

Electronic Engines Support

SW version 6.5.0

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1 Document information

1.1 Clarification of notation

Note: *This type of paragraph calls readers attention to a notice or related theme.*

IMPORTANT: This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

Example: This type of paragraph contains information that is used to illustrate how a specific function works.

1.2 About this guide

A short description of this guide, what it contains, what is should be used for and so on.

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2 Principle of ECU support

Since the engines with electronic fuel injection became commonly used, ComAp has introduced a convenient solution for monitoring and management of such engines based on existing controllers IntelliLite and IntelliGen. These used to be fixed programmed and dedicated to a specific engine type, ECU or communication protocol. A separate module – I-CB (Communication Bridge) – was designed to interface IntelliSys controller and ECU unique for its hardware or software features (e.g. communication speed).

Due to great development on the side of the engine manufacturers regarding electronic equipment and amount of transmitted data from the ECU/engine, ComAp had to react promptly and launched new system of ECU support in the controllers. This new approach described below was started by the IntelliDrive DCU controller. Later on it was adopted by the IntelliLite controller (since version 2.0) and nowadays is integrated into all ComAp controllers.

The new way of ECU support provides above all an easy and fast way how to integrate a new type of ECU. Although the engine manufacturers often declare that the unit provides standard J1939 communication, after deeper analysis many of them appear to use proprietary data frames. Therefore ComAp controllers are simply reconfigurable for such specific units using an external file – Engine Specific Code (ESC) – which contains all necessary information about transmitted values, commands and diagnostic messages. The contents of this file are downloaded to the controller which can afterwards provide complete data monitoring and engine control over the CAN bus.

The above described procedure of implementation of an ECU support ensures easy to use and fast configuration however it doesn't reduce the controller's flexibility. The user should be aware that ComAp provides default configuration and the controller must be adapted and configured to particular application. Providing the most common adjustment doesn't eliminate the need to thoroughly test the functionality of the installed controller in conjunction with the gen-set and other equipment and advice the end user about the way of its operation.

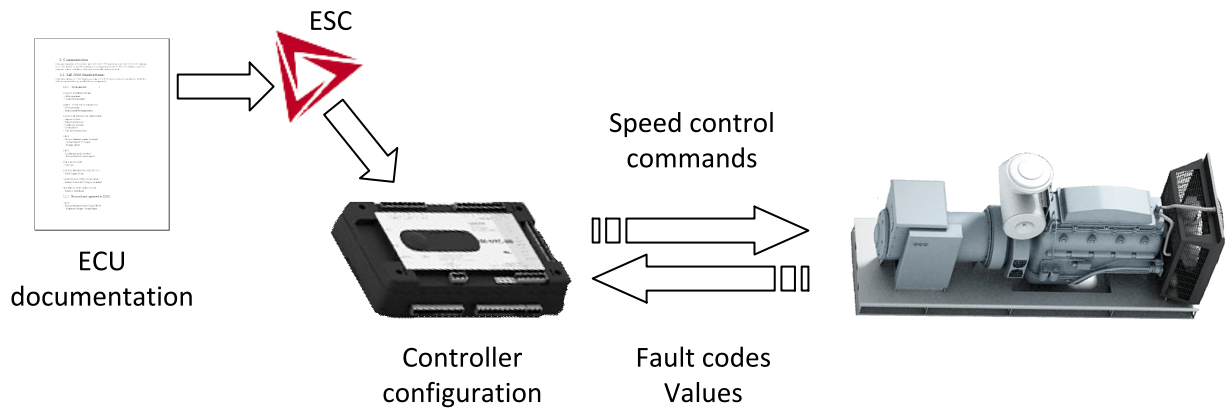
Due to quick development in this area it is strongly recommended to check up ComAp web pages (www.comap-control.com) for software and documentation updates ahead of carrying on with projects comprising electronic engines.

2.1 What must be done to support a new ECU?

Let's say about units communicating over CAN bus and using J1939 protocol (we will leave out specific units - using RS232/RS485 or their own CAN bus lines, Modbus). As mentioned above we cannot rely on ECU brief specification which states that the unit supports J1939 protocol but we have to study a comprehensive specification describing all details of data communicated by the unit. Only then it is possible to create an ESC and test it with the engine. So the necessary steps are in brief:

Study ECU documentation

- ▶ If the ECU is fully compatible with SAE J1939-71, an ESC for "Standard J1939 engine" can be used
- ▶ If the ECU is sufficiently but not fully consistent with SAE J1939-71, a new ESC has been created in ComAp
- ▶ The controller with new ESC has to be tested with the engine/ECU (without testing the functionality is only theoretical – operating conditions of ECUs can vary a lot (for example sequence of activating/deactivating of ECU inputs during starting/stopping of the engine))



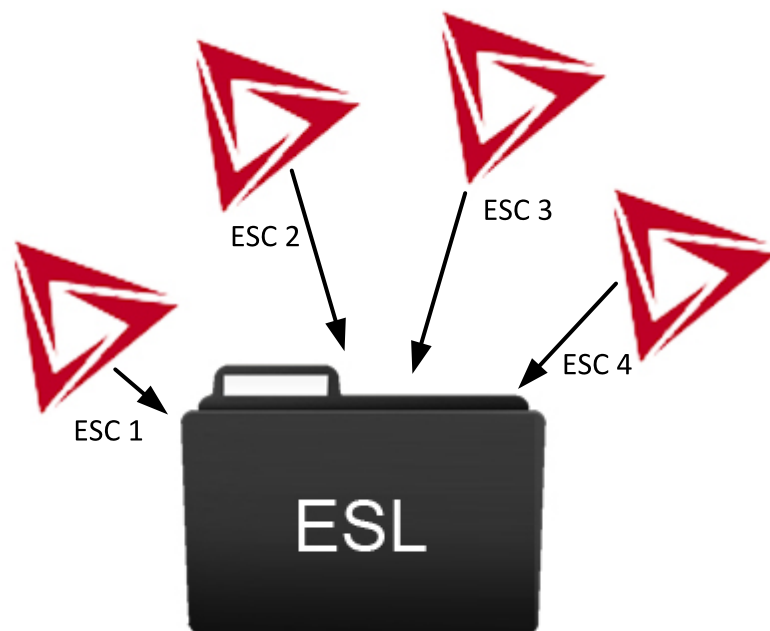
2.2 What data can be transmitted to / from ECU?

There are generally four types of data communicated between the controller and ECU:

- ▶ Values read from the ECU (e.g. Engine coolant temperature, Lube oil pressure)
- ▶ Values/parameters written to ECU (e.g. Speed control, Frequency select)
- ▶ Commands written to ECU (e.g. Start/Stop, Fault reset)
- ▶ Fault codes

2.3 What is an ESL file?

ESL (ECU Specification List) file contains list of all supported ECUs for a given controller. The particular list appears in LiteEdit, LiteEdit 2015, DriveConfig, GenConfig, NanoEdit, ECUDIag as a list of available engine/ECU types. The ESL file also defines communication/diagnostic protocol used in the ECU.



2.4 What is the default ESL setting?

ComAp offers many kinds of controllers for various applications. Almost each of our controllers supports electronic engines, but the configuration PC software and its settings are different. Therefore we have various ECU lists designed for each controller's family. In the table below there is a description of recommended ESL across our standard controller's family.

ECU list (ESL) name	Controller's Family			
ECU list - Allspeed.esl	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano
ECU list - Gensets.esl	InteliGen ^{NT}	InteliGen ^{NT}		
ECU list - InteliLite 2015.esl	InteliLite			
ECU list - InteliLite.esl	InteliLite ^{NT1}	InteliCompact ^{NT}		
ECU list - InteliNano.esl	InteliNano ^{NT}			

Note: It is possible to use a different than a default ECU list in PC software (e.g. ECU list - Allspeed.esl for InteliGen^{NT} or InteliSys^{NT} controller's family in GenConfig). In that case the default configuration may not work properly and/or some values (fault codes) might be unavailable.

2.5 How to import ESC - ESL package?

The "ECU list-x.y" package can be downloaded from ComAp website (www.comap-control.com) and imported into a PC software in the same way as a standard controller firmware package.

It can also be a part of an installation package, in this case it is not necessary to import it separately.

2.6 Why ESC and ECU list have different versions?

Each ESC has a version which changes with each modification. For example if a new parameter or text of a diagnostic message is added.

An ECU list version changes if any of ESC version is changed. It is not possible to issue a new ESC without a new ECU list. In practice a whole ECU list "ESL and ESC package" package is released and it is distributed separately or included in the installation package of the controller.

The configuration softwares (LiteEdit, DriveConfig, GenConfig, NanoEdit) enable to import this package with DNC/IDC/IGC/IWE/NCA/PSI extension as any other firmware packages.

2.7 Configuration

2.7.1 InteliNano^{NT}

- ▶ Open NanoEdit PC software
- ▶ Open controller configuration
- ▶ Go to ECU configuration window (Miscellaneous > Engine control unit)
- ▶ Choose the ECU from the list
- ▶ Write the configuration to the controller

¹except InteliLite^{NT} MRS3, MRS10, MRS11 and InteliLite^{NT} AMF8, AMF20

Note: *InteliNano^{NT} controller does not provide configurable inputs/outputs for engine parameters or commands. The parameters are fixed and cannot be changed.*

Default parameters for ECU (J1939 only)				
NO.	ANAIN from the ECU	BININ from the ECU	ANAOUT to the ECU ¹	BINOUT to the ECU ²
1	Engine speed		Speed control	Start / Stop command
2	Coolant Temperature			Idle / Nominal command
3	Oil Pressure			Frequency selection
4	Fuel Level			
5	Total Engine Hours			

Speed control

InteliNano^{NT} is an easy to use AMF or MRS controller with no capability to speed variation. The requested speed or accelerator pedal position is steady based on the Nominal Frequency setpoint.

Nominal Frequency	ANAOUT to the ECU	
	Requested Speed	Accelerator Pedal Position
50Hz	1500RPM	50%
60Hz	1800RPM	50%

Note: *The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.*

2.7.2 InteliDrive Nano

- ▶ Open DriveEdit PC software
- ▶ Open controller configuration
- ▶ Go to ECU configuration window (Miscellaneous > Engine control unit)
- ▶ Choose the ECU from the list
- ▶ Write the configuration to the controller

Note: *InteliDrive Nano controller does not provide configurable inputs/outputs for engine parameters or commands. The parameters are fixed and cannot be changed.*

Default parameters for ECU (J1939 only)				
NO.	ANAIN from the ECU	BININ from the ECU	ANAOUT to the ECU ³	BINOUT to the ECU ⁴
1	Engine speed		Speed control	Start / Stop command
2	Coolant Temperature			Idle / Nominal command
3	Oil Pressure			Frequency selection
4	Fuel Level			
5	Total Engine Hours			

¹Depends on the ECU capability

²Depends on the ECU capability

³Depends on the ECU capability

⁴Depends on the ECU capability

Speed control

InteliNano^{NT} is an easy to use engine controller with a capability to speed variation. The required speed is based on the configuration and application. Please refer to controller [manual](#) for more information about.

Note: The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.

2.7.3 InteliLite^{NT}, InteliCompact^{NT}

Note: Controllers InteliLite^{NT} MRS3, InteliLite^{NT} MRS10, InteliLite^{NT} MRS11, InteliLite^{NT} AMF8, InteliLite^{NT} AMF20 don't support electronic engines (engines equipped with ECU).

- ▶ Open LiteEdit PC software
- ▶ Open controller configuration
- ▶ Enter controller password (controller > enter password)
- ▶ Open the modify window (controller > configuration > modify...)
- ▶ Click on ECU icon Check the “electronic engine is connected” check button
- ▶ Choose the ECU from the list below
- ▶ Confirm OK
- ▶ Write the configuration to the controller

Note: InteliLite^{NT} and InteliCompact^{NT} controllers do not provide configurable inputs/outputs for engine parameters or commands. The parameters are fixed and cannot be changed.

Default parameters for ECU (J1939 only)				
NO.	ANAIN from the ECU	BININ from the ECU	ANAOUT to the ECU ¹	BINOUT to the ECU ²
1	Engine speed	Yellow Lamp	Speed control	Start / Stop command
2	Fuel Rate	Red Lamp		Idle / Nominal command
3	Coolant Temperature	Wait to Start Lamp		Frequency selection
4	Intake Temperature	Tier4 information		Tier4 control
5	Oil Pressure			
6	Percent Load			
7	Boost Pressure			
8	Total Engine Hours			
9	Total Fuel Used			

Speed control

InteliLite^{NT} is an easy to use AMF or MRS gen-set controller with a limited capability to speed variation. The required speed is calculated from ECU FreqSelect and ECU SpeedAdj setpoints.

InteliCompact^{NT} is an easy to use parallel (SPtM or MINT) controller with a full capability to speed variation. The required is calculated from ECU FreqSelect and ECU SpeedAdj setpoints or based on load share or base load demand.

¹Depends on the ECU capability

²Depends on the ECU capability

ANAOUT to the ECU (ECU FreqSelect setpoint = PRIMARY (DEFAULT))		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1350RPM	0%
50%	1500RPM	50%
100%	1650RPM	1000%
ANAOUT to the ECU (ECU FreqSelect setpoint = SECONDARY)		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1620RPM	0%
50%	1800RPM	50%
100%	1980RPM	1000%

Note: The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.

2.7.4 IntelliLite

- ▶ Open LiteEdit 2015 PC software
- ▶ Open controller connection
- ▶ Enter controller password (controller > enter password)
- ▶ Open the controller configuration window (controller > controller configuration)
- ▶ Select modules folder
- ▶ Click on + add new module in ECU section
- ▶ Choose the ECU from the list on right hand side
- ▶ Click on Add module
- ▶ Confirm by OK and Restart

Note: IntelliLite controller does not provide configurable inputs/outputs for engine parameters or commands. The parameters are fixed and cannot be changed.

Default parameters for ECU (J1939 only)				
NO.	ANAIN from the ECU	BININ from the ECU	ANAOUT to the ECU ¹	BINOUT to the ECU ²
1	Engine speed	Yellow Lamp	Speed control	Start / Stop command
2	Fuel Rate	Red Lamp		Idle / Nominal command
3	Coolant Temperature	Wait to Start Lamp		Frequency selection
4	Intake Temperature	Tier4 information		Tier4 control
5	Oil Pressure			
6	Percent Load			
7	Boost Pressure			
8	Total Engine Hours			
9	Total Fuel Used			

Speed control

IntelliLite is an easy to use AMF or MRS gen-set controller with a limited capability to speed variation. The required speed is calculated from ECU Frequency Select and ECU Speed Adjustment setpoints.

¹Depends on the ECU capability

²Depends on the ECU capability

ANAOUT to the ECU (ECU Frequency Select setpoint = PRIMARY (DEFAULT))		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1350RPM	0%
50%	1500RPM	50%
100%	1650RPM	1000%
ANAOUT to the ECU (ECU Frequency Select setpoint = SECONDARY)		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1620RPM	0%
50%	1800RPM	50%
100%	1980RPM	1000%

Note: The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.

2.7.5 InteliDrive Lite

- ▶ Open LiteEdit PC software
- ▶ Open controller configuration
- ▶ Enter controller password (controller > enter password)
- ▶ Open the modify window (controller > configuration > modify...)
- ▶ Click on ECU icon Check the “electronic engine is connected” check button
- ▶ Choose the ECU from the list below
- ▶ Confirm OK
- ▶ Write the configuration to the controller

Note: InteliDrive Lite controller does not provide configurable inputs/outputs for engine parameters or commands. The parameters are fixed and cannot be changed.

Default parameters for ECU (J1939 only)				
NO.	ANAIN from the ECU	BININ from the ECU	ANAOUT to the ECU ¹	BINOUT to the ECU ²
1	Engine speed	Yellow Lamp	Speed control	Start / Stop command
2	Fuel Rate	Red Lamp		Idle / Nominal command
3	Coolant Temperature	Wait to Start Lamp		F frequency selection
4	Intake Temperature	Tier4 information		Tier4 control
5	Oil Pressure			
6	Percent Load			
7	Boost Pressure			
8	Total Engine Hours			
9	Total Fuel Used			

Speed control

InteliDrive Lite is an easy to use engine controller with capability to a full speed variation. The required is calculated base on the configuration. For more information please refer to controller [manual](#).

¹Depends on the ECU capability

²Depends on the ECU capability

ANAOUT to the ECU (ECU FreqSelect setpoint = PRIMARY (DEFAULT))		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1350RPM	0%
50%	1500RPM	50%
100%	1650RPM	1000%
ANAOUT to the ECU (ECU FreqSelect setpoint = SECONDARY)		
ECU SpeedAdj	Requested Speed	Accelerator Pedal Position
0%	1620RPM	0%
50%	1800RPM	50%
100%	1980RPM	1000%

Note: The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.

2.7.6 InteliDrive DCU , InteliDrive Mobile

- ▶ Open DriveConfig PC software
- ▶ Open controller configuration
- ▶ Add ECU to the configuration (modules card > ECU, check the ECU-1 Used check box)
- ▶ Choose the ECU from the list
- ▶ Write the configuration to the controller

Note: InteliDrive DCU and InteliDrive Mobile controllers provide configurable inputs/outputs for engine parameters or commands. These lists of supported parameters are available in I/O card of DriveConfig. For list of supported parameters or commands refer to particulate ECU type in this manual.

Note: It may happen that some commands as Start request, Stop request have a red background. It means that these ECU commands do not have assigned a source value from the controller e.g. Starter, Stop pulse.

Note: The default configuration of ECU I/O is different for each particular ECU.

Speed control

InteliDrive DCU , InteliDrive Mobile are engine controllers with a complex speed control capability. Please refer to [InteliDrive DCU](#) or [InteliDrive Mobile](#) manual for further information about engine speed control over CAN bus.

ANAOUT to the ECU		
Speed Request	Requested Speed	Accelerator Pedal Position
0%	1350RPM	0%
50%	1500RPM	50%
100%	1650RPM	1000%

Note: The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.

2.7.7 InteliGen^{NT}, InteliSys^{NT}

- ▶ Open GenConfig PC software
- ▶ Open controller configuration

- ▶ Choose the ECU from the list (modules card > ECU)
- ▶ Click on Insert
- ▶ Write the configuration to the controller

Note: *InteliGen^{NT} and InteliSys^{NT} controllers provide configurable inputs/outputs for engine parameters or commands. These lists of supported parameters are available in I/O card of GenConfig. For list of supported parameters or commands refer to particulate ECU type in this manual.*

Note: *It may happen that some commands as Start request, Stop request have a red background. It means that these ECU commands do not have assigned a source value from the controller e.g. Starter, Stop pulse.*

Note: *The default configuration of ECU I/O is different for each particular ECU.*

Speed control

InteliGen^{NT}, InteliSys^{NT} are paralleling gen-set controllers with an essential speed variation capability. The required speed is calculated from Nominal RPM setpoint and SpeedRegOut value.

ANALOGUE to the ECU		
Speed Gov Out	Requested Speed	Accelerator Pedal Position
0.000V	1350RPM	0%
5.000V	1500RPM	50%
10.000V	1650RPM	1000%
ANALOGUE to the ECU		
Speed Gov Out	Requested Speed	Accelerator Pedal Position
0.000V	1620RPM	0%
5.000V	1800RPM	50%
10.000V	1980RPM	1000%

Note: *The speed control over the CAN bus (J1939 protocol) has to be supported by the engine ECU. Without it supporting ComAp controllers cannot adjust the engine speed.*

2.8 Proprietary (non J1939) ECU/protocols

Some ECUs do not offer J1939 communication protocol and so it is necessary to have a solution dedicated to each of these units. We recognize two groups:

- ▶ ECU communicating via Modbus protocol (e.g. some Cummins engines). It is possible to connect such ECU directly (without I-CB unit)
- ▶ ECU with proprietary communication protocol (e.g. MTU/MDEC CAN bus). These units are supported with the use of an I-CB unit.

Note: *For more details about configuration and available parameters of I-CB refer to I-CB Reference Guide.*

2.9 SAE - J1939 diagnostic connector

A Description of Off-Board diagnostic connector supposed to be used on engine to get the access to the engine communication links.

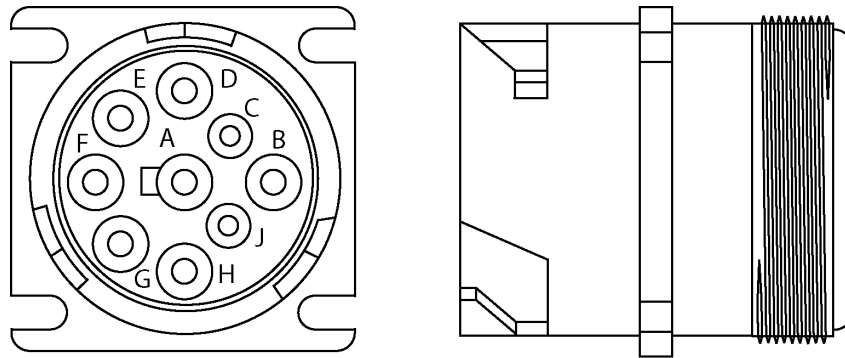


Image 2.1 SAE - J1939 diagnostic connector

Pin label	Meaning
A	Battery negative
B	Battery positive - unswitched
C	CAN H
D	CAN L
E	CAN SHLD
F	SAE J1708 +
G	SAE J1708 -
H	Proprietary OEM use
J	Proprietary OEM use

2.10 Fault codes – FMI table

To inform a service about engine failure sends the ECU a fault code to the controller (e.g. SAE J1939-73 protocol). The Fault codes are shown as a code and/or as a text. The code consists of:

- ▶ SPN number (suspect parameter number) – is a particular code for each fault,
- ▶ FMI number (failure mode) – is a particular code for each cause of fault,
- ▶ OC number (occurrence count) – is an ECU internal counter for each combination of SPN and FMI.

The table describes the cause of fault base on the FMI code:

FMI	Meaning	FMI	Meaning
0	Data valid but above normal operational range – most severe level	16	Data valid but above normal operating range – moderately severe level
1	Data valid but below normal operational range – most severe level	17	Data valid but below normal operating range – least severe level
2	Data erratic, intermittent or incorrect	18	Data valid but below normal operating range – moderately severe level
3	Voltage above normal or shorted to high source	19	Received network data in error
4	Voltage below normal or shorted to low source	20	Data drifted high
5	Current below normal or open circuit	21	Data drifted low
6	Current above normal or grounded circuit	22	Reserved for SAE assignment
7	Mechanical system not responding or out of adjustment	23	Reserved for SAE assignment
8	Above frequency or pulse width or period	24	Reserved for SAE assignment
9	Abnormal update rate	25	Reserved for SAE assignment

10	Abnormal rate of change	26	Reserved for SAE assignment
11	Root cause not known	27	Reserved for SAE assignment
12	Bad intelligent device or component	28	Reserved for SAE assignment
13	Out of calibration	29	Reserved for SAE assignment
14	Special instructions	30	Reserved for SAE assignment
15	Data valid but above normal operating range – least severe level	31	Condition exists

2.11 How to create a constant for ECU control

There are at least two ways in **GenConfig** software:

1. By math function ADD in PLC where first input is a required analog value (constant) and the second input is value 0. The output of the function is a constant which can be used as a source for ECU control. In this example is created constant = 2.

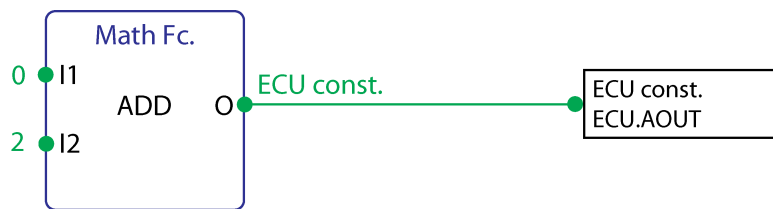


Image 2.2 PLC constant for ECU control

2. By any of not used ExtValue1deflt - ExtValue4deflt setpoint. The value of an ExtValueXdeflt setpoint can be used as a source for ECU control. It is recommended to use a source Logical 1 for a particular ExtValueXreset (in LBI card).

There is a recommended way in **DriveConfig** software:

3. By math function ADD in PLC where first input is a required analog value (constant) and the second input is value 0. The output of the function is a constant which can be used as a source for ECU control. In this example is created constant = 2.

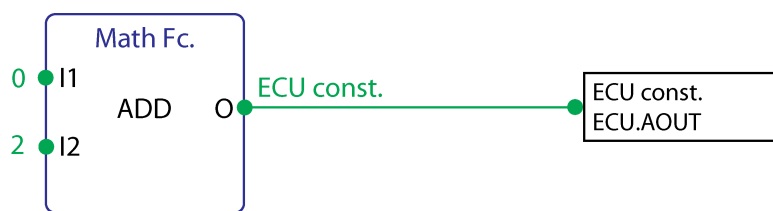


Image 2.3 PLC constant for ECU control

2.12 After-treatment support (Tier4)

Emission standards are requirements that set specific limits to the amount of pollutants that can be released into the environment. Many emissions standards focus on regulating pollutants released by power plants, small equipment such as lawn mowers and diesel generators.

The U.S. Environmental Protection Agency (EPA) began to enforce limits on diesel exhaust emissions from non-road diesel engines in 1996 and stationary diesel engine generator sets in 2006. Implemented National Ambient Air Quality Standards (NAAQS) in a series of steps called Tier levels. These regulations have

introduced successively more strict limitations on carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM) and non-methane hydrocarbons (NMHC). In response to these regulations, engine manufacturers began introducing innovative design changes and sophisticated engine control systems that have successfully reduced the major pollutants in diesel exhaust to comply with each successive Tier level. Emission standards to be phased-in over the period of 2015 to 2016 are mainly Tier4 standard. Tier 4 standard then divides to Tier 4 interim and Tier 4 final.

The after-treatment technologies include e.g. selective catalytic reduction (SCR) to control NOx and diesel particulate filters (DPF) to capture the remaining carbon particles. While most diesel engines will require SCR to meet the NOx limits for both Tier 4 Interim and Tier 4 Final, some engine models will be able to meet the Tier 4 Final regulations for PM without a DPF. In addition, exhaust gas recirculation (EGR) combined with a DPF may be used in some engine platforms to reduce NOx in place of SCR to meet Tier 4 Final.






ComAp is continuously following this new emission trends. The investigation brings to ComAp controllers the ability to read the values related to the Tier4 emission standards as well as to control the engine after-treatment directly by the controller or by service if needed (In general the after-treatment system is primarily driven by the engine ECU itself and does not require any external control.). The build-in displays as well as external displays offer in context with Tier4 icons to display the health of the engine and after-treatment system. It is even more intuitive for the service or maintenance of the engine. Particular products provide different level of Tier4 standard support. See the table below for details.





Note: Tier4 emission standard has to be supported by the engine ECU. Without its support ComAp controllers cannot read related data, show the icon on displays nor control the after-treatment.

For complete support of Tier4 functions there are three parts with Tier4 support needed: controller firmware, display firmware and ECU list.

Please refer to **Comparison table (page 23)** for more details. Follow the particular New Features List for most recent information.

Following table shows list of available icons (symbols) related to after-treatment support. There are often more inputs for control the icons than stated in SPN column, this table serves just as overview.

SPN	Icon name	Displayed Icon
3697	Diesel Particulate Filter Lamp Command	
3702	Diesel Particulate Filter Regeneration Inhibited	
6915	SCR System Cleaning Lamp Command	
3698	Exhaust System High Temperature Lamp Command	
5245	Fluid Tank Low Level Indicator	

1213	Malfunction Indicator Lamp (indicates that the active trouble code is emission-related)	
624	Amber Warning Lamp	
623	Red Stop Lamp	
1081	Engine Wait to start Lamp (Glow Lamp)	

Note: Icons at built-in displays are configured automatically. For further information about icon configuration for external displays, please refer to configuration PC software manual (GenConfig, DriveConfig).

Beside icons there are few other signals that are crucial for Tier4Final support. These are summarized in following table.

SPN	Name	Description
3719	DPF1 Soot Load	Indicates the soot load percent of diesel particulate filter in per cent. Read by ComAp controller.
1761	DEF Level	Indicates Aftertreatment 1 Diesel Exhaust Fluid Tank Level in per cent. Read by ComAp controller.
3695	Aftertreatment Regeneration Inhibit Switch	Signal used to control the aftertreatment. This switch inhibits aftertreatment regeneration. Transmitted by ComAp controller.
3696	Aftertreatment Regeneration Force Switch	Signal used to control the aftertreatment. This switch force aftertreatment regeneration. Transmitted by ComAp controller.

2.13 Comparison table

Manufacturer / ECU Typeve	InteliSys NT	InteliGen NT	InteliGen GC ^{NT}	InteliCompact NT	InteliLite NT	InteliLite	InteliNano NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano	InteliVision 5	InteliVision 5 CAN	InteliVision 8	InteliVision 12T	ID	Selection in PC software
version	3.8.0	3.8.0	3.8.0		2.2.0	1.3.0		3.1.0		2.1.0		1.7.0	1.3.1	2.4.0	1.1.0		
Agco Power																	
EEM4	Tier4F	Tier4F	YES	NO	NO	NO	NO	Tier4F	YES	Tier4F	YES	Tier4F	Tier4I	Tier4F	Tier4F	116	Agco Power EEM4
Caterpillar																	
CCM module	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	N/A	I-CB unit
PL1000 module	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	N/A	I-CB unit
ADEM + EMCP	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	17	Caterpillar ADEM&EMCP
ADEM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	10	Caterpillar J1939
Cummins																	
CM500	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	57	Cummins CM500
CM558	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	33	Cummins CM558
CM570	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	4	Cummins CM570
CM800	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	67	Cummins CM800
CM850	Tier4F	Tier4F	YES	YES	YES	YES	YES	Tier4F	Tier4F	Tier4F	Tier4F	Tier4F	Tier4I	Tier4F	Tier4F	26	Cummins CM850
CM2150	Tier4I	Tier4I	YES	YES	YES	YES	YES	Tier4I	Tier4I	Tier4I	Tier4I	Tier4I	Tier4I	Tier4I	Tier4I	134	Cummins CM2150
CM2250	NO	NO	NO	NO	NO	NO	NO	Tier4F	Tier4F	Tier4F	Tier4F	Tier4F	Tier4I	Tier4F	Tier4F	59	Cummins CM2250
CM2350	Tier4F	Tier4F	YES	NO	NO	NO	NO	Tier4F	YES	YES	NO	Tier4F	Tier4I	Tier4F	Tier4F	101	Cummins CM2350
GCS	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	5	Cummins MODBUS
PGI 1.1	Tier4F	Tier4F	YES	NO	NO	YES	YES	NO	NO	NO	NO	Tier4F	Tier4I	Tier4F	Tier4F	43	Cummins CM850/CM2150/CM2250
Daimler Chrysler																	
ADM2	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	24	Daimler Chrysler ADM2

Manufacturer / ECU Type	InteliSys NT	InteliGen NT	InteliGen GC ^{NT}	InteliCompact NT	InteliLite NT	InteliLite	InteliNano NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano	InteliVision 5	InteliVision 5 CAN	InteliVision 8	InteliVision 12T	ID	Selection in PC software
ADM3	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	42	Daimler Chrysler ADM3
Detroit Diesel																	
DDEC IV/V	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	9	DDC DDEC IV/V
Deutz																	
EMR2	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	8	Deutz EMR2
EMR3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	25	Deutz EMR3
EMR4	Tier4I	Tier4I	YES	YES	YES	YES	YES	Tier4F	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	70	Deutz EMR4
TEM Evolution	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	N/A	I-CB unit
Ford																	
E - control	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	95	Ford e-control
GM																	
MEFI4B / MEFI5B	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	34	GM MEFI4B / MEFI5B
MEFI6	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	71	GM MEFI6
SECM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	35	GM SECM
E - control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	44	GM e-control
E - control LCI	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	58	GM e-control LCI
Guascore																	
LECM E6	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	YES	YES	YES	YES	YES	147	Guascore LECM E6
Isuzu																	
ECM	Tier4I	Tier4I	YES	YES	YES	YES	YES	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	36	Isuzu ECM
Iveco																	
EDC	Tier4I	Tier4I	YES	YES	YES	YES	YES	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	14	Iveco NEF & Cursor
EDC Tier3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	91	Iveco NEF & Cursor Tier3
ADEM III	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	28	Iveco Vector
JCB																	

Manufacturer / ECU Typeve	InteliSys NT	InteliGen NT	InteliGen GC ^{NT}	InteliCompact NT	InteliLite NT	InteliLite	InteliNano NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano	InteliVision 5	InteliVision 5 CAN	InteliVision 8	InteliVision 12T	ID	Selection in PC software
Delphi DCM	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	23	JCB Delphi DCM
Jenbacher																	
DIA.NE	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	22	Jenbacher DIA.NE
John Deere																	
JDEC	Tier4F	Tier4F	YES	YES	Tier4F	Tier4F	YES	Tier4F	YES	Tier4F	YES	Tier4F	Tier4I	Tier4F	Tier4F	7	John Deere
Kubota																	
ECM	Tier4I	Tier4I	YES	YES	Tier4I	Tier4I	YES	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	122	Kubota
Liebherr																	
LIDEC1	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	135	Liebherr
MAN																	
EDC / MFR	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	29	MAN MFR
Data Logger	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	NO	YES	YES	YES	YES	56	MAN data logger
MTU																	
MDEC	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	N/A	I-CB unit
ECU7	YES	YES	YES	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	YES	N/A	I-CB unit
ECU7	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	130	MTU ADEC Direct
ECU7 & SAM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	20	MTU ADEC J1939
ECU7 & SAM	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	37	MTU ADEC J1939 P-engines
ECU8 & SMART connect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	60	MTU SMART Connect
ECU9	Tier4I	Tier4I	YES	YES	Tier4I	Tier4I	YES	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	125	MTU ECU9
DDEC10	Tier4I	Tier4I	YES	YES	Tier4I	NO	NO	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	117	MTU DDEC10
EIM	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	120	MTU Engine Interface Module

Manufacturer / ECU Type	InteliSys NT	InteliGen NT	InteliGen GC ^{NT}	InteliCompact NT	InteliLite NT	InteliLite	InteliNano NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano	InteliVision 5	InteliVision 5 CAN	InteliVision 8	InteliVision 12T	ID	Selection in PC software
Perkins																	
A4E2 or ECM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	12	Perkins ECM
A4E2 or ECM	NO	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	54	Perkins 1300
Scania																	
S6	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	3/16	Scania S6 Singlespeed
S6	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	6/11	Scania S6 Allspeed
S8	Tier4I	Tier4I	YES	YES	Tier4I	YES	YES	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	68	Scania S8 Singlespeed
S8	NO	NO	NO	NO	NO	NO	NO	Tier4I	YES	Tier4I	YES	Tier4I	Tier4I	Tier4I	Tier4I	69	Scania S8 Allspeed
Sisu																	
EEM2	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	19	Sisu EEM3 Propulsion
EEM3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	18	Sisu EEM3 Gen-set
Steyr																	
M1	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	66	Steyr M1
VM																	
EDC	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	32/31	VM Industrial / VM Maine
Volvo																	
EDC3/ EMS1/ EMS2	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	1	Volvo Singlespeed
EDC3/ EMS1/ EMS2	YES	YES	YES	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	2	Volvo Allspeed
EDC7 Allspeed KWP2000	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	YES	YES	YES	YES	114	Volvo EDC7 Allspeed KWP2000
Waukesha																	
ESM	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	15	Waukesha ESM
Yanmar																	

Manufacturer / ECU Type	InteliSys NT	InteliGen NT	InteliGen GC ^{NT}	InteliCompact NT	InteliLite NT	InteliLite	InteliNano NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliDrive Nano	InteliVision 5	InteliVision 5 CAN	InteliVision 8	InteliVision 12T	ID	Selection in PC software
TNV	YES	YES	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	89	Yanmar TNV
Generic SAE J1939 support																	
N/A	Tier4F	Tier4F	YES	YES	Tier4F	Tier4F	YES	Tier4F	YES	Tier4F	YES	Tier4F	Tier4F	Tier4F	Tier4F	255	Standard J1939 engine
N/A	Tier4F	Tier4F	YES	YES	Tier4F	Tier4F	NO	NO	NO	NO	NO	Tier4F	Tier4F	Tier4F	Tier4F	118	Standard J1939 monitor

Note: List of controllers contains only standard branches of controllers. Customized branches usually follow the implementation of relevant standard branch. For more info about customized branches please see <http://www.comap.cz/products/> or contact your local distributor.

Note: Tier4F (final) means DPF and/or SCR technology is supported in the ECU list,

Note: Tier4I (interim) only DPF technology is supported in the ECU list.

3 List of ECU

3.1 Agco Power engines support	29
3.2 Caterpillar engines support	32
3.3 Cummins engines support	40
3.4 Daimler Chrysler engines support	66
3.5 Detroit Diesel engines support	71
3.6 Deutz engines support	75
3.7 Ford engines support	86
3.8 GM engines support	88
3.9 Guascor engines support	99
3.10 Isuzu engines support	103
3.11 Iveco engines support	107
3.12 JCB engines support	116
3.13 GE Jenbacher engines support	119
3.14 JohnDeere engines support	122
3.15 Kubota engines support	127
3.16 Liebherr engines support	130
3.17 MAN engines support	132
3.18 MTU engines support	137
3.19 Perkins engines support	167
3.20 Scania engines support	175
3.21 SISU engines support	192
3.22 Steyr engines support	196
3.23 VM engines support	197
3.24 Volvo engines support	202
3.25 Waukesha engines support	213
3.26 Yanmar engines support	217
3.27 Standard J1939 engines support	219

3.1 Agco Power engines support

ECU Type	Engine type
EEM4	All Offroad, marine, land generating engines

3.1.1 EEM4

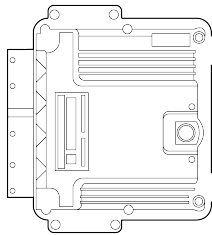


Image 3.1 EEM4

Controllers that support the EEM4:

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Start Request ^{1,2,3,4,5,6}	-	Proprietary parameter
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter
DPF Reg. Inhibit Switch ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
SCR Act. dosing reagent quality	4331	Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity

SCR system state	4332	Aftertreatment 1 SCR System State
SCR Dosing Reagent Abs. Press	4334	Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Catalyst Tank Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Ambient Air Temperature	171	Ambient Air Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
DEF tank level lamp	-	Proprietary parameter
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Engine low idle switch	2883	Engine Alternate Low Idle Switch
Droop percentage request	2881	Engine Droop Accelerator 1 Select
Engine high idle switch	-	Proprietary parameter
Alternative low idle selection	2891	Engine Alternate Low Idle Select State
Alternative high idle selection	-	Proprietary parameter

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen^{NT} or IntelliSys^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU "K" connector	Tyco 62pin connector (837074045)	Controller
CAN H	54	45	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	76	44	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,3,5	57,58,59	N/A
Battery - (negative)	2,4,6	60,61,62	N/A
Key Switch	88	55	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **EEM4 on page 230**

3.2 Caterpillar engines support

ECU Type	Engine type
CCM (with ADEM or EMCP2)	3500 series
PL1000 (with ADEM or EMCP2)	3500 series
ADEM A3 / ADEM A4 (with EMCP 3.x / 4.x)	C series, 3400 series
ADEM A3 / ADEM A4	C series
ADEM II is not supported!	

3.2.1 CCM with ADEM or EMCP2



Image 3.2 EMCP2 + CCM

Configuration

Note: For connection to CAT CCM module it is necessary to use an I-CB module. Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEdit software. For further information see I-CB manual.

Controllers that support the CCM

Refer to Comparison table (page 23)

Available parameters

For more information about available values and signals, please refer to I-CB [manual](#) or ICBEdit PC software.

Recommended wiring of CCM module

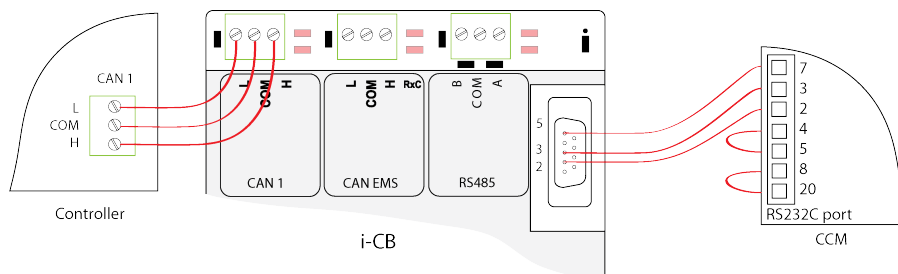


Image 3.3 EMCP2 + CCM recommended wiring

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

3.2.2 PL1000 with ADEM or EMCP2



Image 3.4 EMCP2 + PL1000

Configuration

Note: For connection to CAT PL1000 module it is necessary to use an I-CB module. Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEEdit software. For further information see I-CB manual.

Controllers that support the PL1000

Refer to Comparison table (page 23)

Available parameters

For more information about available values and signals, please refer to I-CB [manual](#) or ICBEEdit PC software.

Recommended wiring of PL1000E or PL1000T

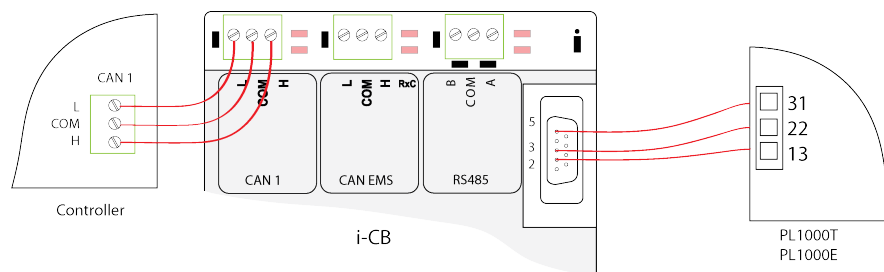


Image 3.5 Recommended wiring of PL1000E or PL1000T

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

3.2.3 ADEM A3 or ADEM A4

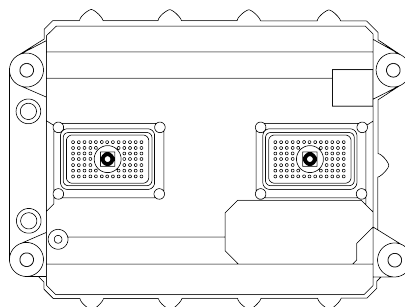


Image 3.6 ADEM A3

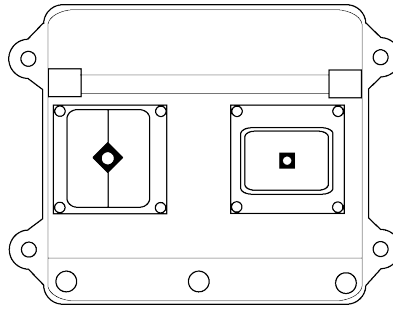


Image 3.7 ADEM A4

Controllers that support the ADEM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temperature	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Exhaust Gas Temperature	173	Engine Exhaust Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Alternator Potential (Voltage)	167	Charging System Potential (Voltage)
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Oil Filter Diff.Press	99	Engine Oil Filter Differential Pressure
Fuel Filter Diff.Press	95	Engine Fuel Filter Differential Pressure

Right Exhaust Temp	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Left Exhaust Temp	2434	Engine Exhaust Manifold Bank 1 Temperature 1
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
AuxTemp	441	Auxiliary Temperature 1
AuxPress	1387	Auxiliary Pressure #1
Transmission Output Shaft Speed	191	Transmission Output Shaft Speed
Transmission Current Gear	523	Transmission Current Gear
Aux Valve 15 Fail Safe Mode Command	2345	Aux Valve 15 Fail Safe Mode Command
Auxiliary Coolant Pressure	1203	Engine Auxiliary Coolant Pressure
Engine Auxiliary Coolant Temperature	1212	Engine Auxiliary Coolant Temperature
Engine Intercooler Coolant Level	3668	Engine Charge Air Cooler Coolant Level
Engine Aftercooler Coolant Level	3676	Engine Aftercooler Coolant Level
Pre-filter Oil Pressure	1208	Engine Pre-filter Oil Pressure
Fuel Leakage	1239	Engine Fuel Leakage 1
Fuel Leakage 2	1240	Engine Fuel Leakage 2
Sea Water Pump Outlet Pressure	2435	Sea Water Pump Outlet Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliCompact^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 70pin AMP connector	Controller
CAN H	50	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	CAN1 (extension modules/J1939) – CAN COM

CAN L	34	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,55	N/A
Battery - (negative)	61,63,65,69	N/A
Key Switch	70	Any binary output configured as ECU PwrRelay
Analog Speed Control	66 (38-S-SPD ¹)	SG OUT
Analog Speed Control	68 (39-D-SPD ¹)	SG COM

Note: In case of Marine application the settings of the ECU has to be set to “Startboard”. It changes the ECU address to 0 which is expected by the ComAp controller. Settings “Port” uses an address 1 and is not allowed.

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **ADEM A3 or ADEM A4 on page 234**.

3.2.4 ADEM A4 with EMCP3.x or EMCP4.x

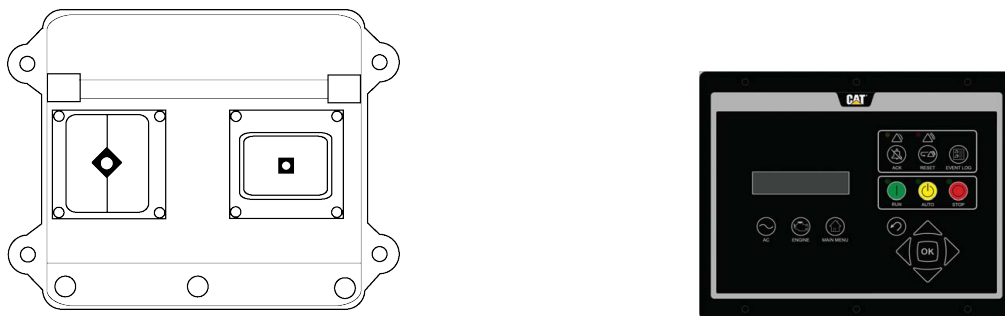


Image 3.8 ADEM A4 with EMCP3.x or ADEM A4 with EMCP4.x

Note: The configuration and connection is the same on the gen-set equipped with ADEM A4 (ECU) and EMCP 3.x or EMCP 4.x (generator set controller). The ADEM 4.x is the successor of the ADEM 3.x.

Controllers that support the ADEM with EMCP

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp

¹Caterpillar PWM speed control terminal

Protect Lamp EMCP	987	Protect Lamp - signal of EMCP panel
Amber Warning Lamp EMCP	624	Amber Warning Lamp - signal of EMCP panel
Red Stop Lamp EMCP	623	Red Stop Lamp - signal of EMCP panel
Malfunction Lamp EMCP	1213	Malfunction Indicator Lamp - signal of EMCP panel
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Startup Mode	1675	Engine Starter Mode
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temperature	175	Engine Oil Temperature 1
IntercoolTemp	52	Engine Intercooler Temperature
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Air Filter Differential Pressure	107	Engine Air Filter 1 Differential Pressure
Percent Load	92	Engine Percent Load At Current Speed
Accelerator Pedal Position 1	91	Accelerator Pedal Position 1
Fuel Rate	183	Engine Fuel Rate
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Exhaust Gas Temp - Right Manifold	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Exhaust Gas Temp - Left Manifold	2434	Engine Exhaust Manifold Bank 1 Temperature 1
Pre-filter Oil Pressure	1208	Engine Pre-filter Oil Pressure
Auxiliary Coolant Pressure	1203	Engine Auxiliary Coolant Pressure
Turbocharger 1 Intake Temp	1180	Engine Turbocharger 1 Turbine Intake Temperature
Turbocharger 2 Intake Temp	1181	Engine Turbocharger 2 Turbine Intake Temperature
Turbo 1 Inlet Pressure	1176	Engine Turbocharger 1 Compressor Intake Pressure
Turbo 2 Inlet Pressure	1177	Engine Turbocharger 2 Compressor Intake Pressure
Air Filter 2 Differential Press	2809	Engine Air Filter 2 Differential Pressure
DesiredOpSpd	515	Engine's Desired Operating Speed
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Engine speed EMCP	190	Engine Speed - signal of EMCP panel
Coolant Temp EMCP	110	Engine Coolant Temperature - signal of EMCP panel
Fuel Temp EMCP	174	Engine Fuel Temperature 1 - signal of EMCP panel
Electrical Potential (Voltage) EMCP	168	Battery Potential / Power Input 1 - signal of EMCP panel
Battery Potential (Voltage) EMCP	158	Keyswitch Battery Potential - signal of EMCP panel
Oil Filter Diff.Press	99	Engine Oil Filter Differential Pressure - signal of EMCP panel
Fuel Filter Diff.Press	95	Engine Fuel Filter Differential Pressure - signal of EMCP panel
Fuel Delivery Pressure EMCP	94	Engine Fuel Delivery Pressure - signal of EMCP panel

Engine Oil Pressure EMCP	100	Engine Oil Pressure - signal of EMCP panel
Throttle Position	51	Engine Throttle Valve 1 Position 1
Alternator Bearing 1 Temperature	1122	Engine Alternator Bearing 1 Temperature
Alternator Bearing 2 Temperature	1123	Engine Alternator Bearing 2 Temperature
Alternator Winding 1 Temperature	1124	Engine Alternator Winding 1 Temperature
Alternator Winding 2 Temperature	1125	Engine Alternator Winding 2 Temperature
Alternator Winding 3 Temperature	1126	Engine Alternator Winding 3 Temperature
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Gas Supply Pressure	159	Engine Gaseous Fuel Supply Pressure 1
Engine Intercooler Coolant Level	3668	Engine Charge Air Cooler Coolant Level
Fuel Filter Intake Abs Pressure	5417	Engine Fuel Filter (Suction Side) Intake Absolute Pressure
Fuel Temperature 2	3468	Engine Fuel Temperature 2
Sea Water Pump Outlet Pressure	2435	Sea Water Pump Outlet Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
--------------------	-----	------------

IMPORTANT: Speed control can be done by using PWM from the controller (SG interface) to the ADEM. PWM rate for the controller has to be set to 500Hz. See the SpdGovPWM rate setpoint in the Sync/Load ctrl group of setpoints. This feature has to be enabled in the ECU. Please contact your local distributor to check it.

Start/Stop command can be configured as Remote Start/Stop EMCP input. Use ECU PwrRelay controller output for this purpose.

Recommended wiring

Function	ECU 70pin AMP connector	Controller
CAN H	50	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,55	N/A
Battery - (negative)	61,63,65,69	N/A

Key Switch	70	Any binary output configured as ECU PwrRelay
Analog Speed Control	66 (38-S-SPD ¹)	SG OUT
Analog Speed Control	68 (39-D-SPD ¹)	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **Caterpillar ADEM A4 with EMCP3.x or ADEM A4 with EMCP4.x on page 235**.

¹Caterpillar PWM speed control terminal

3.3 Cummins engines support

ECU Type	Engine type
CM500	Industrial engines QSK19, QSK23, QSK45, QSK60, QSK78
CM558	Gas engines, QST30 (slave ECU)
CM570 (CM876)	Tier2/Tier3 QSM11, QSX15, ISM 400, ISM 435
CM800	ISB, ISBe
PGI1.1 (CM850, CM2150, CM2250)	Tier4i QSB7 and QSL9 Tier 2 QSK50/60, QSK19, QSK38 MCRC Tier 3 QSB5, QSB7, QSL9, QSM11
CM2150	ISDe, ISLe, ISZ (ISX 13)
CM2350	Tier4 QSB6.7, QSL9, QSX15, QSF3.8, QSB4.5, QSG12
CM2250	Industrial engines (ISX, ISB series)
GCS	Tier2 QSK23, QSK45/60/78, QST30

3.3.1 CM500

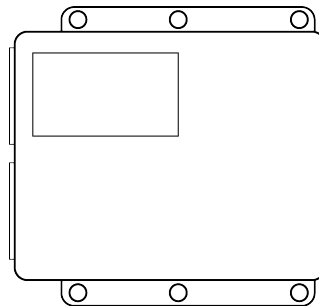


Image 3.9 CM500

Controllers that support the CM500

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		

Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
AP low idle switch	558	Accelerator Pedal 1 Low Idle Switch
Water in Fuel	97	Water In Fuel Indicator 1

ECU binary inputs (controller's outputs - commands)

Configuration Name	SPN	J1939 Name
--------------------	-----	------------

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
AP Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temp	175	Engine Oil Temperature 1
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Pressure	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliCompact^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU A2 connector	Controller
CAN H	32	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	33	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	3,4,5	N/A
Battery - (negative)	7,8	N/A
Key Switch	10	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **CM500 on page 236**.

3.3.2 CM558

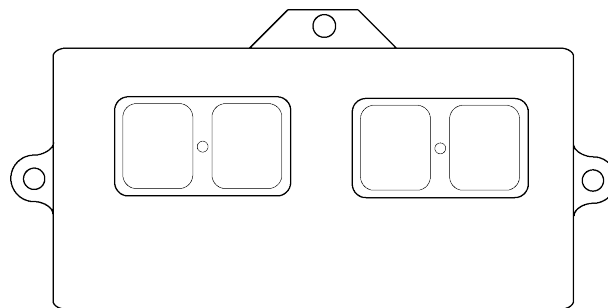


Image 3.10 CM558

Controllers that support the CM558

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Throttle Actuator 1 Command	3464	Engine Throttle Actuator 1 Control Command
Fuel Actuator 1 Command	633	Engine Fuel Actuator 1 Control Command
Engine Fuel Shutoff 1 Control	632	Engine Fuel Shutoff 1 Control
Aftertreat1 ExhGas Temp 2	3249	Aftertreatment 1 Exhaust Temperature 2
Aftertreat1 ExhGas Temp 1	3241	Aftertreatment 1 Exhaust Temperature 1
Intake Manif. Absolute Press	3563	Engine Intake Manifold #1 Absolute Pressure
Fuel Valve 1 Position	1442	Engine Fuel Valve 1 Position
T-ECU	1136	Engine ECU Temperature
EngTemp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Barometric Pressure	108	Barometric Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Engine Throttle Position	51	Engine Throttle Valve 1 Position 1
Battery Potential (Voltage)	168	Battery Potential / Power Input 1
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

No documentation available so far!

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **CM558 on page 237**.

3.3.3 CM570

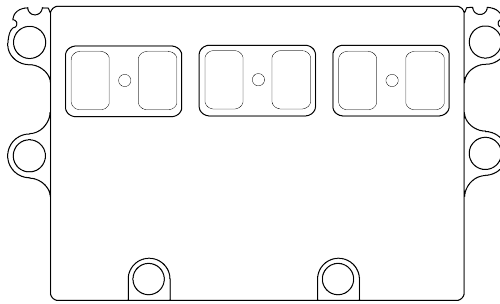


Image 3.11 CM570

Controllers that support the CM570

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Water in fuel	97	Water In Fuel Indicator 1
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
PTO VarSpdSw	978	Engine Remote PTO Governor Variable Speed Control Switch
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Run/Stop	-	Proprietary parameter
Idle/Rated	-	Proprietary parameter
Emergency Stop Indication	-	Proprietary parameter
Utility/Isochronous Gain Select	-	Proprietary parameter
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature

Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Engine Oil Pressure	100	Engine Oil Pressure
DesiredOpSpd	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Speed Bias Reference 1,2,4,5,6	-	Proprietary parameter
Frequency Selection 1,2,4,5,6	-	Proprietary parameter 0 - 50Hz 1 - 60Hz 2-5 - Reserved 6 - Error 7 - Do not care
Requested speed (TSC1) 3,6	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliCompact^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Speed Bias Reference settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpdRegOut	
Convert	YES	
Limits	-10.000V	-10%
	+10.000V	+10%

Speed Bias Reference settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	-10%
	100.0 %	+10%

Recommended wiring

Function	ECU C-01 50pin connector	Controller
CAN H	46	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	CAN1 (extension modules/J1939) – CAN COM
CAN L	36	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	7,8,17,18,28	N/A
Battery - (negative)	29,30,39,40,50	N/A
Key Switch	38	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes see **CM570 on page 238**.

Table of tested ECU calibrations

Engine type	ECU calibration
QSX15-G4	N 11959.01
QSX15-G6	N 11960.01
QSX15-G7	N 11961.01
QSX15-G8	N 11962.01
	N 11962.05
	N12013.00
QSX15-G9	N 11963.01
ISM	L 21103.10

3.3.4 CM800

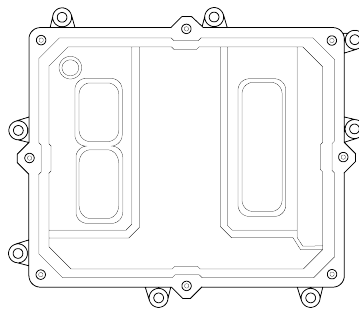


Image 3.12 CM800

Controllers that support the CM800

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Water in fuel	97	Water In Fuel Indicator 1
PTO VarSpdSw	978	Engine Remote PTO Governor Variable Speed Control Switch
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Run/Stop 1,2,3,4,5,6	-	Proprietary parameter

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Engine Oil Pressure	100	Engine Oil Pressure
DesiredOpSpd	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliCompact^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source		
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 40pin top connector	3pin diagnostic connector	Controller
CAN H	53	2	CAN1 (extension modules/J1939) – CAN H
CAN COM	51	3	CAN1 (extension modules/J1939) – CAN COM
CAN L	52	1	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,7,12,13	N/A	N/A
Battery - (negative)	3,9,14,15	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **CM800 on page 239**.

Table of tested ECU calibrations

Engine type	ECU calibration
6ISBe	90132.05

3.3.5 CM850

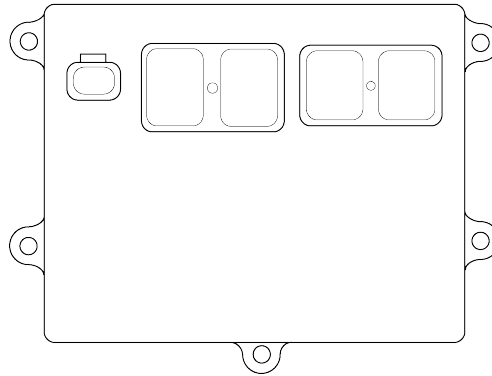


Image 3.13 CM850

Controllers that support the CM850

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfuction Lamp	1213	Malfuction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Water in fuel	97	Water In Fuel Indicator 1
PTO VarSpdSw	978	Engine Remote PTO Governor Variable Speed Control Switch
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Engine Auxiliary Shutdown Switch ^{5,6}	970	Engine Auxiliary Shutdown Switch
Run/Stop ^{1,2,3,4,5,6}	-	Proprietary parameter
Idle/Rated ^{1,2,3,4}	-	Proprietary parameter
Shutdown Override CC ^{1,2,3,4}	-	Proprietary parameter

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Exhaust Gas Temperature - Right Manifold	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Exhaust Gas Temperature - Left Manifold	2434	Engine Exhaust Manifold Bank 1 Temperature 1
Pre-filter Oil Pressure	1208	Engine Pre-filter Oil Pressure
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Turbo Oil Temp	176	Engine Turbocharger Oil Temperature
Intercooler Temp	52	Engine Intercooler Temperature
Intercooler Thermostat Opening	1134	Engine Charge Air Cooler Thermostat Opening
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Engine Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Engine Crankcase Pressure	101	Engine Crankcase Pressure 1
Engine Coolant Pressure	109	Engine Coolant Pressure 1
Inj. Timing Rail 1 Pressure	156	Engine Injector Timing Rail 1 Pressure
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Intake Manifold 2 Temperature	1131	Engine Intake Manifold 2 Temperature
Intake Manifold 3 Temperature	1132	Engine Intake Manifold 3 Temperature
Intake Manifold 4 Temperature	1133	Engine Intake Manifold 4 Temperature
Intake Manifold 5	1802	Engine Intake Manifold 5 Temperature

Temperature		
Intake Manifold 6 Temperature	1803	Engine Intake Manifold 6 Temperature
Turbocharger 1 Boost Pressure	1127	Engine Turbocharger 1 Boost Pressure
Turbocharger 2 Boost Pressure	1128	Engine Turbocharger 2 Boost Pressure
Turbocharger 3 Boost Pressure	1129	Engine Turbocharger 3 Boost Pressure
Turbocharger 4 Boost Pressure	1130	Engine Turbocharger 4 Boost Pressure
DesiredOpSpd	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure
Electrical Potential	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed (TSC1) ^{3,6}	898	Engine Requested Speed/Speed Limit
Speed Bias Reference 1,2,3,4,5	-	Proprietary parameter. Speed bias provides the means to adjust the engine speed set point while the engine is running. It is used for synchronization with the power grid. Once synchronized and paralleled with other power sources the speed bias is used to make the gen-set and engine pick up or shed load. In the case of using speed bias to pick up and shed load the commanded engine speed does change, but the actual engine speed does not change.
Frequency Selection 1,2,3,4,5,6	-	Proprietary parameter. This feature gives the operator ability to switch the rated speed between 50Hz and 60Hz. This feature will only be enabled and functional on engines that have been rated for dual speed operations. The engine has two speed set points that define the base operating speed of the engine. The system will only react to a state transition while the Engine speed is 0. If datalink is lost during operation the alternate frequency will not be effected until engine reaches 0 RPM. The recommended source value is a constant following the requested function. 0 = 50Hz 1 = 60Hz 2-5 = Reserved 6 = Error 7 = Do not care
Governor Gain Adjustment 1,2,3,4,5,6	-	Proprietary parameter. For service purpose only! Default value is 5.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Speed Bias Reference settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpdRegOut	
Convert	YES	
Limits	-10.000V	-10%
	+10.000V	+10%

Speed Bias Reference settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	-10%
	100.0 %	+10%

Recommended wiring

Function	ECU J2 50pin connector	Controller
CAN H	46	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	CAN1 (extension modules/J1939) – CAN COM
CAN L	47	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	39	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes **see CM850 on page 240**.

Table of tested ECU calibrations

Engine type	ECU calibration (G-Drive)
Engine QSB7-G	AZ 90084.02
Engine QSL9	AZ90059.15
	AZ 90105.04
	AZ 90056.02
	AZ 90041.05 (analog speed control)
Engine type	ECU calibration (Industrial)
Engine QSK38	AQ 60186.98
	AQ 60176.01

3.3.6 CM2150

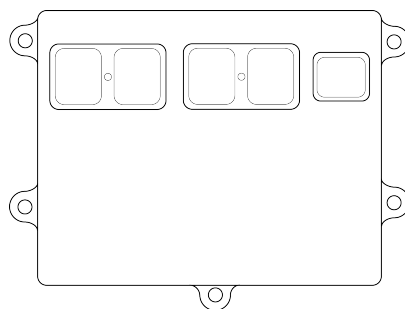


Image 3.14 CM2150

Controllers that support the CM2150

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Water in fuel	97	Water In Fuel Indicator 1
Wait to Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Auxiliary Shutdown Sw	970	Engine Auxiliary Shutdown Switch
Engine Derate Switch	971	Engine Derate Switch
Remote Accelerator Enable Switch	969	Remote Accelerator Enable Switch
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Regeneration Inhibit Switch ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force Switch ^{1,2,3,4}	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Barometric Pressure	108	Barometric Pressure
Ambient Air Temperature	171	Ambient Air Temperature
Air Inlet Temperature	172	Engine Intake Air Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Air filter differential pressure	107	Engine Air Filter 1 Differential Pressure
Exhaust Gas Temperature	173	Engine Exhaust Temperature
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Coolant Temperature	110	Engine Coolant Temperature
Fuel Temperature	174	Engine Fuel Temperature 1
Oil Temp	175	Engine Oil Temperature 1
Intercooler Temp	52	Engine Intercooler Temperature
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Oil Level	98	Engine Oil Level
Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1

Coolant Level	111	Engine Coolant Level 1
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Rated Power	166	Engine Rated Power
Diesel Exhaust Fluid Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
Torque Mode	899	Engine Torque Mode
Demand Torque	512	Driver's Demand Engine - Percent Torque
Torque	513	Actual Engine - Percent Torque
Engine Speed	190	Engine Speed
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator	974	Remote Accelerator Pedal Position
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}			
Source	SpeedReq RPM		
Convert	NO		
Limits	N/A	N/A	
	N/A	N/A	
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile			
Source	Speed Request		
Convert	YES		
Limits	0.0 %	Min eng. speed (800RPM)	
	100.0 %	Max eng. speed (2100RPM)	

Recommended wiring

Function	9pin diagnostic connector	OEM connector	4pin OEM connector	Controller
CAN H	C	01	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	E	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	D	21	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	43,47,53	01,02	N/A
Battery - (negative)	A	N/A	03,04	N/A

Key Switch	N/A	45	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **CM2150 on page 241**.

3.3.7 CM2250 (Industrial calibration)

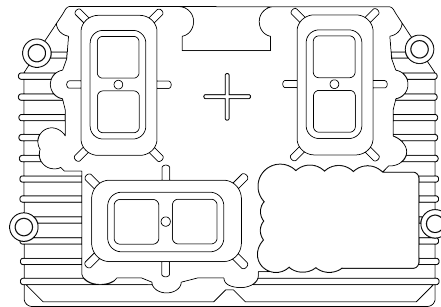


Image 3.15 CM2250

Controllers that support the CM2250

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Water in fuel	97	Water In Fuel Indicator 1
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Reg. Inhibit Switch ³	3695	Aftertreatment Regeneration Inhibit Switch
DPF Reg. Force Switch ³	3696	Aftertreatment Regeneration Force Switch

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Percent Load	92	Engine Percent Load At Current Speed
Engine speed	190	Engine Speed
Engine torque	513	Actual Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Fuel Rate	183	Engine Fuel Rate
Intake Manifold Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Engine Oil Pressure	100	Engine Oil Pressure
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
Barometric Pressure	108	Barometric Pressure
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{3,6}	898	Engine Requested Speed/Speed Limit
Accelerator Pedal Position	91	Accelerator Pedal Position 1

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpdRegOut	
Convert	YES	
Limits	-10.000V	-10%
	+10.000V	+10%
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	9pin diagnostic connector	Controller
CAN H	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	N/A
Battery - (negative)	A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector** on page 18.
 Available list of texts of fault codes see **CM2250** on page 242.

3.3.8 CM2350

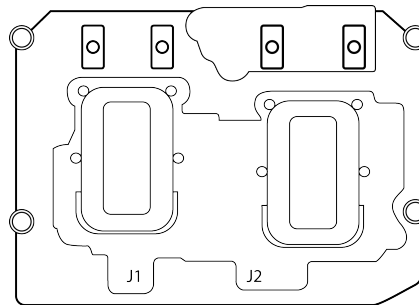


Image 3.16 CM2350

Controllers that support the CM2350

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Amber Warning Lamp Command	5078	Engine Amber Warning Lamp Command
Engine Red Stop Lamp Command	5079	Engine Red Stop Lamp Command
SCR System Cleaning Status	6916	SCR System Cleaning Status
Water in fuel	97	Water In Fuel Indicator 1
DPF Regen. Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Reg. Inhibit Switch	3695	Aftertreatment Regeneration Inhibit Switch

1,3,4,6		
DPF Reg. Force Switch 1,3,4,6	3696	Aftertreatment Regeneration Force Switch
Override	1237	Engine Shutdown Override Switch
Idle/Rated	-	
Engine Auxiliary Shutdown Switch	970	Engine Auxiliary Shutdown Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
AccPedal 1 Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp 1	105	Engine Intake Manifold 1 Temperature
Exhaust Gas Temp	173	Engine Exhaust Temperature
Intake Manifold Temp 2	1131	Engine Intake Manifold 2 Temperature
Fuel Rate	183	Engine Fuel Rate
SCR System Cleaning Lamp Command	6915	SCR System Cleaning Lamp Command
Diesel Exhaust Fluid Tank 1 Temperature Bank 2	4427	Aftertreatment 2 Diesel Exhaust Fluid Tank Temperature
SCR Intake Temp	4360	Aftertreatment 1 SCR Intake Temperature
SCR Outlet Temp	4363	Aftertreatment 1 SCR Outlet Temperature
Outlet NH3	4377	Aftertreatment 1 Outlet NH3
DOC Intake Temperature	4765	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature
DOC Outlet Temperature	4766	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Temperature
Engine Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Act.Reg.ForcedStatus	4175	Diesel Particulate Filter Active Regeneration Forced Status
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
Interface Version1	-	Proprietary parameter
Interface Version2	-	Proprietary parameter
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Barometric Pressure	108	Barometric Pressure
Tank Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
Catalyst Tank Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature

Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
NDE Temperature	-	Proprietary parameter
DE Temperature	-	Proprietary parameter
U Phase Temperature	-	Proprietary parameter
V Phase Temperature	-	Proprietary parameter
W Phase Temperature	-	Proprietary parameter
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,3,4,6}	898	Engine Requested Speed/Speed Limit
Engine Requested Torque	4191	Engine Requested Torque (Fractional)
Frequency Selection	-	<p>Proprietary parameter.</p> <p>This feature gives the operator ability to switch the rated speed between 50Hz and 60Hz. This feature will only be enabled and functional on engines that have been rated for dual speed operations. The engine has two speed set points that define the base operating speed of the engine. The system will only react to a state transition while the Engine speed is 0. If datalink is lost during operation the alternate frequency will not be effected until engine reaches 0 RPM. The recommended source value is a constant following the requested function.</p> <p>0 = 50Hz 1 = 60Hz 2-5 = Reserved 6 = Error 7 = Do not care</p>
Speed Bias Reference	-	<p>Proprietary parameter.</p> <p>Speed bias provides the means to adjust the engine speed set point while the engine is running. It is used for synchronization with the power grid. Once synchronized and paralleled with other power sources the speed bias is used to make the gen-set and engine pick up or shed load. In the case of using speed bias to pick up and shed load the commanded engine speed does change, but the actual engine speed does not change.</p>

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Speed Bias Reference settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpdRegOut	
Convert	YES	
Limits	-10.000V	-10%
	+10.000V	+10%

Speed Bias References for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	-10%
	100.0 %	+10%

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpdRegOut	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	9pin diagnostic connector	96pin OEM connector	Controller
CAN H	C	22	CAN1 (extension modules/J1939) – CAN H
CAN COM	E	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	D	46	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	01,25,26,27,28	N/A
Battery - (negative)	A	49,50,51,52	N/A
Key Switch	N/A	05	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **CM2350 on page 243**.

3.3.9 PGI Interface (CM850 / CM2150 / CM2250)

Controllers that support the Cummins PGI

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Water in fuel	97	Water In Fuel Indicator 1
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Idle/Rated ^{1,2,3,4}	-	Proprietary parameter
Shutdown Override ^{1,2,3,4}	-	Proprietary parameter
DPF Reg. Inhibit Switch ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Reg. Force Switch ^{1,2,3,4}	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Exhaust Gas Temp	173	Engine Exhaust Temperature
Fuel Rate	183	Engine Fuel Rate
Engine Oil Pressure	100	Engine Oil Pressure
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
Barometric Pressure	108	Barometric Pressure
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Speed Bias Reference ⁵	-	Proprietary parameter. Speed bias provides the means to adjust the engine speed set point while the engine is running. It is used for synchronization with the power grid. Once synchronized and paralleled with other power sources the speed bias is used to make the gen-set and engine pick up or shed load. In the case of using speed bias to pick up and shed load the commanded engine speed does change, but the actual engine speed does not change.
Frequency Selection 1,2,3,4,5,6	-	Proprietary parameter. This feature gives the operator ability to switch the rated speed between 50Hz and 60Hz. This feature will only be enabled and functional on engines that have been rated for dual speed operations. The engine has two speed set points that define the base operating speed of the engine. The system will only react to a state transition while the Engine speed is 0. If datalink is lost during operation the alternate frequency will not be effected until engine reaches 0 RPM. The recommended source value is a constant following the requested function. 0 = 50Hz 1 = 60Hz 2-5 = Reserved 6 = Error 7 = Do not care
Generator Governing Bias 1,2,3,4,5	-	Proprietary parameter. Speed bias provides the means to adjust the engine speed set point while the engine is running. It is used for synchronization with the power grid. Once synchronized and paralleled with other power sources the speed bias is used to make the gen-set and engine pick up or shed load. In the case of using speed bias to pick up and shed load the commanded engine speed does change, but the actual engine speed does not change.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Generator Governing Bias settings for IntelliGen ^{NT} or IntelliSys ^{NT}			
Source	SpdRegOut		
Convert	YES		
Limits	-10.000V	-10%	
	+10.000V	+10%	
Generator Governing Bias for IntelliDrive DCU, IntelliDrive Mobile			
Source	Speed Request		
Convert	YES		
Limits	0.0 %	-10%	
	100.0 %	+10%	

Note: If you have the engine as a part of gen-set package (with PCC panel) the ECU might be delivered with different communication interface (not PGI) which means that speed control doesn't work with ComAp controller. It is necessary to use/order ECU with calibration for G-drive engines (with PGI). Recommended wiring

Function	ECU J2 50pin connector	Controller
CAN H	46	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	CAN1 (extension modules/J1939) – CAN COM

CAN L	47	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	39	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes **see PGI Interface on page 245**.

3.3.10 GCS

Controllers that support the GCS

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Fuel Shut-Off Valve Driver State	-	Is reporting a fuel Shut-Off Valve output.
Red Shutdown Lamp	-	It warrants stopping the engine.
Run/Stop Switch State	-	The command used for engine running. On the occasion of loss of datalink, the engine will not shut down as it is looking for the initial 'run' command and will only shutdown if it was sent 'stop' or if it experienced a shutdown fault. The recommended source value for this command is Fuel solenoid.
Yellow Warning Lamp	-	Is reporting a problem with the engine system but the engine need not be immediately stopped.
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Fault Acknowledge	-	Switch signal which indicates the position of the fault acknowledge switch. This switch function allows the operator to acknowledge faults of the engine. The recommended source value for this command is Logical 0.
Shutdown Override	-	Switch signal which indicates the position of the engine shutdown override switch. This switch function allows the operator to override an impending engine shutdown. The recommended source value for this command is Logical 0.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Speed	-	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Coolant Temp	-	Temperature of liquid found in engine cooling system.
Oil Pressure QSK23/45/60/78	-	Gage pressure of oil in engine lubrication system as provided by oil pump.
Oil Pressure QST30, QSX15	-	Gage pressure of oil in engine lubrication system as provided by oil pump.
Frequency Adjust Pot	-	A signal output is provided to read the generator set frequency. The frequency is adjustable within ± 3 Hz of the rated operating frequency.
Running Time	-	Accumulated time of operation of engine.
Final Speed Reference	-	Please contact Cummins representative for further information about this value.
+/- 2,5V Speed Bias	-	This speed bias signal is provided as feedback from compatible speed

		governing and load share controller.
Fuel Rate (UK)	-	Amount of fuel consumed by engine per unit of time.
Fuel Rate (US)	-	Amount of fuel consumed by engine per unit of time.
Intake Manif. Press (QSX15)	-	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger. If there is one boost pressure to report and this range and resolution is adequate, this parameter should be used.
Intake Manif. Temp (QSX15)	-	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Oil Temperature (QSX15)	-	Temperature of the engine lubricant.
Intake Manif. Press (QSKxx)	-	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger. If there is one boost pressure to report and this range and resolution is adequate, this parameter should be used.
Intake Manif. Temp (QSKxx)	-	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Pump Pressure (QSKxx)	-	Please contact Cummins representative for further information about this value.
Fuel Rail Pressure (QSKxx)	-	Please contact Cummins representative for further information about this value.
Fuel Inlet Temperature (QSKxx)	-	Temperature of fuel entering injectors.
Timing Rail Pressure (QSKxx)	-	Please contact Cummins representative for further information about this value.
Intake Manif. Press L (QST30)	-	Gage pressure of air measured downstream on the left compressor discharge side of the turbocharger. If there is one boost pressure to report and this range and resolution is adequate, this parameter should be used.
Intake Manif. Press R (QST30)	-	Gage pressure of air measured downstream on the right compressor discharge side of the turbocharger. If there is one boost pressure to report and this range and resolution is adequate, this parameter should be used.
Intake Manif. Temp L (QST30)	-	Temperature of pre-combustion air found in intake manifold of engine left air supply system.
Intake Manif. Temp R (QST30)	-	Temperature of pre-combustion air found in intake manifold of engine right air supply system.
Oil Temperature (QST30)	-	Temperature of the engine lubricant.
Battery Potential (Voltage)	-	Battery potential measured at the input of the electronic control unit.
Coolant Pressure	-	Pressure of liquid found in engine cooling system.
Fuel Delivery Pressure	-	Pressure of fuel in system from supply pump to the injection pump.
Fuel Temperature	-	Temperature of the engine fuel.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Recommended wiring

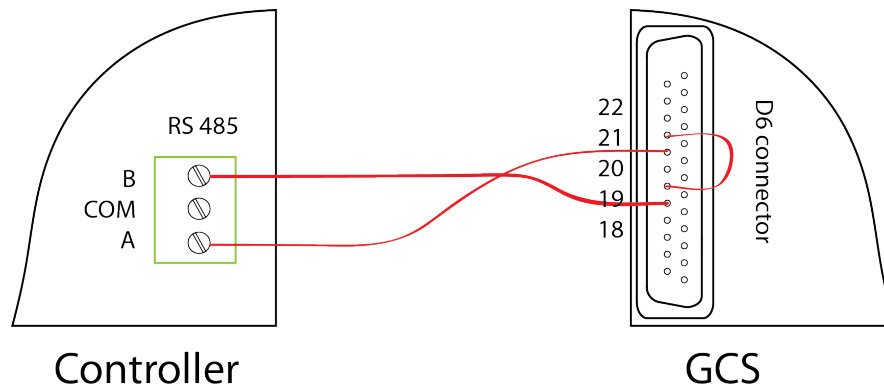


Image 3.17 Recommended wiring of GCS

Function	ECU 25pin D6 connector	ECU 25pin D3 connector	Controller
RS485 A	21	N/A	RS485 – RS485 A
RS485 COM	N/A	N/A	RS485 – RS485 COM
RS485 B	18	N/A	RS485 – RS485 B
Battery + (positive)	N/A	N/A	N/A
Battery - (negative)	N/A	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Service Mode Enable	loop 19 & 22	N/A	N/A
Analog Speed Control	N/A	11	SG OUT Analog Speed Control range 2.5VDC – 7.5VDC
Analog Speed Control	N/A	12	SG COM
Analog Speed Control Shield	N/A	20	N/A

Note: In case that the GCS doesn't communicate try to activate input Diagnostic mode (pin 07 on connector D6).

Recommended controller setting

Controller	Setpoint	Value	Interface
IntelliGen ^{NT}	RS232(1) mode	ECU LINK	
	RS232(2) mode	ENABLED DISABLED	RS 485(1), RS 485(2) RS 232(1) ¹ , RS 232(2) ²
IntelliSys ^{NT}	RS232(2) mode	ECU LINK	
	RS485(X)conv.	ENABLED	RS 485(2)

¹external RS232-485 converter is required

²external RS232-485 converter is required

		DISABLED	RS 232(1) ¹ , RS 232(2) ²
InteliLite^{NT}	COM2 Mode	ECU LINK	RS 485 ³
InteliCompact^{NT}	COM2 Mode	ECU LINK	RS 485 ⁴
InteliDrive DCU	RS485 Mode	ECU LINK	RS 485 ⁵
InteliDrive Mobile	RS485 Mode	ECU LINK	RS 485 (pin 85(A), pin 87(B), pin 86(COM))
InteliDrive Lite	COM2 Mode	ECU LINK	RS 485 ⁶

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes **see GCS on page 247**.

¹external RS232-485 converter is required

²external RS232-485 converter is required

³IL-NT RS232-485 communication module is required

⁴IL-NT RS232-485 communication module is required

⁵IL-NT RS232-485 communication module is required

⁶IL-NT RS232-485 communication module is required

3.4 Daimler Chrysler engines support

ECU Type	Engine type
ADM2	series 500, 900, 450
ADM3	series 500, 900, 450

3.4.1 ADM2

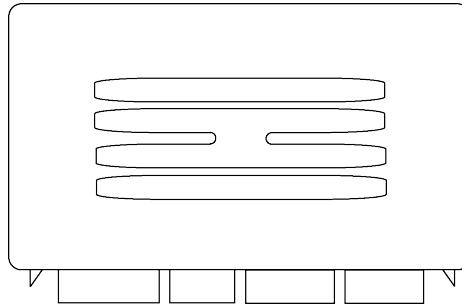


Image 3.18 ADM2

Controllers that support the ADM2

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Inhibit fuel injection ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine fuel injection inhibits. The recommended source value for this command is Logical 0.
Engine start ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine start. The recommended source value for this command is Fuel solenoid.

Inhibit engine start	-	Proprietary parameter. The command used for engine start inhibits. The recommended source value for this command is Logical 0.
TorqueConvLockupEngaged	-	Proprietary parameter
Engine overspeed enable	-	Proprietary parameter
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Output shaft speed	191	Transmission Output Shaft Speed

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 21pin connector	Controller
CAN H	19	CAN1 (extension modules/J1939) – CAN H
CAN COM	20	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1	N/A
Battery - (negative)	3	N/A

Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **ADM2 on page 248**.

3.4.2 ADM3

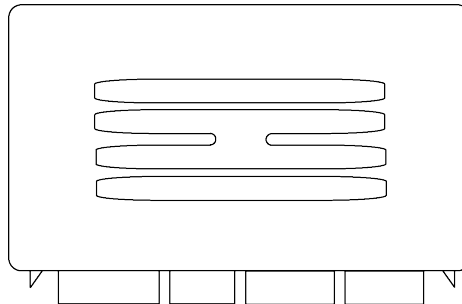


Image 3.19 ADM3

Controllers that support the ADM3

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Inhibit fuel injection ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine fuel injection inhibits. The recommended source value for this command is Logical 0.
Engine start ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine start. The recommended source value for this command is Fuel solenoid.
Inhibit engine start	-	Proprietary parameter. The command used for engine start inhibits. The recommended source value for this command is Logical 0.
TorqueConvLockupEngaged	-	Proprietary parameter
Engine overspeed enable	-	Proprietary parameter

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Output shaft speed	191	Transmission Output Shaft Speed

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	SpeedReq RPM	
Convert	NO	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 21pin connector	Controller
CAN H	19	CAN1 (extension modules/J1939) – CAN H
CAN COM	20	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1	N/A
Battery - (negative)	3	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18.**

Available list of texts of fault codes **see ADM3 on page 250.**

3.5 Detroit Diesel engines support

ECU Type	Engine type
DDEC IV.htm	Series 50, 60
DDEC V	Series 60
DDEC 10	Series DD13, DD15, DD16

3.5.1 DDEC IV

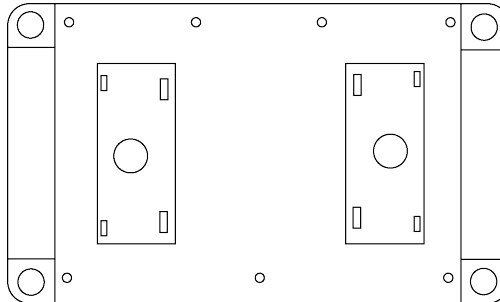


Image 3.20 DDEC IV

Controllers that support the DDEC IV

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp		
Fast Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque

Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	6pin communication connector	Controller
CAN H	F	CAN1 (extension modules/J1939)– CAN H
CAN COM	D	CAN1 (extension modules/J1939) – CAN COM
CAN L	E	CAN1 (extension modules/J1939)– CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **DDEC IV on page 251**.

3.5.2 DDEC V

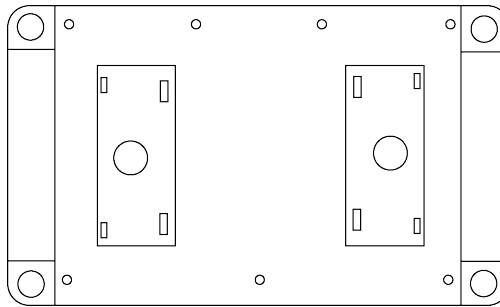


Image 3.21 DDEC IV

Controllers that support the DDEC V

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate

Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	6pin communication connector	Controller
CAN H	F	CAN1 (extension modules/J1939) – CAN H
CAN COM	D	CAN1 (extension modules/J1939) – CAN COM
CAN L	E	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **DDEC V on page 252**.

3.6 Deutz engines support

ECU Type	Engine type
EMR2	10xx series
EMR3-E (EDC16, EDC7)	TCD 2012 4V TCD 2013 4V TCD 2015
EMR3-S (EDC16, EDC7)	TCD 2012 2V TCD 2013 2V TCD 2013 4V
EMR4 (EDC17CV52)	TCD 3.6 L4 TCD 4.1 L4 TCD 6.1 L6 TCD 7.8 L6 TCD 12 V6 TCD 16 V8
TEM Evolution	TBG 616/620/632 TCG 2016/2020/2032

Previous engine designation	New engine designation
TCD 20xx L04	TCD 2.9 L4
TCD 2010 L04	TCD 3.6 L4
TCD 2012 L04	TCD 4.1 L4
TCD 2012 L06	TCD 6.1 L6
TCD 2013 L06	TCD 7.8 L6
TCD 2015 V06	TCD 12 V6
TCD 2015 V08	TCD 16 V8

3.6.1 Engine type explanation

Engine Code	Meaning
Txxxxxx	Turbocharged
xCxxxxx	Charge air cooled
xxDxxxx	Diesel engine
xxx12xx	Displacement in liters
xxxxxLx	L – in line engine, V – V-engine
xxxxxx6	Number of cylinders

3.6.2 EMR2

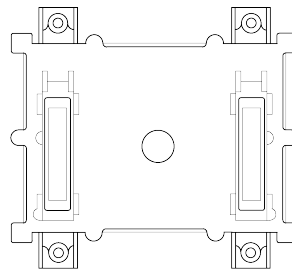


Image 3.22 EMR2

Controllers that support the EMR2

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Lock status	-	Proprietary parameter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Engine Oil Level	98	Engine Oil Level

Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential (Voltage)	158	Keyswitch Battery Potential

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	Speed Request	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

IMPORTANT: Deutz does not recommend switching off the engine by removing the power supply (battery). It causes fault code SPN=536.

Recommended setting of EMR2 using Serdia PC tool

Note:

Page 30: 4400 = 1 ... CAN activation

Page 31: 4412 = 1 ... Activate TSC1a receive telegram

Page 31: 4470 = 1 ... Activate CAN set point by TSC1a

Page 12: 4829 = 8... Enable stop request telegram

Page 10: 4900 = 8 ... Selection of input channel type for nominal speed value sensor

829 = FunctEngineStop – Switch assignment for “Engine stop” function

4424 = TelStopRequestOn – SAEJ1939: Active Engine Stop Request receives telegram

Recommended wiring

Function	ECU 25pin F connector	Controller
CAN H	12	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	13	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	14	N/A
Battery - (negative)	1	N/A

Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **EMR2 on page 253**.

3.6.3 EMR3-E

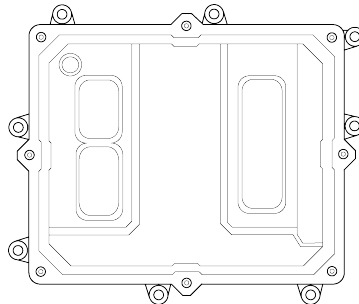


Image 3.23 EMR3-E

Controllers that support the EMR3-E

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Lock status	-	Proprietary parameter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
Start Lock ⁴	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque

Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Fuel delivery pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential (Voltage)	158	Keyswitch Battery Potential
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Torque Map	-	Proprietary parameter. 0 = no modification of torque map 1 = switch to torque map 1 2 = switch to torque map 2
Engine speed droop	-	Proprietary parameter. 0 = no modification of droop 1 = selects droop 1 2 = selects droop 2
High Idle Droop	-	Proprietary parameter. 0 = no modification of high idle droop 1 = selects high idle droop 1 2 = selects high idle droop 2

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

IMPORTANT: It is not allowed by Deutz to control speed over CAN bus on gen-set engines! Use pedal position input on ECU instead. The SG OUT signal **MUST NOT** exceed the limits otherwise EMR3 blocks speed control via this input. Therefore it is recommended to keep the controller powered on always while the EMR3 is powered on (by Klemme 30). Or it is necessary to switch off this protection in EMR3.

Note: EMR3-E has internal relay providing power supply to EMR3. As soon as the ignition key is turned off (Klemme 15) the main relay switches off the EMR3 within cca. 10 seconds. The main relay separates the EMR3 from the battery + (Klemme 30).

Recommended wiring

Function	ECU D2 connector	Controller
CAN H	35	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	2,3,8,9 (loop 30)	N/A
Battery - (negative)	5,6,10,11 (loop31)	N/A
Key Switch	40	Any binary output configured as ECU PwrRelay
Analog Speed Control	79	SG OUT Range 0VDC to 5VDC, 100kOhm pull-down resistance
Analog Speed Control	78	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EMR3-E on page 254**.

3.6.4 EMR3-S

Controllers that support the EMR3-S

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Lock status	-	Proprietary parameter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
Start Lock ⁴	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1

Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Fuel delivery pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential (Voltage)	158	Keyswitch Battery Potential

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Torque Map	-	Proprietary parameter. 0 = no modification of torque map 1 = switch to torque map 1 2 = switch to torque map 2
Engine speed droop	-	Proprietary parameter. 0 = no modification of droop 1 = selects droop 1 2 = selects droop 2
High Idle Droop	-	Proprietary parameter. 0 = no modification of high idle droop 1 = selects high idle droop 1 2 = selects high idle droop 2

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

IMPORTANT: It is not allowed by Deutz to control speed over CAN bus on gen-set engines! Use pedal position input on ECU instead. The SG OUT signal **MUST NOT** exceed the limits otherwise EMR3 blocks speed control via this input. Therefore it is recommended to keep the controller powered on always while the EMR3 is powered on. Or it is necessary to switch off this protection in EMR3.

Note: EMR3-S has internal relay providing power supply to EMR3. As soon as the ignition key is turned off the main relay switches off the EMR3 within cca. 10 seconds. The main relay separates the EMR3 from the battery +.

Recommended wiring

Function	ECU D2 connector	Controller
CAN H	62	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	61	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,3,5	N/A
Battery - (negative)	2,4,6	N/A
Key Switch	28	Any binary output configured as ECU PwrRelay
Analog Speed Control	9	SG OUT Range 0VDC to 5VDC, 100kOhm pull-down resistance
Analog Speed Control	30	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **EMR3-S on page 255**.

3.6.5 EMR4

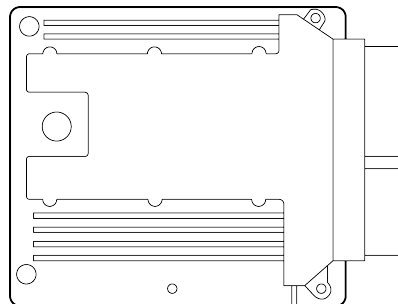


Image 3.24 EMR4

Controllers that support the EMR4

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Bank 1 Intake Dew Point	3237	Aftertreatment 1 Intake Dew Point
Bank 1 Exhaust Dew Point	3238	Aftertreatment 1 Exhaust Dew Point

Bank 2 Intake Dew Point	3239	Aftertreatment 2 Intake Dew Point
Bank 2 Exhaust Dew Point	3240	Aftertreatment 2 Exhaust Dew Point
DPF Passive Regeneration	3699	Aftertreatment Diesel Particulate Filter Passive Regeneration Status
DPF Active Regeneration	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF Inhibited Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Start Lock EP	-	Proprietary parameter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
Start Lock ^{1,2,3,4,5,6}	-	Proprietary parameter.
DPF Regeneration Inhibit ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force ^{1,2,3,4}	3696	Aftertreatment Regeneration Force Switch
DPF Regeneration Request	-	Proprietary parameter.
DPF Inhibit Command	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Starter mode	1675	Engine Starter Mode
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Hand Gas Position	974	Remote Accelerator Pedal Position
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Exhaust Gas Mass Flow	3236	Aftertreatment 1 Exhaust Gas Mass Flow Rate
Coolant Temp	110	Engine Coolant Temperature
Fuel temperature	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Fuel delivery pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
DPF Inlet Pressure	81	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure

Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air filter differential pressure	107	Engine Air Filter 1 Differential Pressure
Exhaust gas temperature	173	Engine Exhaust Temperature
Barometric pressure (absolute)	108	Barometric Pressure
Air Intake Temperature	171	Ambient Air Temperature
Battery Potential	158	Keyswitch Battery Potential
Fuel Rate	183	Engine Fuel Rate
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Urea Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
DPF Soot Load Percent	3719	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent
DPF Ash Load Percent	3720	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent
DPF Lamp	3697	Diesel Particulate Filter Lamp Command
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
DPF Differential Pressure	3251	Aftertreatment 1 Diesel Particulate Filter Differential Pressure
Catalyst Intake Temperature	4765	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature
Catalyst Outlet Temperature	4766	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Temperature

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Power reduction	-	Proprietary parameter. Reduces the max. engine torque. The base for the percentage value is the max. torque curve 1. If there is more than one source for power reduction active, i.e. internal power protection by temperature and this message, the lowest value (= the highest reduction) will be used. If there is a timeout of a message the last valid data will be used furthermore for the calculation. 0% causes the EMR4 to switch off the engine. 100% means no power reduction.
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

No documentation available so far!

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EMR4 on page 256**.

3.6.6 TEM Evolution

Note: For connection to Deutz TEM module it is necessary to use an I-CB module. Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEdit software. For further information see I-CB [manual](#).

Controllers that support the I-CB

Refer to Comparison table (page 23)

Available parameters

For more information about available values and signals, please refer to I-CB [manual](#) or ICBEdit PC software.

Recommended wiring of TEME module

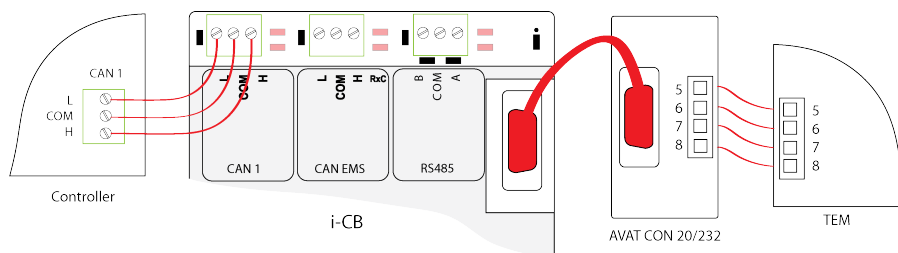


Image 3.25 Deutz TEME recommended wiring

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

3.7 Ford engines support

ECU Type	Engine type
E-control	DSG-423, WSG-1068

3.7.1 E-control

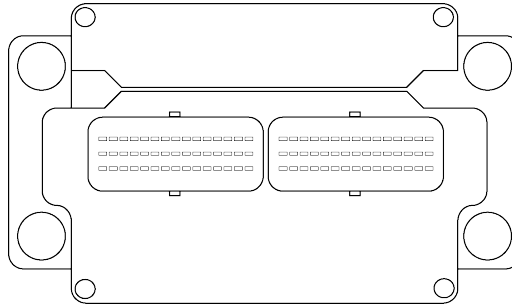


Image 3.26 E-control

Controllers that support the E-control

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Engine torque	513	Actual Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Intercooler Temp	52	Engine Intercooler Temperature

Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
AccPedal 1 Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Load At Current Speed	92	Engine Percent Load At Current Speed
Accelerator Pedal Position2	29	Accelerator Pedal Position 2
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - InteliLite^{NT}, 2 - InteliLite, 3 - InteliDrive Lite, 4 - InteliCompact^{NT}, 5 - InteliNano^{NT}, 6 - InteliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for InteliGen ^{NT} or InteliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU B connector	customer 42pin connector	Controller
CAN H	14	28	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	15	29	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	60,79	N/A	N/A
Battery - (negative)	4,69,81	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **E-control on page 257**.

3.8 GM engines support

ECU Type	Engine type
E-control E-control LCI	Natural gas or propane engines: GM 3.0 liter GM 4.3 liter GM 5.0 liter GM 5.7 liter GM 8.1 naturally aspirated GM 8.1 turbo GM 11.1 liter GM 21.9 liter
SECM	Gas engines
MEFI 4B MEFI 5B MEFI 6	Diesel engines

3.8.1 E-control

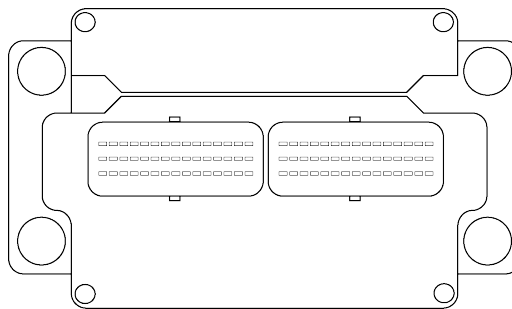


Image 3.27 E-control

Controllers that support the E-control

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfuction Lamp	1213	Malfuction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		

Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Engine torque	513	Actual Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Intercooler Temp	52	Engine Intercooler Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
AccPedal 1 Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Load At Current Speed	92	Engine Percent Load At Current Speed
Accelerator Pedal Position2	29	Accelerator Pedal Position 2
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Total Engine Hours	247	Engine Total Hours of Operation
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature
Long-term Fuel Trim - Bank 1	4237	Long-term Fuel Trim - Bank 1
Short-term Fuel Trim - Bank 1	4236	Short-term Fuel Trim - Bank 1
Engine Exhaust Bank 1 O2 Sensor Closed Loop Operation	4240	Engine Exhaust Bank 1 O2 Sensor Closed Loop Operation
Long-term Fuel Trim - Bank 2	4239	Long-term Fuel Trim - Bank 2
Short-term Fuel Trim - Bank 2	4238	Short-term Fuel Trim - Bank 2
Engine Exhaust Bank 2 O2 Sensor Closed Loop Operation	4241	Engine Exhaust Bank 2 O2 Sensor Closed Loop Operation
Engine Actual Ignition Timing	1436	Engine Actual Ignition Timing
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU B connector	Controller
CAN H	14 (N)	CAN1 (extension modules/J1939) – CAN H
CAN COM	(S)	CAN1 (extension modules/J1939) – CAN COM
CAN L	15 (P)	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **E-control on page 259**.

3.8.2 E-control LCI

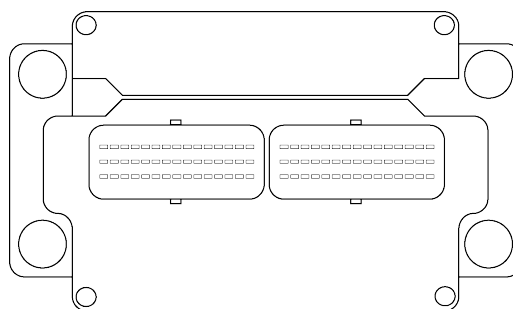


Image 3.28 E-control LCI

Controllers that support the E-control LCI

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp

Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Engine torque	513	Actual Engine - Percent Torque
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Intercooler Temp	52	Engine Intercooler Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature
Long-term Fuel Trim - Bank 1	4237	Long-term Fuel Trim - Bank 1
Short-term Fuel Trim - Bank 1	4236	Short-term Fuel Trim - Bank 1
Engine Exhaust Bank 1 O2 Sensor Closed Loop Operation	4240	Engine Exhaust Bank 1 O2 Sensor Closed Loop Operation
Long-term Fuel Trim - Bank 2	4239	Long-term Fuel Trim - Bank 2
Short-term Fuel Trim - Bank 2	4238	Short-term Fuel Trim - Bank 2
Engine Exhaust Bank 2 O2 Sensor Closed Loop Operation	4241	Engine Exhaust Bank 2 O2 Sensor Closed Loop Operation
Engine Actual Ignition Timing	1436	Engine Actual Ignition Timing

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU B connector	Controller
CAN H	A	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	B	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **E-control LCI on page 261**.

3.8.3 MEFI4B or MEFI5B

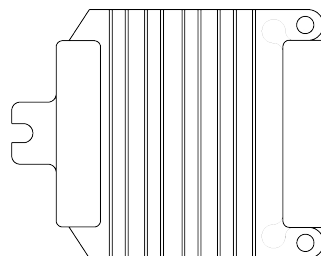


Image 3.29 MEFI4B

Controllers that support the MEFI4B or MEFI5B

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Protect Lamp prop	-	Proprietary parameter.
Amber Warning Lamp prop	-	Proprietary parameter.
Red Stop Lamp prop	-	Proprietary parameter.
Malfunction Lamp prop	-	Proprietary parameter.
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Boost Pressure (MEFI5B only)	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp (MEFI5B only)	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure (MEFI5B only)	106	Engine Intake Air Pressure
Exhaust Gas Temp (MEFI5B only)	173	Engine Exhaust Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate (MEFI5B only)	183	Engine Fuel Rate
Fuel Level (MEFI5B only)	96	Fuel Level 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{3,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU J1 and J2connector	Controller
CAN H	24 (J2)	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	9 (J2)	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1 (J2)	N/A
Battery - (negative)	13,28,29 (J1)	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT Range 0VDC to 5VDC, 100kOhm pull-down resistance
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes see **MEFI4B or MEFI5B on page 262**.

3.8.4 MEFI 6

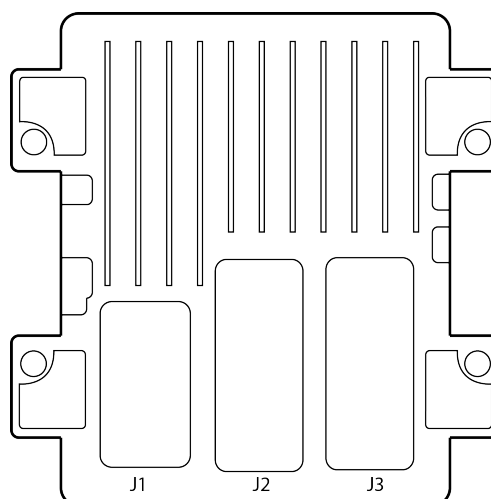


Image 3.30 MEFI 6

Controllers that support the MEFI 6

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
MEFI6 Protect Lamp	-	Proprietary parameter.
MEFI6 Amber Warning Lamp	-	Proprietary parameter.
MEFI6 Red Stop Lamp	-	Proprietary parameter.
MEFI6 Malfunction Lamp	-	Proprietary parameter.
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
StarterMode	1678	Cab Ventilation
AP Position	91	Accelerator Pedal Position 1
Desired speed	515	Engine's Desired Operating Speed
Coolant Temp	110	Engine Coolant Temperature
Oil Temperature	175	Engine Oil Temperature 1
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Oil Pressure	100	Engine Oil Pressure
Fuel Rate	183	Engine Fuel Rate
Barometric Pressure	103	Engine Turbocharger 1 Speed
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Battery Potential	168	Battery Potential / Power Input 1
Fuel Level	96	Fuel Level 1
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	-	Proprietary parameter.
TSC1 Requested speed	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

No documentation available so far!

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes see **MEFI 6 on page 264**.

3.8.5 SECM

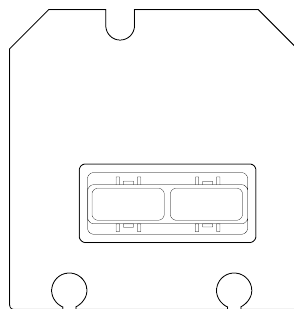


Image 3.31 SECM

Controllers that support the SECM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		

Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Approaching Shutdown	1109	Engine Protection System Approaching Shutdown
System Timer State	1107	Engine Protection System Timer State
System Configuration	1111	Engine Protection System Configuration
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine Throttle Position	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure
Barometric Pressure	108	Barometric Pressure
Inlet Air Mass Flow Rate	132	Engine Intake Air Mass Flow Rate
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU B connector	Controller
CAN H	20	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	22	N/A
Battery - (negative)	17	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT Range 0VDC to 5VDC, 100kOhm pull-down resistance
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18.**

Available list of texts of fault codes **see SECM on page 266.**

3.9 Guascor engines support

ECU Type	Engine type
LECM E6	SFGLD 480, SFGLD 560, HGM 560

3.9.1 LECM E6

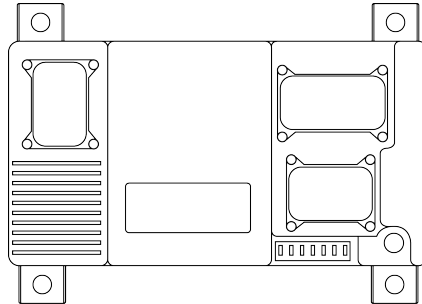


Image 3.32 LECM E6

Controllers that support the LECM E6

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Speed	190	Engine Speed
Engine Cylinder 1 Ignition Timing Offset	7356	Proprietary parameter
Engine Cylinder 2 Ignition Timing Offset	7357	Proprietary parameter
Engine Cylinder 3 Ignition Timing Offset	7358	Proprietary parameter
Engine Cylinder 4 Ignition Timing Offset	7359	Proprietary parameter
Engine Cylinder 5 Ignition Timing Offset	7360	Proprietary parameter
Engine Cylinder 6 Ignition	7361	Proprietary parameter

Timing Offset		
Engine Cylinder 7 Ignition Timing Offset	7362	Proprietary parameter
Engine Cylinder 8 Ignition Timing Offset	7363	Proprietary parameter
Engine Cylinder 9 Ignition Timing Offset	7364	Proprietary parameter
Engine Cylinder 10 Ignition Timing Offset	7365	Proprietary parameter
Engine Cylinder 11 Ignition Timing Offset	7366	Proprietary parameter
Engine Cylinder 12 Ignition Timing Offset	7367	Proprietary parameter
Engine Cylinder 13 Ignition Timing Offset	7368	Proprietary parameter
Engine Cylinder 14 Ignition Timing Offset	7369	Proprietary parameter
Engine Cylinder 15 Ignition Timing Offset	7370	Proprietary parameter
Engine Cylinder 16 Ignition Timing Offset	7371	Proprietary parameter
Engine Cylinder 17 Ignition Timing Offset	7372	Proprietary parameter
Engine Cylinder 18 Ignition Timing Offset	7373	Proprietary parameter
Engine Cylinder 19 Ignition Timing Offset	7374	Proprietary parameter
Engine Cylinder 20 Ignition Timing Offset	7375	[[[Undefined variable J1939.7375]]]
Aftertreatment 1 Gas Oxidation Catalyst Intake Temperature	4753	Joystick 10 Theta-Axis Neutral Position Status
Aftertreatment 1 Gas Oxidation Catalyst Outlet Temperature	4754	Aftertreatment 1 Gas Oxidation Catalyst Outlet Temperature
Coolant Temperature 2	4076	Engine Coolant Temperature 2
Turbocharger Compressor Bypass Actuator 1 Command	3470	Engine Turbocharger Compressor Bypass Actuator 1 Command
Turbocharger Compressor Bypass Actuator 1 Position	3675	Engine Turbocharger Compressor Bypass Actuator 1 Position
Turbocharger Compressor Bypass Actuator 1 Desired Position	5366	Engine Turbocharger Compressor Bypass Actuator 1 Desired Position
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature

Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Exhaust Gas Port 17 Temp	1153	Engine Exhaust Gas Port 17 Temperature
Exhaust Gas Port 18 Temp	1154	Engine Exhaust Gas Port 18 Temperature
Exhaust Gas Port 19 Temp	1155	Engine Exhaust Gas Port 19 Temperature
Exhaust Gas Port 20 Temp	1156	Engine Exhaust Gas Port 20 Temperature
ECU Temperature	1136	Engine ECU Temperature
Intake Manifold 2 Temperature	1131	Engine Intake Manifold 2 Temperature
Turbocharger 1 Boost Pressure	1127	Engine Turbocharger 1 Boost Pressure
Turbocharger 2 Boost Pressure	1128	Engine Turbocharger 2 Boost Pressure
Coolant Temperature	110	Engine Coolant Temperature
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Oil Pressure	100	Engine Oil Pressure
Throttle 1 Position	51	Engine Throttle Valve 1 Position 1
Throttle 2 Position	3673	Engine Throttle Valve 2 Position
Barometric Pressure	108	Barometric Pressure
Ambient Air Temperature	171	Ambient Air Temperature
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temperature	173	Engine Exhaust Temperature
Electrical Potential	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Spark Plug Life Indicator cylinder 1	-	Proprietary parameter
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
Outlet O2	3227	Aftertreatment 1 Outlet Percent O2

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Generator Governing Bias ^{1,2,3,4,5,6}	3938	Generator Governing Bias

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	DB9 Pin	Service 3 Pin Connector	Controller
CAN H	J2-007	7	A	CAN1 (extension modules/J1939) – CAN H
CAN COM	J2-015	5	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	J2-008	2	B	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	J1-121	N/A	N/A	N/A
Battery - (negative)	J1-122,123	N/A	N/A	N/A
Key Switch	J1-012	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **LECM E6 on page 267**.

3.10 Isuzu engines support

ECU Type	Engine type
ECM	4HK series 5.2L (140kW-190kW) 4J series 3.0L (46kW-140kW) 6HK series 7.8L (up to 300kW) 6U series 9.8L (up to 400kW) 6W series 15.7L (up to 400kW)

3.10.1 ECM

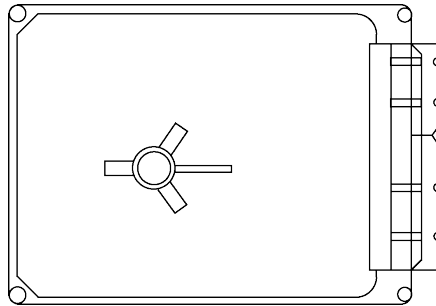


Image 3.33 ECM

Controllers that support the ECM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Ignition key switch	-	Proprietary parameter.
DPF SwitchKnd	-	Proprietary parameter.
DPF SwitchUns	-	Proprietary parameter.
RegAuxLoadReq1	-	Proprietary parameter.
RegAuxLoadReq2	-	Proprietary parameter.
StartCutRelay	-	Proprietary parameter.
EGRGasTmpWrn	-	Proprietary parameter.
Wait To Start Lamp	1081	Engine Wait to Start Lamp
InAirBstTmpWrn	-	Proprietary parameter.
ExhstGasTmpWrn	-	Proprietary parameter.
IntAirTmpWrn	-	Proprietary parameter.
FuelFitrClogg	-	Proprietary parameter.
EngOilPresDrop	-	Proprietary parameter.
BoostTmpRise	-	Proprietary parameter.
FuelTmpRise	-	Proprietary parameter.
ClntTmpRise	-	Proprietary parameter.
OverrunWrn	-	Proprietary parameter.

EmerSDoperSig	-	Proprietary parameter.
Glow signal	-	Proprietary parameter.
StarterSwitch	704	Auxiliary I/O #04
DPF GrLampMode	-	Proprietary parameter.
DPF RegLampReq	-	Proprietary parameter.
DPF BuzzerMode	-	Proprietary parameter.
DPF RegenFlag	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop solenoid.
EngProtHoldSig	-	Proprietary parameter. Engine Protection System Holding Signal. For more information about this signal contact local Isuzu representative
PreheatStartSg	-	Proprietary parameter. Preheating Start Signal. For more information about this signal contact local Isuzu representative
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temperature	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Boost temp	-	Proprietary parameter.
Boost Pressure	-	Proprietary parameter.
Intake Manifold Temp	-	Proprietary parameter.
DPF filter Inlet Gas Temp	-	Proprietary parameter.
Catalyst inlet gas temp	-	Proprietary parameter.
EGR gas temp	-	Proprietary parameter.
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator Pedal Position	974	Remote Accelerator Pedal Position
Fuel Rate	183	Engine Fuel Rate
EngOil Filter Diff.Press	99	Engine Oil Filter Differential Pressure

Main relay voltage	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
Target engine speed	-	Proprietary parameter.
Fuel injection quantity level	-	Proprietary parameter.
Engine percent torque	-	Proprietary parameter.
DiffPressJudg1	164	Engine Injection Control Pressure
Commonrail Pressure	157	Engine Injector Metering Rail 1 Pressure
Instruction engine speed	-	Proprietary parameter.
Commonrail Diff Pressure	-	Proprietary parameter.
DPF AmLampMode	-	Proprietary parameter.
DPF IndiStat	-	Proprietary parameter.
Atmospheric pressure	108	Barometric Pressure
T-Ambient	172	Engine Intake Air Temperature
PCode	-	Proprietary parameter.
Turbo actual opening	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
EngineModel/SN	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 121pin connector	Controller
CAN H	18	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	37	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	2,5	N/A
Battery - (negative)	1,3,4	N/A

Key Switch	24	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT Range 0VDC to 5VDC, 100kOhm pull-down resistance
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes **see ECM on page 271**.

3.11 Iveco engines support

ECU Type	Engine type
EDC EDC62 or EDC7C1 or EDC7UC31 EDC7 EDC7 EDC7UC31 EDC7UC31 MS 6.2 EDC7UC31 MS 6.3 EDC7UC31	NEF and Cursor (9, 10, 13) NEF marine NEF tier2 NEF tier3 NEF 560 marine Cursor 8,10,13 tier2 Cursor 9 marine Cursor 9 industrial tier2 Cursor 9 industrial tier3
EDC7	Tier3 gen-set industrial application (Cursor and NEF engines)
ADEM III	Vector

3.11.1 EDC

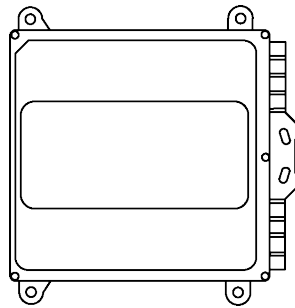


Image 3.34 EDC7 - Cursor

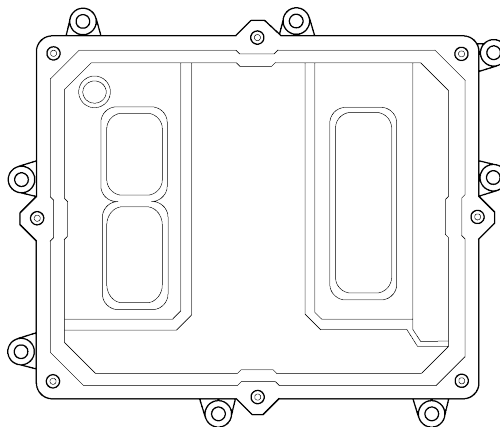


Image 3.35 EDC7 - NEF

Controllers that support the EDC

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
APP Kick Down Switch	559	Accelerator Pedal Kickdown Switch
Retarder Brake Assist Switch	571	Retarder Enable - Brake Assist Switch
Retarder Shift Assist Switch	572	Retarder Enable - Shift Assist Switch
Cruise Control Active	595	Cruise Control Active
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Immobilizer Fuel Block	-	Proprietary parameter.
Diagnostic Lamp Status	-	Proprietary parameter. This lamp is used to relay trouble code information that is reporting a problem with an engine system that is most probably not electronic subsystem related.
Engine Overspeed	-	Proprietary parameter. This signal is active when the actual engine speed is above the operating range.
Engine Oil Pressure Low	-	Proprietary parameter. Low pressure of oil in engine lubrication system as provided by oil pump.
Water In Fuel	97	Water In Fuel Indicator 1
Fuel Filter Heater Status	-	Proprietary parameter. This signal is active when the fuel filter heater is active.
Engine Oil Temperature High	-	Proprietary parameter. High temperature of oil in engine lubrication system as provided by oil pump.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Torque Mode	558	Accelerator Pedal 1 Low Idle Switch
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque

Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Operating Speed Asymmetry	519	Engine's Desired Operating Speed Asymmetry Adjustment
Retarder Torque Mode	900	Retarder Torque Mode
Actual Retarder Torque	520	Actual Retarder - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Barometric Pressure	108	Barometric Pressure
Trap Inlet Pressure	81	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Exhaust Gas Temp	173	Engine Exhaust Temperature
Engine Oil Pressure	100	Engine Oil Pressure
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Cold Start Heater Status	-	Proprietary parameter.
Engine Over Temp Status	-	Proprietary parameter.
Engine Degradation Level	-	Proprietary parameter.
ECM Operational Status	-	Proprietary parameter.
Catalyst Upstream Temp	-	Proprietary parameter.
Catalyst Downstream Temp	-	Proprietary parameter.
Urea Pressure	-	Proprietary parameter.
Urea tank level	-	Proprietary parameter.
Urea Tank Temp	-	Proprietary parameter.
Urea Quantity	-	Proprietary parameter.
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
DEF Warning	-	Proprietary parameter.

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit The speed request is sent from address 3.
Mode without SCI ^{1,2,3,4,5,6}	897	This output is recommended to be used when there is no SCI module connected to the CAN bus. This output is available only in GenConfig or DriveConfig PC software.
Mode with SCI	897	This output must be used when a SCI module is connected to the CAN bus. This output is available only in GenConfig or DriveConfig PC software.
Requested speed (VE)	898	Engine Requested Speed/Speed Limit The speed request is sent from address 39.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}	
Source	SpeedReq RPM
Convert	NO

Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring for NEF

Function	ECU A2 89pin connector	Controller
CAN H	52	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	53	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,7,12,13	N/A
Battery - (negative)	3,9,14,15	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

Recommended wiring for Cursor

Function	ECU A2 89pin connector	Controller
CAN H	11	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	12	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **EDC on page 273**.

3.11.2 EDC Tier3 (EDC7)

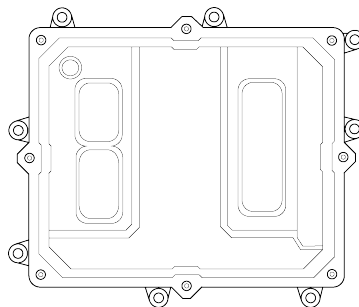


Image 3.36 EDC7

Controllers that support the EDC7

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Fuel Block Status By Immobilizer	-	Proprietary parameter.
Diagnostic Lamp Status	-	Proprietary parameter.
Engine Overspeed	-	Proprietary parameter.
OBD MIL Status	-	Proprietary parameter.
ECM Fuelling	-	Proprietary parameter.
Status Of Stop Button	-	Proprietary parameter.
Status Of Start Button	-	Proprietary parameter.
Engine Oil Pressure Low	-	Proprietary parameter.
Water In Fuel	-	Proprietary parameter.
Fuel Filter Heater Status	-	Proprietary parameter.
Engine Oil Temperature High	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Torque Mode	899	Engine Torque Mode
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Controlling Device Address	1483	Source Address of Controlling Device for Engine Control
Engine Starter Mode	1675	Engine Starter Mode
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator	974	Remote Accelerator Pedal Position
Nominal Friction - % Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Operating Speed Asymetry	519	Engine's Desired Operating Speed Asymmetry Adjustment
Coolant Temp	110	Engine Coolant Temperature

Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Turbo Oil Temperature	176	Engine Turbocharger Oil Temperature
Intercooler Temperature	52	Engine Intercooler Temperature
Barometric Pressure	108	Barometric Pressure
Cab Interior Temperature	170	Cab Interior Temperature
Ambient Air Temperature	171	Ambient Air Temperature
Air Inlet Temperature	172	Engine Intake Air Temperature
Trap Inlet Pressure	81	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Air Filter Diff. Pressure	107	Engine Air Filter 1 Differential Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Coolant Filter Diff. Pressure	112	Engine Coolant Filter Differential Pressure
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Extended Crankcase Blow-by Pressure	22	Engine Extended Crankcase Blow-by Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Engine Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Cold Start Status	-	Proprietary parameter.
Engine Overtemperature	-	Proprietary parameter.
Engine Degradation Level	-	Proprietary parameter.
ECM Operational Status	-	Proprietary parameter.
Humidity	-	Proprietary parameter.

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU A2 89pin connector	Controller
CAN H	52	CAN1 (extension modules/J1939)– CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	53	CAN1 (extension modules/J1939)– CAN L
Battery + (positive)	1, 7, 12, 13	N/A
Battery - (negative)	3, 9, 14, 15	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes **see EDC Tier3 (EDC7) on page 275**.

3.11.3 ADEM III

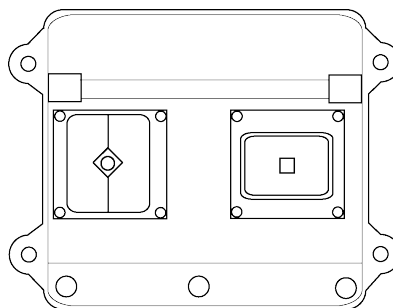


Image 3.37 ADEM III

Controllers that support the ADEM III

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Wait To Start Lamp	1081	Engine Wait to Start Lamp

ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
Start Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Fuel solenoid.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Cooling water temp	-	Proprietary parameter. Temperature of liquid found in engine cooling system.
Oil temperature	-	Proprietary parameter. Temperature of the engine lubricant.
Oil pressure	-	Proprietary parameter. Gage pressure of oil in engine lubrication system as provided by oil pump.
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Fuel Rate	183	Engine Fuel Rate
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	Interface card	Controller
CAN H	J2 - 1	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	J2 - 2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	116	N/A

Battery - (negative)	117	N/A
Key Switch	J7 - 18,19 ¹	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes **see ADEM III on page 277**.

¹Emergency stop must open this contact. After power on it has to wait for 10 seconds before start the engine - if ECU PwrRelay output is used to close this contact Prestart time has to be set to at least 10 seconds.

3.12 JCB engines support

ECU Type	Engine type
Delphi DCM	Dieselmax or ecoMAX

3.12.1 Delphi DCM

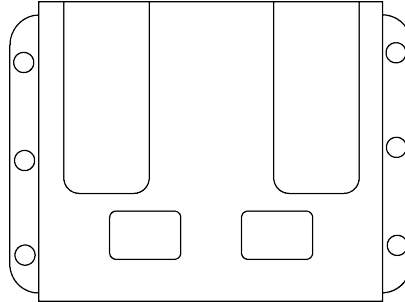


Image 3.38 DCM

Controllers that support the DCM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
APP Kick Down Switch	559	Accelerator Pedal Kickdown Switch
Idle Shutdown has Shutdown Engine	593	Engine Idle Shutdown has Shutdown Engine
Idle Shutdown Timer Override	592	Engine Idle Shutdown Timer Override
Idle Shutdown Timer State	590	Engine Idle Shutdown Timer State
Idle Shutdown Timer Function	591	Engine Idle Shutdown Timer Function
Wait to Start Lamp	1081	Engine Wait to Start Lamp
Water In Fuel Indicator	97	Water In Fuel Indicator 1
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		

Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Bank 1 Intake Dew Point	3237	Aftertreatment 1 Intake Dew Point
Bank 1 Exhaust Dew Point	3238	Aftertreatment 1 Exhaust Dew Point
Bank 2 Intake Dew Point	3239	Aftertreatment 2 Intake Dew Point
Bank 2 Exhaust Dew Point	3240	Aftertreatment 2 Exhaust Dew Point
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Regeneration Inhibit Switch ^{1,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force Switch ^{1,3,4}	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Torque Mode	558	Accelerator Pedal 1 Low Idle Switch
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Engine Demand Torque	5398	Estimated Pumping - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
T-ECU	1136	Engine ECU Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator	974	Remote Accelerator Pedal Position
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Estimated Percent Fan Speed	975	Engine Fan 1 Estimated Percent Speed
Fan Drive State	977	Fan Drive State
Intake NOx	3216	Aftertreatment 1 Selective Catalytic Reduction Intake NOx
AT1 Intake O2	3217	Aftertreatment 1 Intake Percent O2
Aftertreat1 ExhGas Temp 1	3241	Aftertreatment 1 Exhaust Temperature 1
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
AT1 Outlet O2	3227	Aftertreatment 1 Outlet Percent O2
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
Aftertreatment Lamp Status	517640	Manufacturer Assignable SPN
Inducement Level	517641	Manufacturer Assignable SPN
Refresh Status Byte	517649	Manufacturer Assignable SPN

SCR Monitor	517650	Manufacturer Assignable SPN
Successful Running Refreshes	517651	Manufacturer Assignable SPN
Successful Stationary Refreshes	517652	Manufacturer Assignable SPN
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,3,4,6}	898	Engine Requested Speed/Speed Limit
Fuel Level	96	Fuel Level 1

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU X2 62pin connector	Controller
CAN H	27	CAN1 (extension modules/J1939) – CAN H
CAN COM	19	CAN1 (extension modules/J1939) – CAN COM
CAN L	23	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	57,60,53,49	N/A
Battery - (negative)	58,59,61,62	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18.**

Available list of texts of fault codes **see Delphi DCM on page 278.**

3.13 GE Jenbacher engines support

ECU Type	Engine type
DIA.NE	Gas engines

3.13.1 DIA.NE

Note: To enable direct controller communication with Jenbacher DIA.NE, order the engine with Modbus interface!

Controllers that support the DIA.NE

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Service Selector Switch OFF	-	Proprietary parameter. The feedback from Service Selector Switch. The switch is in OFF position.
Service Selector Switch MAN	-	Proprietary parameter. The feedback from Service Selector Switch. The switch is in Manual position.
Service Selector Switch AUT	-	Proprietary parameter. The feedback from Service Selector Switch. The switch is in Auto position.
GCB Closed	-	Proprietary parameter. This signal indicates closed position of generator circuit breaker.
GCB Open	-	Proprietary parameter. This signal indicates open position of generator circuit breaker.
Operation ON	-	Proprietary parameter.
Operation OFF	-	Proprietary parameter.
Ready for Aut. Demand ON	-	Proprietary parameter.
Ready for Aut. Demand OFF	-	Proprietary parameter.
MCB Closed	-	Proprietary parameter. This signal indicates closed position of utility circuit breaker.
MCB Open	-	Proprietary parameter. This signal indicates open position of utility circuit breaker.
Synchronizing Gen. Activated	-	Proprietary parameter.
Re-synchronizing Activated	-	Proprietary parameter.
Ready for Aut. Demand	-	Proprietary parameter.
Demand for Auxiliaries	-	Proprietary parameter.
GCB Closed 2	-	Proprietary parameter.
MCB Closed 2	-	Proprietary parameter.
Module is Demanded	-	Proprietary parameter.
Operation - Engine is Running	-	Proprietary parameter.
Service Select. Switch MAN 2	-	Proprietary parameter.
Service Select. Switch AUT 2	-	Proprietary parameter.
General Trip	-	Proprietary parameter.

General Warning	-	Proprietary parameter.
Pulse for OperHours Counter	-	Proprietary parameter.
Pulse for Start Counter	-	Proprietary parameter.
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Jacket Water Temperature	-	Proprietary parameter.
Jacket Water Pressure	-	Proprietary parameter.
Engine Oil Temperature	-	Proprietary parameter.
Engine Oil Pressure	-	Proprietary parameter.
ExhstGasTemp-Turbocharger	-	Proprietary parameter.
ExhstGasTemp-HeatExchanger	-	Proprietary parameter.
PlateTempExhstGasHeatExch.	-	Proprietary parameter.
Cylinder Exhaust Gas Temp	-	Proprietary parameter.
Heating Water Return Temp	-	Proprietary parameter.
Generator Power Factor	-	Proprietary parameter.
Generator Frequency	-	Proprietary parameter.
Gener. Current Average	-	Proprietary parameter.
Gener. Voltage Aver. Ph-Ph	-	Proprietary parameter.
Setpoint Power Control	-	Proprietary parameter.
Fuel Mixture Temperature	-	Proprietary parameter.
Excitation Voltage	-	Proprietary parameter.
Generator Voltage L1-L2	-	Proprietary parameter.
Generator Power	-	Proprietary parameter.
Generator Reactive Power	-	Proprietary parameter.
Generator Apparent Power	-	Proprietary parameter.
Generator Neutral Current	-	Proprietary parameter.
Boost Pressure Actual Value	-	Proprietary parameter.
Gasmixer Position	-	Proprietary parameter.
Throttle Valve Position	-	Proprietary parameter.
Turbocharg Bypass Position	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Note: The address of the DIA.NE has to be set to 11 (0x0B).

Controller's analog output for speed control configuration

There is no speed control over the data bus available for this particular ECU.

Recommended wiring

Function	Siemens connector	Controller
RS485 A	A	RS485 – RS485 A
RS485 COM	COM	RS485 – RS485 COM
RS485 B	B	RS485 – RS485 B

Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay

Recommended controller setting

Controller	Setpoint	Value	Interface
IntelGen ^{NT}	RS232(1) mode RS232(2) mode	ECU LINK	
	RS485(X)conv.	ENABLED DISABLED	RS 485(1), RS 485(2) RS 232(1) ¹ , RS 232(2) ²
IntelSys ^{NT}	RS232(2) mode	ECU LINK	
	RS485(X)conv.	ENABLED DISABLED	RS 485(2) RS 232(1) ³ , RS 232(2) ⁴

¹external RS232-485 converter is required

²external RS232-485 converter is required

³external RS232-485 converter is required

⁴external RS232-485 converter is required

3.14 JohnDeere engines support

ECU Type	Engine type
JDEC	Diesel engines

3.14.1 Engine type explanation

Engine Code	Meaning
4xxxxxxx	Number of cylinders
x045xxxx	Displacement in liters YY.Z
xxxxHxxxx	T - turbocharger w/o aftercooler H - turbocharger w aftercooler
xxxxxFxxx	F - OEM engine
xxxxxx4xx	Valves/cylinder
xxxxxxx8x	Emissions: 7 - Tier II 8 - Tier III
xxxxxxx5	0 - no ECU 5 - J1939 ECU 9 - J1939 ECU, Tier II electronic

3.14.2 PowerTech engine type explanation

Engine Code	Meaning
Pxxxxx	Technology : P - Powertech plus E - Powertech E
xSxxxx	Turbocharger : V – Variable geometry turbocharger (VGT) S – Series turbochargers W – wastegate turbocharger
xxSxxx	Aftertreatment : S – Exhaust filter and SCR X – Exhaust filter
xxx6.8L	Displacement

3.14.3 JDEC

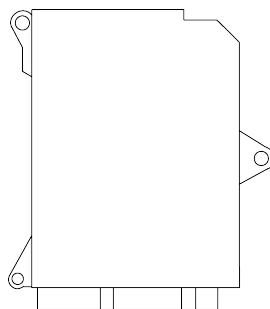


Image 3.39 JDEC

Controllers that support the JDEC

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Two Speed Axle Switch	69	Two Speed Axle Switch
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Active	595	Cruise Control Active
Cruise Control Enable Switch	596	Cruise Control Enable Switch
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Set Switch	599	Cruise Control Set Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch
Idle Increment Switch	968	Engine Idle Increment Switch
Idle Decrement Switch	967	Engine Idle Decrement Switch
Engine Test mode switch	966	Engine Diagnostic Test Mode Switch
DPF Regen. Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF Pas.Reggen.Status	3699	Aftertreatment Diesel Particulate Filter Passive Regeneration Status
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF Inhibit DueTo Clutch	3704	Diesel Particulate Filter Active Regeneration Inhibited Due to Clutch Disengaged
DPF Inhibit DueTo Breake	3705	Diesel Particulate Filter Active Regeneration Inhibited Due to Service Brake Active
DPF Inhibit DueTo Speed	3709	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed
DPF Inhibit DueTo Neutral	3708	Diesel Particulate Filter Active Regeneration Inhibited Due to Out of Neutral
DPF Inhibit DueTo Idle	3707	Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle
DPF Inhibit DueTo PTO	3706	Diesel Particulate Filter Active Regeneration Inhibited Due to PTO Active
DPF Inhibit DueTo Park.Brake	3710	Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set
DPF Inhibit DueTo Exh.Temp	3711	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature
DPF Inhibit DueTo SysFault	3712	Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active
DPF Inhibit DueTo SysTimeout	3713	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout
DPF Inhibit DueTo SysLockout	3714	Diesel Particulate Filter Active Regeneration Inhibited Due to Temporary System Lockout
DPF Inhibit DueTo Peranent Lockout	3715	Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
DPF Inhibit DueTo	3717	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed

LowSpeed		Below Allowed Speed
DPF Auto Reg.Configuration	3718	Diesel Particulate Filter Automatic Active Regeneration Initiation Configuration
HydrocarbonDoserEna	5504	Hydrocarbon Doser Purging Enable
DPF Inhibit DueTo Exh.Press	5629	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Pressure
DPF ConditionNotRegen	3750	Aftertreatment 1 Diesel Particulate Filter Conditions Not Met for Active Regeneration
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Reg. Inhibit Switch 1,2,3,4	3695	Aftertreatment Regeneration Inhibit Switch
DPF Reg. Force Switch 1,2,3,4	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temp	175	Engine Oil Temperature 1
Turbo Oil Temp	176	Engine Turbocharger Oil Temperature
Intercooler Temp	52	Engine Intercooler Temperature
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator	974	Remote Accelerator Pedal Position
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1

Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Act.Reg.ForcedStatus	4175	Diesel Particulate Filter Active Regeneration Forced Status
Fuel Rail Pressure	-	Proprietary parameter.
Manifold Air Pressure	-	Proprietary parameter.
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
SCR Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 21pin connector	Controller
CAN H	V	CAN1 (extension modules/J1939) – CAN H
CAN COM	F	CAN1 (extension modules/J1939) – CAN COM
CAN L	U	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	N/A
Battery - (negative)	E	N/A
Key Switch	G	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18.**

Available list of texts of fault codes **see JDEC on page 279.**

Note:

Important JDEC settings for speed control via CAN are:

Torque speed control - Enable TSC1 Source 1; Source Address 1 set to 3

Governor droop – Set RPM of droop to e.g. 36 (it will enable controller to vary engine speed its nominal speed)

Throttle – Disable all throttles

3.15 Kubota engines support

ECU Type	Engine type
ECM	diesel engines

3.15.1 ECM

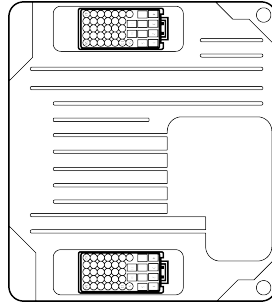


Image 3.40 ECM

Controllers that support the ECM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Engine Protection System has Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Engine Emergency (Immediate) Shutdown Indication	3607	Engine Emergency (Immediate) Shutdown Indication
DPF Active Regeneration Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF Active Regeneration Inhibit State	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF Active Regeneration Inhibit Due To Inhibit Switch	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF Active Regeneration Inhibit Due To Accelerator Pedal Off Idle	3707	Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle
DPF Active Regeneration Inhibit Due To Out Of Neutral	3708	Diesel Particulate Filter Active Regeneration Inhibited Due to Out of Neutral
DPF Active Regeneration Inhibit Due To Parking Brake Not Set	3710	Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set
DPF Active Regeneration inhibit Due To Low Exhaust Gas Temp	3711	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature

DPF Active Regeneration Inhibit Due To System Fault Active	3712	Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active
DPF Active Regeneration Inhibit Due To System Timeout	3713	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout
DPF Active Regeneration Inhibit Due To Permanent System Lockout	3715	Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout
DPF Active Regeneration Inhibit Due To Engine Not Warmed Up	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Reg. Inhibit Switch 1,2,3,4	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force Switch 1,2,3,4	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Throttle position	51	Engine Throttle Valve 1 Position 1
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine Oil Pressure	100	Engine Oil Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Barometric Pressure	108	Barometric Pressure
Coolant Temp	110	Engine Coolant Temperature
Inlet Air Mass Flow Rate	132	Engine Intake Air Mass Flow Rate
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Battery Potential (Voltage)	168	Battery Potential / Power Input 1
Ambient Air Temperature	171	Ambient Air Temperature
Air Inlet Temperature	172	Engine Intake Air Temperature
Fuel Temperature	174	Engine Fuel Temperature 1
Fuel Rate	183	Engine Fuel Rate
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Engine Starter Mode	1675	Engine Starter Mode
Aftertreatment 1 Diesel	3242	Aftertreatment 1 Diesel Particulate Filter Intake Temperature

Particulate Filter Intake Gas Temperature		
Aftertreatment 1 Diesel Particulate Filter Outlet Gas Temperature	3246	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature
Aftertreatment 1 Diesel Particulate Filter Differential Pressure	3251	Aftertreatment 1 Diesel Particulate Filter Differential Pressure
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
Aftertreatment 1 Diesel Oxidation Catalyst Intake Gas Temperature	4765	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature
Soot Mass	4781	Aftertreatment 1 Diesel Particulate Filter Soot Mass
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	Controller
CAN H		CAN1 (extension modules/J1939) – CAN H
CAN COM		CAN1 (extension modules/J1939) – CAN COM
CAN L		CAN1 (extension modules/J1939) – CAN L
Battery + (positive)		N/A
Battery - (negative)		N/A
Key Switch		Any binary output configured as ECU PwrRelay
Analog Speed Control		SG OUT
Analog Speed Control		SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **ECM on page 280**.

3.16 Liebherr engines support

ECU Type	Engine type
LIDEC1	Diesel engines series Dxxx

3.16.1 LIDEC 1

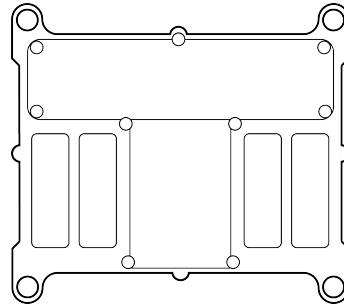


Image 3.41 LIDEC 1

Controllers that support the LIDEC 1

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait to Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine Speed	190	Engine Speed
Torque	513	Actual Engine - Percent Torque
ECU Temperature	1136	Engine ECU Temperature

Injector Metering Rail 1 Pressure	157	Engine Injector Metering Rail 1 Pressure
Injector Metering Rail 2 Pressure	1349	Engine Injector Metering Rail 2 Pressure
Desired Operating Speed	515	Engine's Desired Operating Speed
Intercooler Temp	52	Engine Intercooler Temperature
Coolant Temperature	110	Engine Coolant Temperature
Fuel Temperature	174	Engine Fuel Temperature 1
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Barometric Pressure	108	Barometric Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Battery Potential (Voltage)	158	Keyswitch Battery Potential

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	SpeedReq RPM	
Convert	NO	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	9pin diagnostic connector	Controller
CAN H	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	N/A
Battery - (negative)	A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **LIDEC1 on page 281**.

3.17 MAN engines support

ECU Type	Engine type
EDC Master and MFR interface unit	6 R
EDC Master, EDC Slave and MFR interface unit	8 V, 12 V
DataLogger	Diesel engines equipped with a data logger

3.17.1 Engine type explanation

Engine Code	Meaning
D 0836 LE 201/203	D - Water-cooled four stroke Diesel engine with direct fuel injection
	E - Water-cooled 4 stroke Otto-gas-engines with spark ignition
	E - naturally aspirated engine
	TE - turbocharged engine
6 R	LE - turbocharged and intercooled engine
	R - vertically arranged in-line
	V - cylinders in 90° V arrangement

3.17.2 EDC Master, EDC Slave and MFR interface system

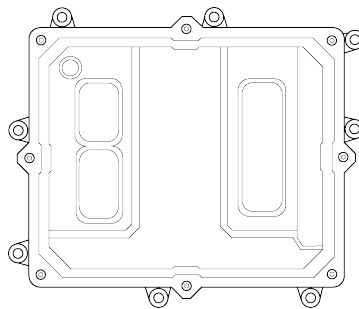


Image 3.42 EDC

Image 3.43 Interface to the controller

Controllers that support the EDC

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp

Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Protect Lamp (sl)	-	Proprietary parameter.
Amber Warning Lamp (sl)	-	Proprietary parameter.
Red Stop Lamp (sl)	-	Proprietary parameter.
Malfunction Lamp (sl)	-	Proprietary parameter.
Protect Lamp (MFR)	-	Proprietary parameter.
Amber Warning Lamp (MFR)	-	Proprietary parameter.
Red Stop Lamp (MFR)	-	Proprietary parameter.
Malfunction Lamp (MFR)	-	Proprietary parameter.
Wait to Start Lamp	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Start Request ^{1,2,3,4,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request ^{1,2,3,4,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop solenoid.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Load	-	Proprietary parameter.
Fakt UW	-	Proprietary parameter.
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Fuel Del. Pressure Master	94	Engine Fuel Delivery Pressure
Engine Oil Pressure Master	100	Engine Oil Pressure
Coolant Pressure Master	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
Fuel Del. Pressure Slave	94	Engine Fuel Delivery Pressure
Engine Oil Pressure Slave	106	Engine Intake Air Pressure

Coolant Pressure Slave	109	Engine Coolant Pressure 1
Water in fuel	-	Proprietary parameter. Signal which indicates the presence of water in the fuel.
Coolant level	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,6}	898	Engine Requested Speed/Speed Limit
P-Grad ^{1,2,3,4,6}	-	Proprietary parameter. P-GRAD Drehzahlregler is parameter for setting engine droop. From this value is calculated real engine droop. See the graph, there is a conversion P-GRAD parameter to real engine droop. The engine droop cannot be set exactly – it depends on engine. The value lies between MAX and MIN engine droop. The recommended source value is a constant following the requested function. See the chart below.
ZDR Parametersatz ^{1,2,3,4,6}	-	Proprietary parameter. ZDR parameters are an internal setting of MAN company. This parameter set the regulation loop in the engine ECU. For more information, please contact your MAN local distributor. Adjust to 0 for singlespeed applications. The recommended source value is a constant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU 89pin connector	9pin diagnostic connector	Controller
CAN H	53	X2-28	CAN1 (extension modules/J1939) – CAN H
CAN COM	51	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	52	X2-29	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,7,12,13	X2-33	N/A
Battery - (negative)	3,9,14,15	X2-32	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

Note:

Controller ECU PwrRelay output can be used to activate Ignition (KI. 15).

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EDC Master, EDC Slave and MFR interface system on page 282**.

Diagnostic

The controller shows in the alarm list for each fault: Text message or fault code number SPN number on the bottom row OC number on the bottom row which says from where comes this fault:

- ▶ 0 - EDC Master
- ▶ 1 - EDC Slave
- ▶ 39 - MFR FMI number in the right bottom corner

Fault details are displayed in the bottom row when fault is selected with > mark in the list of faults by Up/Down arrows.

3.17.3 Data Logger

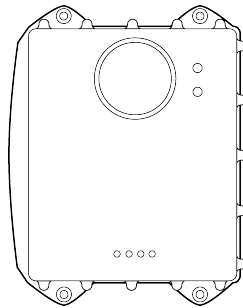


Image 3.44 Data Logger

IMPORTANT: Please check the configuration of MAN Data Logger. The only supported configuration is labeled as order number **51.27700-7002** and rear panel label **Config. version: 31.8.2015**

Controllers that support the Data Logger

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Amber Warning Lamp	-	Proprietary parameter.
Malfunction Lamp	-	Proprietary parameter.
Protect Lamp	-	Proprietary parameter.
Red Stop Lamp	-	Proprietary parameter.
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Oil Temp A	-	Proprietary parameter.
Oil Temp B	-	Proprietary parameter.
Boost Pressure	-	Proprietary parameter.

Oil Pressure A	-	Proprietary parameter.
Oil Pressure B	-	Proprietary parameter.
Cooling Water	-	Proprietary parameter.
Cooling Water 2	-	Proprietary parameter.
Exhaust Temp A	-	Proprietary parameter.
Exhaust Temp B	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Diagnostic

The ECU does not support any diagnostic protocol.

Recommended wiring

Function	Left (L) or Right (R) 48pin connector	9pin diagnostic connector	Controller
CAN H	R88	N/A	CAN1 (extension modules/J1939) CAN H
CAN COM	R89	N/A	CAN1 (extension modules/J1939) CAN COM
CAN L	R91	N/A	CAN1 (extension modules/J1939) CAN L
Battery + (positive)	R95	N/A	N/A
Battery - (negative)	L 12, L36, L48 R60, R72, R84, R96	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

3.18 MTU engines support

ECU Type	Engine type
ECU4 (MDEC) ECU7 (ADEC) ECU7 (ADEC) & SAM	Series 2000, 4000
ECU7 (ADEC) ECU7 (ADEC) & SAM ECU8 (ADEC) & SMART Connect	Series 1600
ECU9	Series 4000
DDEC10	Series 4R1000, 6R1000, 6R1100, 6R1300, 6R1500
MIP4000 gen-set controller	Series 4000 - gas engines

3.18.1 ECU4 (MDEC)

Note: For connection to MTU MDEC module it is necessary to use an I-CB module. Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEdit software. For further information see I-CB [manual](#).

Controllers that support the ECU4

Refer to Comparison table (page 23)

Available parameters

For more information about available values and signals, please refer to I-CB [manual](#) or ICBEdit PC software.

Recommended wiring of ECU4 module

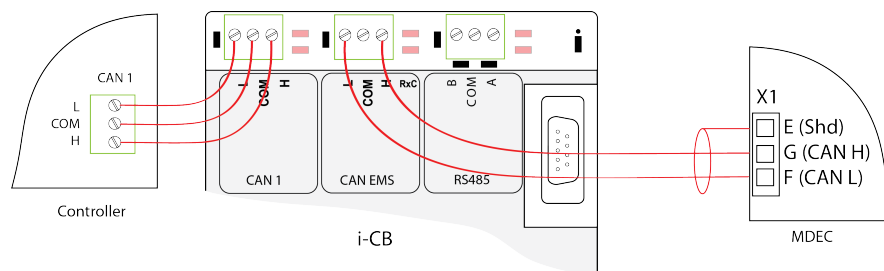


Image 3.45 Recommended wiring MDEC

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

3.18.2 ECU7 (ADEC)

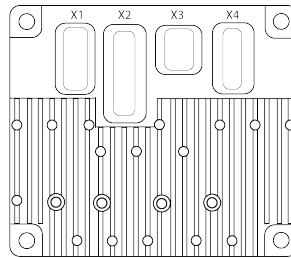


Image 3.46 ECU7

Note: For connection to MTU ADEC module it is necessary to use an I-CB module. Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEdit software. For further information see I-CB manual.

Note: In case of **direct connection** to the IntelliSys^{NT} or IntelliGen^{NT} controllers please use a dedicated controller firmware "IGS-NT-MTU" and dedicated "ECU list - MTU".

Controllers that support the ECU7

Refer to Comparison table (page 23)

Available parameters

For more information about available values and signals, please refer to I-CB [manual](#) or ICBEdit PC software.

Recommended wiring

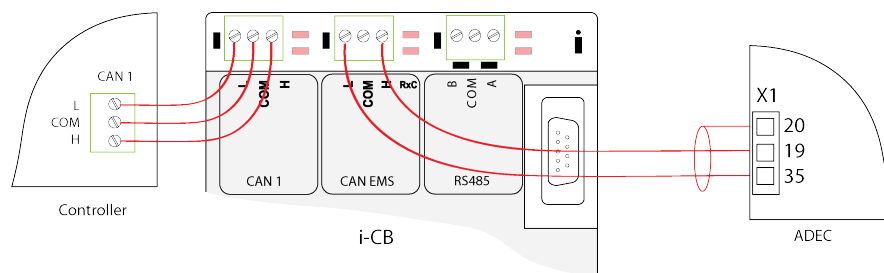


Image 3.47 Recommended wiring of ADEC

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

For more information about available values and signals, please refer to I-CB manual or ICBEdit PC software.

3.18.3 ECU7 (ADEC) & SAM module

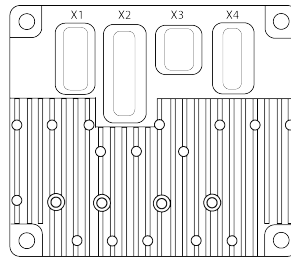


Image 3.48 ECU7

Note: For communication with the ComAp controller the CCB2 card may be required in the SAM module. Please check this demand with local MTU representative.

IMPORTANT: Please check the version of SAM module firmware as the ver. 40014_A8 –V5 is not compatible with ComAp controllers. The compatible SAM module firmwares are ver. 40014_A8 –V4 or older or 40014_A8 –V6.

IMPORTANT: No fault codes in DM1 frame are provided by MTU ADEC system. Fault codes are only available as analog input "Failure Codes". ECU binary inputs may be used as fault code representative. Therefore you can use only 16 fault codes – binary inputs (standard ECU size) or 32 (large ECU size)!

Controllers that support the ECU7

Refer to Comparison table (page 23)

Available parameters for MTU ADEC J1939

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
AL Water In Fuel Prefilter 1	1239	Engine Fuel Leakage 1
AL Water In Fuel Prefilter 2	1240	Engine Fuel Leakage 2
Automatic Shutdown	1110	Engine Protection System has Shutdown Engine
LO P-Lube Oil	-	Proprietary parameter.
LOLO P-Lube Oil	-	Proprietary parameter.
LO Coolant Level	-	Proprietary parameter.
AL ECU Defect	-	Proprietary parameter.
AL Speed Demand Defect	-	Proprietary parameter.
LO Power Supply	-	Proprietary parameter.
HI Power Supply	-	Proprietary parameter.
HI T-Coolant	-	Proprietary parameter.
HIHI T-Coolant	-	Proprietary parameter.
HI T-Charge Air	-	Proprietary parameter.
HI T-Lube Oil	-	Proprietary parameter.
HIHI T-Lube Oil	-	Proprietary parameter.
HI T-Exhaust A	-	Proprietary parameter.
HI T-Exhaust B	-	Proprietary parameter.

HIHI T-Charge Air	-	Proprietary parameter.
HI T-ECU	-	Proprietary parameter.
SS Engine Speed Low	-	Proprietary parameter.
LOLO ECU Power Supp Volt	-	Proprietary parameter.
HIHI ECU Power Supp Volt	-	Proprietary parameter.
SS Overspeed	-	Proprietary parameter.
Override Feedback for ECU	-	Proprietary parameter.
HI T-Fuel	-	Proprietary parameter.
Ext Stop Activated	-	Proprietary parameter.
Speed Demand Fail Mode	-	Proprietary parameter.
Feedback Increase Speed	-	Proprietary parameter.
Feedback Decrease Speed	-	Proprietary parameter.
Engine Running	-	Proprietary parameter.
Cylinder Cutout	-	Proprietary parameter.
Load Generator ON	-	Proprietary parameter.
Preaheat Temp. Not Reached	-	Proprietary parameter.
Feedback CAN Mode Switch	-	Proprietary parameter.
Priming Pump On	-	Proprietary parameter.
LO Intercooler Coolant Level	-	Proprietary parameter.
HI T-Coolant Intercooler	-	Proprietary parameter.
AL Prelubrication Fault	-	Proprietary parameter.
AL Start Speed Not Reached	-	Proprietary parameter.
AL Runup Speed Not Reached	-	Proprietary parameter.
AL Idle Speed Not Reached	-	Proprietary parameter.
HI Pressure 1	-	Proprietary parameter.
HI Pressure 2	-	Proprietary parameter.
HI Level Day-Tank	-	Proprietary parameter.
LO Level Day-Tank	-	Proprietary parameter.
HI Level Holding-Tank	-	Proprietary parameter.
LO Level Holding-Tank	-	Proprietary parameter.
HI T-Winding 1	-	Proprietary parameter.
HI T-Winding 2	-	Proprietary parameter.
HI T-Winding 3	-	Proprietary parameter.
HI T-Ambient	-	Proprietary parameter.
T-Generator Warning	-	Proprietary parameter.
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		

ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Disable Cylinder Cut Out 2	-	Proprietary parameter.
Request Test Overspeed	-	Proprietary parameter.
Alarm Reset 1,2,3,4	-	Proprietary parameter. The command for Reset ECU Alarms. The recommended source value for this command is FltResButnEcho.
Speed Setting Limit Active	-	Proprietary parameter. For more information about this signal contact local MTU representative.
Mode Switch	-	Proprietary parameter.
Governor ParameterSet Select.	-	Proprietary parameter.
Intermittent Oil Priming	-	Proprietary parameter.
Engine Start 1,2,3,4,5,6	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Starter.
50/60Hz 1,2,3,4,5	-	Proprietary parameter. This feature gives the operator ability to switch the rated speed between 50Hz and 60Hz. The system will only react to a state transition while the Engine speed is 0. The recommended source value for this command is Logical 0 for 50Hz and Logical 1 for 60Hz.
Override	1237	Engine Shutdown Override Switch Switch signal which indicates the position of the engine shutdown override switch. This switch function allows the operator to override an impending engine shutdown. The recommended source value for this command is Logical 0.
Engine Stop	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
Starter Reset	520845	Manufacturer Assignable SPN For more information about this signal contact local MTU representative.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
T-Charge Air	2629	Engine Turbocharger 1 Compressor Outlet Temperature
T-Exhaust B (20V4000 only)	2433	Engine Exhaust Manifold Bank 2 Temperature 1
T-Exhaust A (20V4000 only)	2434	Engine Exhaust Manifold Bank 1 Temperature 1
T-ECU	1136	Engine ECU Temperature
T-Winding 1	1124	Engine Alternator Winding 1 Temperature
T-Winding 2	1125	Engine Alternator Winding 2 Temperature
T-Winding 3	1126	Engine Alternator Winding 3 Temperature
T-Coolant	110	Engine Coolant Temperature
T-Fuel	174	Engine Fuel Temperature 1
T-Lube Oil	175	Engine Oil Temperature 1
T-Coolant Intercooler	52	Engine Intercooler Temperature
P-Fuel	94	Engine Fuel Delivery Pressure
P-Lube Oil	100	Engine Oil Pressure
Fuel Rate	183	Engine Fuel Rate
T-Ambient	171	Ambient Air Temperature

P-Charge Air	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
ECU Power Supply Voltage	158	Keyswitch Battery Potential
ETC Speed Turbo Charger 1	103	Engine Turbocharger 1 Speed
Failure Codes	-	Proprietary parameter. Number of fault codes. If there is more than 1 fault code, the "Failure Codes" shows are fault codes step by step.
Selected Speed Demand	-	Proprietary parameter.
Effective Speed Demand	-	Proprietary parameter.
Fdb Spd Demand ana.CAN	-	Proprietary parameter.
Fdb Spd Demand analog	-	Proprietary parameter.
Speed Demand Source	-	Proprietary parameter.
Requested Torque	-	Proprietary parameter.
Engine Optimized	-	Proprietary parameter.
Actual Droop	-	Proprietary parameter.
Level Holding-Tank	-	Proprietary parameter.
Level Day-Tank	-	Proprietary parameter.
Start Process 1	520241	Manufacturer Assignable SPN For service purpose only!
Start Process 2	520241	Manufacturer Assignable SPN For service purpose only!

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Speed Demand Analog 1,2,3,4,5,6	898	Engine Requested Speed/Speed Limit
Speed Demand Switches 1,2,3,4,5,6	-	Proprietary parameter.
Engine alternate droop accelerator 1 select	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for MTU ADEC J1939 P-engines

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Water In Fuel Indicator	97	Water In Fuel Indicator 1
AL Fuel Leakage	1239	Engine Fuel Leakage 1
LOP-Lube Oil (ECU)	-	Proprietary parameter.
SSP-Lube Oil (ECU)	-	Proprietary parameter.
LOP-Charge Air A-Site	-	Proprietary parameter.
HI P-Oil Filter Difference	-	Proprietary parameter.
HI ETC Speed (Turbo Charger 1)	-	Proprietary parameter.
LOP-Fuel (Common Rail)	-	Proprietary parameter.
HI P-Fuel (Common Rail)	-	Proprietary parameter.
SS ETC (Turbo Charger 1)	-	Proprietary parameter.
AL ECU Defect	-	Proprietary parameter.
LO Power Supply	-	Proprietary parameter.

HI Power Supply	-	Proprietary parameter.
HI T-Coolant	-	Proprietary parameter.
SS T-Coolant	-	Proprietary parameter.
HI T-Charge Air	-	Proprietary parameter.
HI T-Lube Oil	-	Proprietary parameter.
SS T-Lube Oil	-	Proprietary parameter.
HI T-Exhaust A	-	Proprietary parameter.
HI T-Exhaust B	-	Proprietary parameter.
SS T-Charge Air	-	Proprietary parameter.
HI T-ECU	-	Proprietary parameter.
SS Engine Speed Low	-	Proprietary parameter.
SS T-Fuel	-	Proprietary parameter.
LOLO ECU Power Supp Volt	-	Proprietary parameter.
HIHI ECU Power Supp Volt	-	Proprietary parameter.
SS Overspeed	-	Proprietary parameter.
Override Feedback for ECU	-	Proprietary parameter.
Combined Alarm	-	Proprietary parameter.
HI T-Fuel	-	Proprietary parameter.
Engine Running	-	Proprietary parameter.
HI P-Crankcase	-	Proprietary parameter.
SS P-Crankcase	-	Proprietary parameter.
LOP-Coolant After Pump	-	Proprietary parameter.
SS P-Coolant After Pump	-	Proprietary parameter.
HI T-Coolant Intercooler	-	Proprietary parameter.
AL SDAF Closed	-	Proprietary parameter.
AL Barring Gear Engaged	-	Proprietary parameter.
SS T-Exhaust Combined A	-	Proprietary parameter.
SS T-Exhaust Combined B	-	Proprietary parameter.
TD T-Coolant	-	Proprietary parameter.
TD P-Lube Oil	-	Proprietary parameter.
P-DiffFuel ECU	-	Proprietary parameter.
SS T-Coolant Intercooler	-	Proprietary parameter.
Coolant Level Switch HT	-	Proprietary parameter.
Coolant Level Charge Air NT	-	Proprietary parameter.
BO Hi P-Diff. Fuel Prefilter	-	Proprietary parameter.
Crankshaft (EMU)	-	Proprietary parameter.
SS T-Coolant water (EMU)	-	Proprietary parameter.
SS P-Lube Oil Red (EMU)	-	Proprietary parameter.
HI Single cylinder A1	-	Proprietary parameter.
HI Single cylinder A2	-	Proprietary parameter.
HI Single cylinder A3	-	Proprietary parameter.
HI Single cylinder A4	-	Proprietary parameter.
HI Single cylinder A5	-	Proprietary parameter.
HI Single cylinder A6	-	Proprietary parameter.
HI Single cylinder A7	-	Proprietary parameter.
HI Single cylinder A8	-	Proprietary parameter.
HI Single cylinder A9	-	Proprietary parameter.

HI Single cylinder A10	-	Proprietary parameter.
HI Single cylinder B1	-	Proprietary parameter.
HI Single cylinder B2	-	Proprietary parameter.
HI Single cylinder B3	-	Proprietary parameter.
HI Single cylinder B4	-	Proprietary parameter.
HI Single cylinder B5	-	Proprietary parameter.
HI Single cylinder B6	-	Proprietary parameter.
HI Single cylinder B7	-	Proprietary parameter.
HI Single cylinder B8	-	Proprietary parameter.
HI Single cylinder B9	-	Proprietary parameter.
HI Single cylinder B10	-	Proprietary parameter.
WB SaSy Emergency Stop Output	-	Proprietary parameter.
EMU Emergency Stop-Open Circuit	-	Proprietary parameter.
Air Flap A wire break	-	Proprietary parameter.
Air Flap B wire break	-	Proprietary parameter.
ASO Voltage to Lo on Relay	-	Proprietary parameter.
ASO Watchdog Relay	-	Proprietary parameter.
Emergency Stop Input 2	-	Proprietary parameter.
Emergency Stop Input 3	-	Proprietary parameter.
Emergency Stop Input 4	-	Proprietary parameter.
ASO Flap A Feedback Contact	-	Proprietary parameter.
ASO Flap B Feedback Contact	-	Proprietary parameter.

ECU binary inputs (controller's outputs - commands)

Configuration Name	SPN	J1939 Name
Disable Cylinder Cut Out 2	-	Proprietary parameter.
Speed Increase	-	Proprietary parameter.
Speed Decrease	-	Proprietary parameter.
Request Test Overspeed	-	Proprietary parameter.
Engine Start	-	Proprietary parameter.
Alarm Reset 1,2,3,4	-	Proprietary parameter.
Lamp test	-	Proprietary parameter.
Speed Setting Limit Active	-	Proprietary parameter.
Mode Switch	-	Proprietary parameter.
Governor ParameterSet Select.	-	Proprietary parameter.
Intermittent Oil Priming	-	Proprietary parameter.
Priming Engine Start	-	Proprietary parameter.
50/60Hz 1,2,3,4,5,6	-	Proprietary parameter.
Override	1237	Engine Shutdown Override Switch
Engine Stop 1,2,3,4,5,6	970	Engine Auxiliary Shutdown Switch
Starter Reset	520845	Manufacturer Assignable SPN

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Percent Load	92	Engine Percent Load At Current Speed

Failure Codes	-	Proprietary parameter.
Engine Speed Camshaft	-	Proprietary parameter.
Engine Speed Crankshaft	-	Proprietary parameter.
P-Coolant Water Intercooler	1203	Engine Auxiliary Coolant Pressure
ETC Speed Turbo Charger 1	103	Engine Turbocharger 1 Speed
T-Charge Air	2629	Engine Turbocharger 1 Compressor Outlet Temperature
T-Exhaust B	2433	Engine Exhaust Manifold Bank 2 Temperature 1
T-Exhaust A	2434	Engine Exhaust Manifold Bank 1 Temperature 1
P-Lube Oil Before Filter	1208	Engine Pre-filter Oil Pressure
T-ECU	1136	Engine ECU Temperature
T-Bearing DE	1122	Engine Alternator Bearing 1 Temperature
T-Bearing NDE	1123	Engine Alternator Bearing 2 Temperature
T-Winding 1	1124	Engine Alternator Winding 1 Temperature
T-Winding 2	1125	Engine Alternator Winding 2 Temperature
T-Winding 3	1126	Engine Alternator Winding 3 Temperature
T-Coolant	110	Engine Coolant Temperature
T-Fuel	174	Engine Fuel Temperature 1
T-Lube Oil	175	Engine Oil Temperature 1
T-Coolant Intercooler	52	Engine Intercooler Temperature
P-Fuel	94	Engine Fuel Delivery Pressure
P-Lube Oil	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
P-Coolant Water After Pump	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
P-Charge Air	102	Engine Intake Manifold #1 Pressure
T-Intake Air	105	Engine Intake Manifold 1 Temperature
Transmission Oil Pressure	127	Transmission Oil Pressure
P-Fuel After Filter	-	Proprietary parameter.
Crankshaft (EMU) (Engine Speed)	-	Proprietary parameter.
Start Process 1	520241	Manufacturer Assignable SPN
Start Process 2	520241	Manufacturer Assignable SPN
Single Cylinder A1	1137	Engine Exhaust Gas Port 1 Temperature
Single Cylinder A2	1138	Engine Exhaust Gas Port 2 Temperature
Single Cylinder A3	1139	Engine Exhaust Gas Port 3 Temperature
Single Cylinder A4	1140	Engine Exhaust Gas Port 4 Temperature
Single Cylinder A5	1141	Engine Exhaust Gas Port 5 Temperature
Single Cylinder A6	1142	Engine Exhaust Gas Port 6 Temperature
Single Cylinder A7	1143	Engine Exhaust Gas Port 7 Temperature
Single Cylinder A8	1144	Engine Exhaust Gas Port 8 Temperature
Single Cylinder A9	1145	Engine Exhaust Gas Port 9 Temperature
Single Cylinder A10	1146	Engine Exhaust Gas Port 10 Temperature
Single Cylinder B1	1147	Engine Exhaust Gas Port 11 Temperature
Single Cylinder B2	1148	Engine Exhaust Gas Port 12 Temperature
Single Cylinder B3	1149	Engine Exhaust Gas Port 13 Temperature
Single Cylinder B4	1150	Engine Exhaust Gas Port 14 Temperature
Single Cylinder B5	1151	Engine Exhaust Gas Port 15 Temperature

Single Cylinder B6	1152	Engine Exhaust Gas Port 16 Temperature
Single Cylinder B7	1153	Engine Exhaust Gas Port 17 Temperature
Single Cylinder B8	1154	Engine Exhaust Gas Port 18 Temperature
Single Cylinder B9	1155	Engine Exhaust Gas Port 19 Temperature
Single Cylinder B10	1156	Engine Exhaust Gas Port 20 Temperature
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Load Signal	-	Proprietary parameter.
Speed Demand Switches 1,2,3,4,5,6	-	Proprietary parameter.
Speed Demand Analog 1,2,3,4,5,6	898	Engine Requested Speed/Speed Limit
Engine alternate droop accelerator 1 select 1,2,3,4,5,6	-	Proprietary parameter.
Rating Switch 1	-	Proprietary parameter. 0 – indicates maximum power fueling 1 – indicates alternate power fueling 1 2 - 253 - indicates alternate power fueling 2 thru 253 254 – Error condition 255 – Not available

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Abbreviation explanation

Abbreviation	Meaning
AL	Alarm - Warning or alarm due to a binary signal
LO	Low - Warning or alarm threshold due to a shortfall
HI	High - Warning or alarm limits are exceeded
TD	Transmitter Deviation - Warning or alarm due to a large deviation between the analog values of two redundant sensors
SD	Sensor Defective - Warning or alarm because of a defective sensor
SF	Switch Fault - Warning or alarm condition due to an improper combination two complementary switch
SS	Security Shutdown - Alarm, which led to engine emergency stop
MG	Message - Message from external system
SE	System Error - Warning, a system error
DL	Default Lost - Warning due to a node failure in the default field bus
RL	Redundancy Lost - Warning due to a node failure in the redundant fieldbus
PB	Push Button - Indicator due to the activation of certain control keys

Note: If you have some problems with frame EBC1 (PGN=61441d, F001h) e.g. binary output engine stop, please contact your MTU service to upgrade firmware in your ECU / SAM module.

Note: ECU is automatically configured to isochronous (Droop2 = 0% corresponds to Engine alternate droop accelerator 1 select = 1). If you want to use droop (Droop1 = 4%) then set Source to 0.

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring between ADEC and SAM module

Function	ADEC X1 connector	SAM X6 connector
CAN H	19	3
CAN COM	20	1
CAN L	35	2

Recommended wiring of power supply

Function	ADEC X3 connector	SAM X13 connector
Battery + (positive)	3,6,9,12,13	1,2
Battery - (negative)	1,4,7,10	3,4

Recommended wiring (SAM with CCB2 card)

Function	SAM module	9pin diagnostic connector	Controller
CAN H	X23 – 2	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	X23 – 3	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	X23 – 1	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	X13 – 1,2	N/A	N/A
Battery - (negative)	X13 – 3,4	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

Recommended wiring (SAM without CCB2 card – marine version)

Function	SAM module	Controller
CAN H	X8 – 3	CAN1 (extension modules/J1939) – CAN H
CAN COM	X8 – 1	CAN1 (extension modules/J1939) – CAN COM
CAN L	X8 – 2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	X13 – 1,2	N/A
Battery - (negative)	X13 – 3,4	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **ECU7 (ADEC) & SAM module on page 283**.

3.18.4 ECU8 (ADEC) & Smart connect

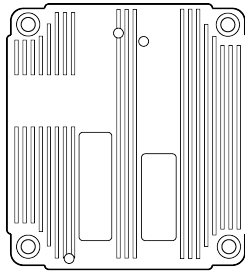


Image 3.49 ECU8

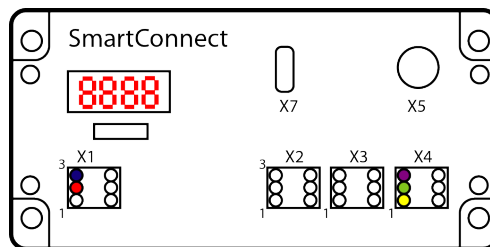


Image 3.50 Smart connect

Controllers that support the ECU8 & Smart connect

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Coolant Pre-heated State	3553	Engine Coolant Pre-heated State
Wait To Start Lamp	1081	Engine Wait to Start Lamp
EPS Engine Shutdown	1110	Engine Protection System has Shutdown Engine
Safety&ProtectionOverStat	520202	Manufacturer Assignable SPN
MTU Engine Running State	520255	Manufacturer Assignable SPN
Engine Cylinder Cutoff	520252	Manufacturer Assignable SPN
Load Generator Status	520253	Manufacturer Assignable SPN
External Stop State	520833	Manufacturer Assignable SPN
Oper. Speed Up Switch Fdb	520205	Manufacturer Assignable SPN
Oper Speed Down Switch Fdb	520206	Manufacturer Assignable SPN
Speed Demand Fail Mode	520830	Manufacturer Assignable SPN
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp

Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Trip Group 1	-	Proprietary parameter.
Engine Start Command ^{1,2,3,4,5,6}	520192	Manufacturer Assignable SPN
Engine Stop Command ^{1,2,3,4,5,6}	520193	Manufacturer Assignable SPN
EngSafety&ProtOverrideCmd ^{1,2,3,4}	520194	Manufacturer Assignable SPN
Engine Overspeed Test Cmd	520197	Manufacturer Assignable SPN
DisableEngCylCutoffCmd2	520834	Manufacturer Assignable SPN
IntermittentOilPrimingCmd	520835	Manufacturer Assignable SPN
EngSpdGovernorParamSwitch	520841	Manufacturer Assignable SPN
Operating Speed Up Switch	520207	Manufacturer Assignable SPN
Oper. Speed Down Switch	520208	Manufacturer Assignable SPN
MTU Req Speed Limit Switch	520842	Manufacturer Assignable SPN
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Intake Manifold Abs Press	3563	Engine Intake Manifold #1 Absolute Pressure
ECU Temperature	1136	Engine ECU Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Coolant Temp	110	Engine Coolant Temperature
T-Lube Oil	175	Engine Oil Temperature 1
Engine Oil Pressure	100	Engine Oil Pressure
Engine Coolant Pressure	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
P-Charge Air	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Keyswitch Battery Voltage	158	Keyswitch Battery Potential
Actual Droop	520831	Manufacturer Assignable SPN
MTU Requested Abs. Torque	520843	Manufacturer Assignable SPN
Demanded Operating Speed	520707	Manufacturer Assignable SPN
Current Speed Demand src	520263	Manufacturer Assignable SPN
Speed Demand CAN fdb	520828	Manufacturer Assignable SPN
Speed Demand Analog In fdb	520829	Manufacturer Assignable SPN
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature

Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Exhaust Gas Port 17 Temp	1153	Engine Exhaust Gas Port 17 Temperature
Exhaust Gas Port 18 Temp	1154	Engine Exhaust Gas Port 18 Temperature
Exhaust Gas Port 19 Temp	1155	Engine Exhaust Gas Port 19 Temperature
Exhaust Gas Port 20 Temp	1156	Engine Exhaust Gas Port 20 Temperature
Sea Water Pump Outlet Pressure	2435	Sea Water Pump Outlet Pressure
P-Lube Oil Redundant	520292	Manufacturer Assignable SPN
T-Coolant Redundant	520302	Manufacturer Assignable SPN

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Speed Demand Switches	520269	<p>Manufacturer Assignable SPN CAN Demand Switches contains at: Bit 0 - 3 the source for Local normal switch position Bit 4 - 7 the source for Local Emergency switch position Bit 8 - 11 the source for Remote normal switch position Bit 12 - 15 the source for Remote Emergency switch position</p> <p>With the following assignment per bit group: 0 = Analog CAN 1 = Up/Down ECU 2 = Up/Down CAN 3 = Analog ECU 4 = Analog ECU relative 5 = Frequency 6 = Notch Position (not used)</p>
Frequency Selection ^{1,2,3,4,5,6}	4080	<p>Generator Frequency Selection This feature gives the operator ability to switch the rated speed. The system will only react to a state transition while the Engine speed is 0. The recommended source values is an constant following the requested function.</p> <p>0 = 50Hz 1 = 60Hz 2 - 5 = Reserved 6 = Error 7 = Do not care</p>

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}	
Source	SpeedReq RPM
Convert	NO

Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Smart module DIP switches adjustment

DIP	1	2	3	4	5	6	7	8
Function	Speed Demand			Droop (0%/4%)	Frequency (50Hz/60Hz)	Protocol (J1939/CanOpen)	N/A	N/A
State	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF

Note: Please, notice that the DIP switch configuration is checking up after SMART connects powering up. Any change of DIP switches requires power off and on again of SMART connect.

Speed demand DIP swichs codes

Code DEC	Code BIN	Designation	Description
0	000	ECU default	ECU default settings of the 4 internal speed demand switches – default speed up/down
1	001	ECU direct up / down	The speed demand (up / down) controlled over binary inputs directly at the ECU. Settings can be done via DiaSys at the ECU
2	010	ECU analogue relative	The analogue speed demand controlled over analogue input directly at the ECU. Settings can be done via DiaSys at the ECU 0VDC = -100RPM 5VDC = +100RPM
3	011	ECU analogue relative	The analogue speed demand controlled over analogue input directly at the ECU. Settings can be done via DiaSys at the ECU 0VDC = -100RPM 10VDC = +100RPM
4	100	ECU analogue relative	The analogue speed demand controlled over analogue input directly at the ECU. Settings can by done via DiaSys at the ECU 4mADC = -100RPM 20mADC = +100RPM
5	101	CAN analogue	The speed demand value (unit, RPM) will be transferred via CAN bus from SAM/SMART to the ECU. The speed demand information must be received from an external CAN bus (CANopen,SEA J1939)
6	110	CAN up / down	The speed demand (up / down) will be transferred via CAN bus from SAM/SMART to the ECU. The speed demand information must be received from an external CAN bus (CANopen,SEA J1939)
7	111	External speed demand source	The speed demand is flexible. The speed demand source can be transmitted from an external controller

Recommended wiring between ADEC and SMART module

Function	ADEC X1 connector	SMART X3 connector	SMART X4 connector
CAN1 H	1	1	
CAN1 COM	5	3	

CAN1 L	2	2	
CAN2 H	3		1
CAN2 COM	8		3
CAN2 L	4		2

Recommended wiring between ADEC and SMART module

Function	SMART connector	Controller
CAN H	X4 – 1	CAN1 (extension modules/J1939) – CAN H
CAN COM	X4 – 3	CAN1 (extension modules/J1939) – CAN COM
CAN L	X4 – 2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	X1 – 2	N/A
Battery - (negative)	X1 – 3	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

Ignition (switched by K1)

Function	Connector
Ignition +24VDC	X1 – 32
Ignition IN	X1 – 31

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **ECU8 & Smart connect on page 285**.

3.18.5 ECU9 (ADEC)

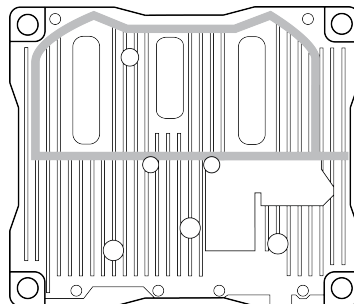


Image 3.51 ECU9

Controllers that support the ECM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Coolant Pre-heated State	3553	Engine Coolant Pre-heated State
Wait To Start Lamp	1081	Engine Wait to Start Lamp
EPS Engine Shutdown	1110	Engine Protection System has Shutdown Engine

Approaching Shutdown	1109	Engine Protection System Approaching Shutdown
Safety&ProtectionOverStat	520202	Manufacturer Assignable SPN
MTU Engine Running State	520255	Manufacturer Assignable SPN
Engine Cylinder Cutoff	520252	Manufacturer Assignable SPN
Load Generator Status	520253	Manufacturer Assignable SPN
External Stop State	520833	Manufacturer Assignable SPN
Oper. Speed Up Switch Fdb	520205	Manufacturer Assignable SPN
Oper Speed Down Switch Fdb	520206	Manufacturer Assignable SPN
Speed Demand Fail Mode	520830	Manufacturer Assignable SPN
Water in fuel	97	Water In Fuel Indicator 1
Aftertreatment 1 Regeneration Status	3483	Aftertreatment 1 Regeneration Status
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Flash Malfunction Indicator Lamp	3038	Flash Malfunction Indicator Lamp
Fast Flash Malfunction Indicator Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Engine Shutdown Override Switch	1237	Engine Shutdown Override Switch
Trip Group 1	-	Proprietary parameter.
Engine Start Command ^{1,2,3,4,5,6}	520192	Manufacturer Assignable SPN
Engine Stop Command ^{1,2,3,4,5,6}	520193	Manufacturer Assignable SPN
EngSafety&ProtOverrideCmd ^{1,2,3,4}	520194	Manufacturer Assignable SPN
Engine Overspeed Test Cmd	520197	Manufacturer Assignable SPN
DisableEngCylCutoffCmd2	520834	Manufacturer Assignable SPN
IntermittentOilPrimingCmd	520835	Manufacturer Assignable SPN
EngSpdGovernorParamSwitch	520841	Manufacturer Assignable SPN
Operating Speed Up Switch	520207	Manufacturer Assignable SPN
Oper. Speed Down Switch	520208	Manufacturer Assignable SPN
MTU Req Speed Limit Switch	520842	Manufacturer Assignable SPN
DPF Regeneration Inhibit Switch ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force Switch ^{1,2,3,4}	3696	Aftertreatment Regeneration Force Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Engine torque	513	Actual Engine - Percent Torque
Engine Starter Mode	1675	Engine Starter Mode

Percent Load	92	Engine Percent Load At Current Speed
Intake Manifold Abs Press	3563	Engine Intake Manifold #1 Absolute Pressure
ECU Temperature	1136	Engine ECU Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Coolant Temp	110	Engine Coolant Temperature
T-Lube Oil	-	Proprietary parameter.
Intercooler Temp	52	Engine Intercooler Temperature
Fuel Temperature	174	Engine Fuel Temperature 1
Engine Oil Pressure	100	Engine Oil Pressure
Engine Coolant Pressure	109	Engine Coolant Pressure 1
Engine Oil Level	98	Engine Oil Level
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
P-Charge Air	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Inlet Pressure	106	Engine Intake Air Pressure
Air filter differential pressure	107	Engine Air Filter 1 Differential Pressure
Keyswitch Battery Voltage	158	Keyswitch Battery Potential
Actual Droop	520831	Manufacturer Assignable SPN
MTU Requested Abs. Torque	520843	Manufacturer Assignable SPN
Demanded Operating Speed	520707	Manufacturer Assignable SPN
Current Speed Demand src	520263	Manufacturer Assignable SPN
Speed Demand CAN fdb	520828	Manufacturer Assignable SPN
Speed Demand Analog In fdb	520829	Manufacturer Assignable SPN
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Trailer, Tag Or Push Channel Tire Pressure
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Sea Water Pump Outlet Pressure	2435	Sea Water Pump Outlet Pressure
Fuel Filter Diff.Press	95	Engine Fuel Filter Differential Pressure
Oil Filter Diff.Press	99	Engine Oil Filter Differential Pressure
Turbocharger 1 Speed	103	Engine Turbocharger 1 Speed
Barometric Pressure	108	Barometric Pressure
Turbocharger 2 Speed	1169	Engine Turbocharger 2 Speed

Turbocharger 3 Speed	1170	Engine Turbocharger 3 Speed
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
T-Charge Air	2629	Engine Turbocharger 1 Compressor Outlet Temperature
Engine Charge Air Cooler Outlet Pressure	2631	Engine Charge Air Cooler Outlet Pressure
Engine Intercooler Coolant Level	3668	Engine Charge Air Cooler Coolant Level
Intake NOx	3216	Aftertreatment 1 Selective Catalytic Reduction Intake NOx
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
SCR Act. dosing reagent quality	4331	Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Frequency Selection ^{1,2,3,4,5,6}	4080	Generator Frequency Selection
Speed Demand Switches	520269	Manufacturer Assignable SPN

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU X1 connector	Controller
CAN H	3	CAN1 (extension modules/J1939) – CAN H
CAN COM	6	CAN1 (extension modules/J1939) – CAN COM
CAN L	4	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	58, 59, 62	N/A
Battery - (negative)	57, 60, 61	N/A
Key Switch	31	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **ECU9 on page 287**.

3.18.6 DDEC 10

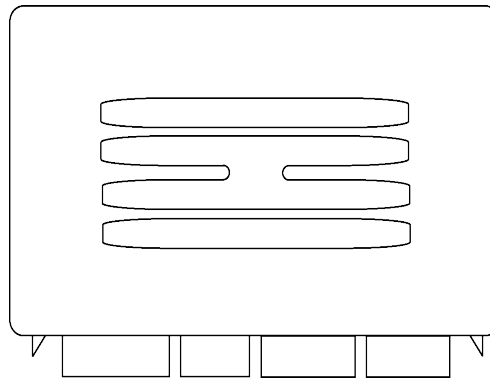


Image 3.52 DDEC 10

Controllers that support the DDEC 10

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
DPF Active Regeneration Inhibited Due to System Fault Active	3712	Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active
DPF Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed	3709	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed
Wait to Start Lamp	1081	Engine Wait to Start Lamp
Water In Fuel Indicator	97	Water In Fuel Indicator 1
DPF Active Regeneration Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
Protect Lamp	987	Protect Lamp
Red Stop Lamp	623	Red Stop Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
DPF Active Regeneration Inhibited Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF Active Regeneration Inhibited Due to Inhibit Switch	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF Active Regeneration Inhibited Due to Clutch Disengaged	3704	Diesel Particulate Filter Active Regeneration Inhibited Due to Clutch Disengaged
DPF Active Regeneration Inhibited Due to PTO Active	3706	Diesel Particulate Filter Active Regeneration Inhibited Due to PTO Active

DPF Active Regeneration Inhibited Due to Accelerator Pedal Off Idle	3707	Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle
DPF Active Regeneration Inhibited Due to Parking Brake Not Set	3710	Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set
DPF Active Regeneration Inhibited Due to Low Exhaust Gas Temperature	3711	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
DPF Regeneration Inhibit Switch 1,3,4	3695	Aftertreatment Regeneration Inhibit Switch
DPF Regeneration Force Switch 1,3,4	3696	Aftertreatment Regeneration Force Switch
Start request 1,3,4,6	-	Proprietary parameter.
Stop request 1,3,4,6	-	Proprietary parameter.
Start Loct	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Desired Operating Speed	515	Engine's Desired Operating Speed
Percent Torque	513	Actual Engine - Percent Torque
SCR Catalyst Intake Gas Temperature	4360	Aftertreatment 1 SCR Intake Temperature
SCR Catalyst Outlet Gas Temperature	4363	Aftertreatment 1 SCR Outlet Temperature
Intake NOx	3216	Aftertreatment 1 Selective Catalytic Reduction Intake NOx
Fuel Temperature	174	Engine Fuel Temperature 1
DPF Intake Pressure 1	3609	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Coolant Level	111	Engine Coolant Level 1
DPF Outlet Pressure 1	3610	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Keyswitch Battery Potential	158	Keyswitch Battery Potential
Diesel Exhaust Fluid Tank 1 Heater	3363	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater
Battery Potential	168	Battery Potential / Power Input 1
DPF Differential Pressure	3251	Aftertreatment 1 Diesel Particulate Filter Differential Pressure
Exhaust Gas Temperature 1	3241	Aftertreatment 1 Exhaust Temperature 1
DPF Intake Gas Temperature	3242	Aftertreatment 1 Diesel Particulate Filter Intake Temperature
Exhaust Gas Temperature	173	Engine Exhaust Temperature
DPF Outlet Gas Temperature	3246	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature
Oil Temperature	175	Engine Oil Temperature 1
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Throttle Valve Position	51	Engine Throttle Valve 1 Position 1
Intercooler Temperature	52	Engine Intercooler Temperature
Fuel Rate	183	Engine Fuel Rate
Diesel Exhaust Fluid Concentration	3516	Aftertreatment 1 Diesel Exhaust Fluid Concentration
Engine Speed	190	Engine Speed
ECU Temperature	1136	Engine ECU Temperature
Remote Accelerator Pedal Position	974	Remote Accelerator Pedal Position
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
Diesel Exhaust Fluid Tank 1	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature

Temperature		
Percent Load	92	Engine Percent Load At Current Speed
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Oil Level	98	Engine Oil Level
Diesel Exhaust Fluid Temperature 2	3515	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Intake Manifold Pressure	102	Engine Intake Manifold #1 Pressure
Turbocharger 1 Speed	103	Engine Turbocharger 1 Speed
Intake Manifold Temperature	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Temperature	110	Engine Coolant Temperature
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
Exhaust System High Temperature Lamp Command	3698	Exhaust System High Temperature Lamp Command
SCR Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,3,4,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	Unit connectors ST2(B) or ST3 (C)	Controller
CAN H	ST2-18	CAN1 (extension modules/J1939) – CAN H
CAN COM	ST2-17	CAN1 (extension modules/J1939) – CAN COM
CAN L	ST2-16	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	ST2-01	N/A
Battery - (negative)	ST2-02	N/A

Key Switch	ST2-03	Any binary output configured as ECU PwrRelay
Analog Speed Control	ST2-04	SG OUT
Analog Speed Control	ST3-02	SG COM

Note: To enable the function of Remote throttle sensor on pin ST3-02, the parameter 13/63 has to be set to 1.

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector** on page 18.

Available list of texts of fault codes see **DDEC 10** on page 286.

3.18.7 EIM (Engine Interface Module)

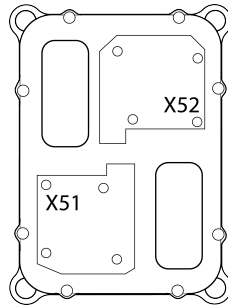


Image 3.53 EIM

Controllers that support the EIM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Percent Load	92	Engine Percent Load At Current Speed
Engine speed	190	Engine Speed
Engine Exhaust Gas Temp Avg 1	4151	Engine Exhaust Temperature Average
Intake Manifold Abs Press	3563	Engine Intake Manifold #1 Absolute Pressure
Exhaust Gas Temp - Right Manifold	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Exhaust Gas Temp - Left Manifold	2434	Engine Exhaust Manifold Bank 1 Temperature 1
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure

Coolant Pressure	109	Engine Coolant Pressure 1
Fuel Rate	183	Engine Fuel Rate
Air Inlet Temperature	172	Engine Intake Air Temperature
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
MTU Engine Speed Redundant	520382	Manufacturer Assignable SPN
MTU Engine Oil Pressure Redundant	520292	Manufacturer Assignable SPN
MTU Engine Coolant Temp Redundant	520302	Manufacturer Assignable SPN
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Recommended wiring

Function	X51 connector	Controller
CAN H	56	CAN1 (extension modules/J1939) – CAN H
CAN COM	54	CAN1 (extension modules/J1939) – CAN COM
CAN L	55	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	16	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18.**

Available list of texts of fault codes **see EIM on page 289.**

3.18.8 MIP 4000

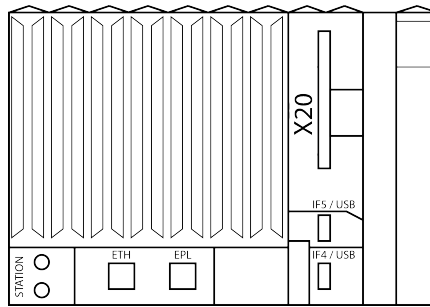


Image 3.54 MIP 4000

Note: In order to connection to the MTU MIP 4000 gen-set controller it is necessary to use an I-CB module and UC-7112-LX Plus module.

Configuration of the controller and I-CB has to be done separately using GenConfig or DriveConfig and ICBEEdit software. For further information see I-CB manual.

UC-7112-LX Plus configuration file - MTU_MIP4000_ver.: 1.0.0 . For further information see UC-7112-LX Plus manual.

Controllers that support the MIP 4000

Refer to Comparison table (page 23)

Available parameters

IMPORTANT: The response time of the UC-7112-LX Plus (modbus server) is about 200ms. It has to be taken into account when configure the number and refresh time of read/written parameters. Incorrect configuration of I-CB module may cause instability of read /written parameters.

ECU binary outputs (controller's inputs); Modbus Discrete Inputs	
Configuration Name	Register
Demand open backup switch	10001
Demand auxiliary drives	10002
Demand fresh oil pump	10003
Demand engine preheating	10004
Control via interface	11001
Machine available	11002
Engine stopped	11003
Gastype A active	11004
Start demand active	11005
Start active	11006
Stop active	11007
Leakage test gas line A active	11008
Leakage test gas line A ok	11009
Auxiliary drives active	11010
Waste/Prelube oil pump active	11011
Gasvalve 1 for gas type A open	11012

Mains ok	11013
Synchronisation GCB	11014
Synchronisation MCB	11015
GCB is off	11016
GCB is on	11017
MCB is off	11018
MCB is on	11019
Mains parallel operation active	11020
Island operation active	11021
Cooling water preheating blocked	11022
Generator heater on	11023
Hardware signal "Request GCU check" from Engine	11024
Hardware signal "Request gas solenoid valve 1" from Engine	11025
Hardware signal "Request gas solenoid valve 2" from Engine	11026
Signal "Request synchronisation" from Engine	11027
Lube oil refill active	11028
Cooling water preheating active	11029
Gasvalve 2 for gas type A open	11030
Stop command from Operator	11031
Protocol - testing plant active	11032
Release island operation from control technology	11033
Short interruption	11034
Request pre lubrication active	11035
GCB release missing from control technology	11036
Release synchronisation GCB	11037
Biogas active	11038
Fault reset	11039
Warm up phase in Insel parallel operation active	11040
GCB black start interlock in island parallel operation	11041
Backup protection active	11042
Generator de-excitation active	11043
Release generator protection	11044
Level Lube Oil Min	11045
Level Lube Oil MinMax	11046
Level Lube Oil Max	11047
Stop Activated	11048
Engine Running	11049
Generator active	11050
Waste oil solenoid valve is on	11051
Go / NoGo	11052
Wait for 0 RPM	11053
Starter On	11054
Mixture throttle position maximum	11055
Limitation active	11056
Back synchronization MCB from MCS/external control technology or other module active	11057
Mains disconnection via MCB from external	11058

ECU binary inputs (controller's outputs - commands); Modbus Coils	
Configuration Name	Register
Engine start	1
Reset	2
Release GCB	3
Speed higher	4
Speed lower	5
Release island operation	6
Blackstart GCB	7
Cooling water deficiency	8
Release MCB	9
Blackstart MCB	10
Deactivate cooling water preheating	11
Activate Waste/Prelube oil pump	12
Activate lube oil solenoid valves	13
Activate waste oil solenoid valve	14
Reserve - Bit 15	15
Voltage Higher	16
Voltage Lower	17
ECU analog outputs (controller's inputs); Modbus Input Registers	
Configuration Name	Register
Power setpoint from external	30201
Actual value power 1	30202
Actual value power 2	30203
Power supply voltage 24VDC	30204
Engine speed	30205
T-Coolant engine inlet	30206
T-Coolant engine outlet	30207
T-Lube oil	30208
T-Intake air	30209
P-Coolant engine inlet	30210
P-Coolant engine outlet	30211
P-Lube oil	30212
P-Crankcase	30213
P-Lube oil before filter	30214
P-Lube oil filter diff	30215
P-Coolant diff.	30216
T-Mixture A	30217
T-Intake air B	30218
P-Mixture before throttle	30219
Board temperature MIP panel	30220
Generator winding temperature U1	30221
Generator winding temperature V1	30222
Generator winding temperature W1	30223
P-Mixture A	30224
P-Mixture B	30225
P-Intake Air A	30226

P-Intake Air B	30227
Mixture throttle position A	30228
Mixture throttle position B	30229
Mixture throttle position bypass	30230
Bearing temperature drive end	30231
Bearing temperature non-drive end	30232
T-Exhaust gas after turbine A	30233
T-Exhaust gas after turbine B	30234
Operating hours 1	30235
Operating hours 2	30236
Actual value reactive power	30237
Actual value apperent power	30238
Start counter	30239
Generator frequency	30240
Generator voltage L12	30241
Generator voltage L23	30242
Generator voltage L31	30243
Generator current L1	30244
Generator current L2	30245
Generator current L3	30246
Generator power factor	30247
Generator active energy 1	30248
Generator active energy 2	30249
Mains voltage L12	30250
Mains voltage L23	30251
Mains voltage L31	30252
Mains frequency	30253
Bus bar voltage L12	30254
Bus bar voltage L23	30255
Bus bar voltage L31	30256
Bus bar frequency	30257
T-Exhaust A1	30258
T-Exhaust A2	30259
T-Exhaust A3	30260
T-Exhaust A4	30261
T-Exhaust A5	30262
T-Exhaust A6	30263
T-Exhaust A7	30264
T-Exhaust A8	30265
T-Exhaust A9	30266
T-Exhaust A10	30267
T-Exhaust B1	30268
T-Exhaust B2	30269
T-Exhaust B3	30270
T-Exhaust B4	30271
T-Exhaust B5	30272
T-Exhaust B6	30273

T-Exhaust B7	30274
T-Exhaust B8	30275
T-Exhaust B9	30276
T-Exhaust B10	30277
Desired ignition timing	30278
Knock integrator A1	30279
Knock integrator B1	30280
Knock integrator A2	30281
Knock integrator B2	30282
Knock integrator A3	30283
Knock integrator B3	30284
Knock integrator A4	30285
Knock integrator B4	30286
Knock integrator A5	30287
Knock integrator B5	30288
Knock integrator A6	30289
Knock integrator B6	30290
Knock integrator A7	30291
Knock integrator B7	30292
Knock integrator A8	30293
Knock integrator B8	30294
Knock integrator A9	30295
Knock integrator B9	30296
Knock integrator A10	30297
Knock integrator B10	30298
Gas temperature	30299
Gas pressure inlet (abs) - Tecjet	30300
Actual position - Tecjet	30301
A - Aftertreatment 1 outlet - NOx	30302
B - Aftertreatment 1 outlet - NOx	30303
Relative position - Phytron A	30304
Relative position - Phytron B	30305

ECU analog inputs (controller's outputs); Modbus Holding Registers

Configuration Name	Register
SP_Effective power	40001
SP_Generator power factor	40002
SP_CH4 content	40003
SP_Offset CH4 content	40004
Hearbeat	41001
CommError	41002

Modbus Settings

Configuration Name	Register
Communication Port	P1
Modbus Address	1

Baud Rate	19200kbps
Data Bits	8
Parity	None
Stop Bits	One
Interface	RS232

It is allowed to read up to 85 sequential registers at one request.

Recommended wiring

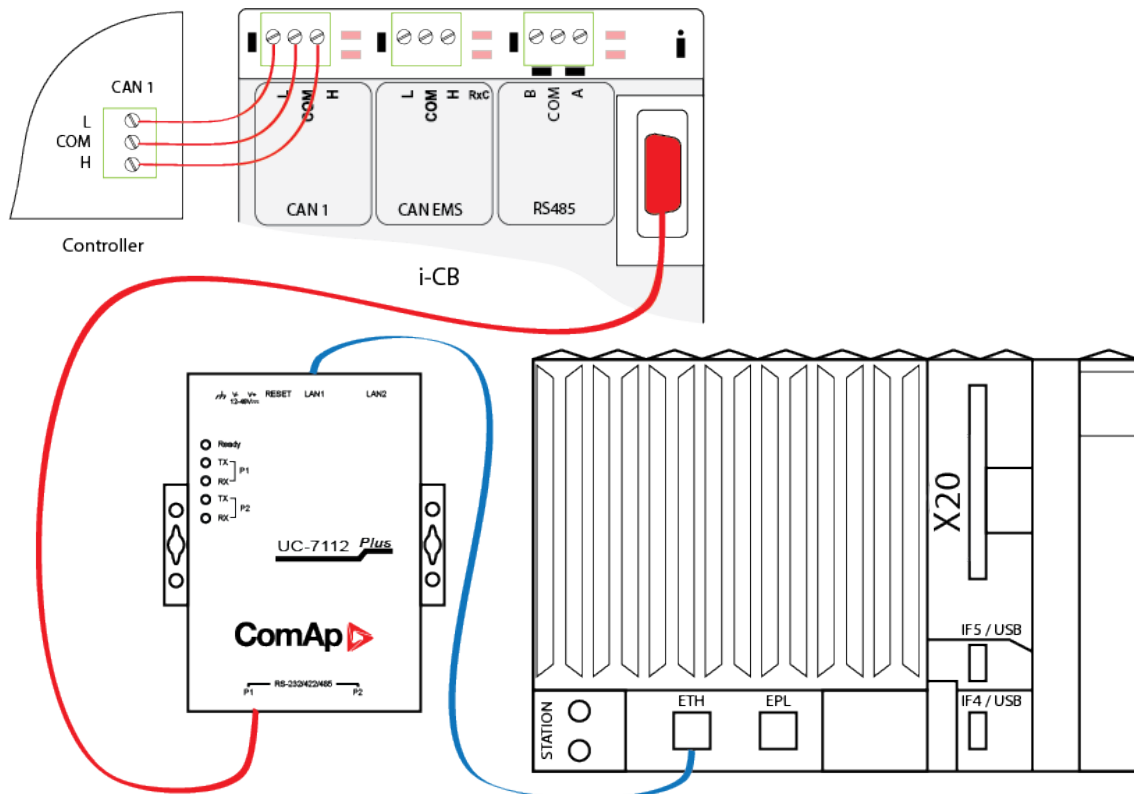


Image 3.55 Recommended wiring of MTU MIP 4000

IMPORTANT: Check that CAN bus terminating resistors or appropriate jumpers are connected.

IMPORTANT: Direct connection of the Ethernet between MTU MIP 4000 and UC-7112-LX Plus is strongly recommended.

Note: IP addresses of the MTU MIP 4000 (192.168.23.101) and the UC-7112-LX Plus (192.168.23.201) are fixed without possibility to change.

The network mask (255.255.254.0) is fixed for both devices without possibility to change it.

The communication UDP port is the same (21101) for both devices.

3.19 Perkins engines support

ECU Type	Engine type
A4E1 A4E2	1100 series
1300	1300 series
ECM or CAT ADEM3, ADEM4	2300 series 2500 series 2800 series

3.19.1 ECM (1100 series)

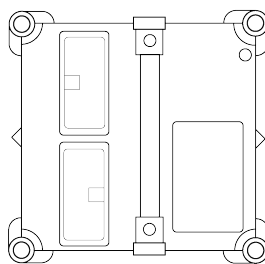


Image 3.56 ECM A4E2

Controllers that support the ECM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is stop pulse.
Alarm Reset ⁴	-	Proprietary parameter.

Engine Start ⁴	-	Proprietary parameter.
Override	-	Proprietary parameter.
Engine alternate droop accelerator 1 select ⁴	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure
Fuel Rate	183	Engine Fuel Rate
Throttle position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring for A4E1

Function	ECU connector	Controller
CAN H	52	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	61	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	56,57	N/A
Battery - (negative)	68,69	N/A

Key Switch	70	Any binary output configured as ECU PwrRelay
Analog Speed Control	25	SG OUT
Analog Speed Control	44	SG COM

Recommended wiring for A4E2

Function	ECU connector	Controller
CAN H	20	CAN1 (extension modules/J1939) – CAN H
CAN COM	22	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	7,8,15,16	N/A
Battery - (negative)	1,2,3,9,10	N/A
Key Switch	40	Any binary output configured as ECU PwrRelay
Analog Speed Control	3	SG OUT
Analog Speed Control	17	SG COM

Note: To enable speed control over CAN bus set Desired Speed Input Arrangement to "CAN Input" and Digital Speed Control Installed to "Not Installed" in Perkins EST program.

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **ECM (1100 series) on page 1**.

3.19.2 ECM 1300 (1300 series)

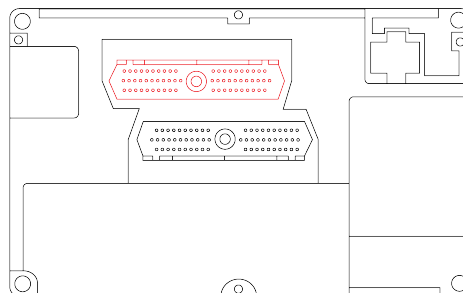


Image 3.57 ECM 1300

Controllers that support the ECM 1300

Refer to Comparison table (page 23)

Available parameters for ECM

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp

Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is stop pulse.
Alarm Reset ⁴	-	Proprietary parameter.
Engine Start ⁴	-	Proprietary parameter.
Override	-	Proprietary parameter.
Engine alternate droop accelerator 1 select ⁴	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure
Fuel Rate	183	Engine Fuel Rate
Throttle position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for ECM 1300

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp

ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is stop pulse.

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure
Fuel Rate	183	Engine Fuel Rate
Throttle position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Recommended wiring for ECM 1300

Function	ECU connector	Controller
CAN H	19	CAN1 (extension modules/J1939) – CAN H
CAN COM	18	CAN1 (extension modules/J1939) – CAN COM
CAN L	20	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	25,21,22,41	N/A
Battery - (negative)	23,42,1,2	N/A
Key Switch	24	Any binary output configured as ECU PwrRelay
Analog Speed Control	30	SG OUT
Analog Speed Control	11	SG COM

Recommended wiring for CAT unit

Function	ECU J1 21pin connector	Controller
CAN H	20	CAN1 (extension modules/J1939) – CAN H
CAN COM	22	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	7,8,15,16	N/A
Battery - (negative)	1,2,3,9,10	N/A
Key Switch	40	Any binary output configured as ECU PwrRelay
Analog Speed Control	3	SG OUT
Analog Speed Control	17	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector** on page 18.
 Available list of texts of fault codes see **ECM (1100 series)** on page 1.

Available list of texts of fault codes see **ECM 1300 (1300 series)** on page 1.

Note: To enable speed control over CAN bus if possible - set parameter 89001 - Vehicle Speed Signal Mode to "2" in Perkins 1306/1606 Engine Diagnostic Software

IMPORTANT: No value for speed control being sent to the ECU when Perkins 1300 is configured!

3.19.3 ADEM (2300, 2500, 2800 series)

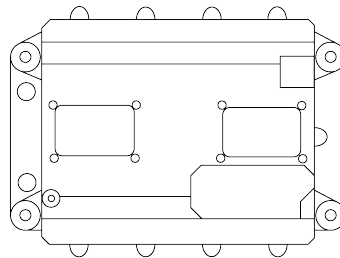


Image 3.58 ADEM3

Controllers that support the ADEM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is stop pulse.
Alarm Reset ⁴	-	Proprietary parameter.
Engine Start ⁴	-	Proprietary parameter.
Override	-	Proprietary parameter.
Engine alternate droop accelerator 1 select ⁴	-	Proprietary parameter.

ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Percent Load	92	Engine Percent Load At Current Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Barometric Pressure	108	Barometric Pressure
Fuel Rate	183	Engine Fuel Rate
Throttle position	51	Engine Throttle Valve 1 Position 1
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure
Turbocharger Compressor Bypass Actuator 1 Position	3675	Engine Turbocharger Compressor Bypass Actuator 1 Position
Fuel Valve 1 Position	1442	Engine Fuel Valve 1 Position
Fuel Valve 2 Position	1443	Engine Fuel Valve 2 Position
Requested Fuel Valve 1 Position	1765	Engine Fuel Valve 1 Commanded Position
Requested Fuel Valve 2 Position	1766	Engine Fuel Valve 2 Commanded Position
Fuel Valve 1 Intake Absolute Pressure	1390	Engine Fuel Valve 1 Intake Absolute Pressure
Fuel Valve Differential Pressure	1391	Engine Fuel Valve 1 Differential Pressure
Air to Fuel Differential Pressure	1392	Engine Air to Fuel Differential Pressure
Desired Rated Exhaust Oxygen	1117	Engine Desired Rated Exhaust Oxygen
Desired Exhaust Oxygen	1118	Engine Desired Exhaust Oxygen
Actual Exhaust Oxygen	1119	Engine Actual Exhaust Oxygen
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring for ADEM4 (2200, 2500 series)

Function	ECU J1 connector	Controller
CAN H	50	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,70	N/A
Battery - (negative)	61,63,65	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

Recommended wiring for ADEM3 (2300, 2800 series)

Function	ECU J1 connector	Controller
CAN H	50	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,70	N/A
Battery - (negative)	61,63,65	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	17	SG OUT
Analog Speed Control	3	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **ADEM (2300, 2500, 2800 series) on page 1**.

Note: To enable speed control over CAN bus set Desired Speed Input Arrangement to "CAN Input" and Digital Speed Control Installed to "Not Installed" in Perkins EST program. Or make a loop on J1 connector pins 49 and 18.

3.20 Scania engines support

ECU Type	Engine type
S6 Singlespeed S6 Allspeed	DC9 DI12 DC12 DC16 D9M DI12M DI16M
S8 Singlespeed S8 Allspeed	DC9 DC13 DC16

3.20.1 Engine type explanation

Engine Code	Meaning
Dxxx	Diesel fuel
xCxx	Intercooler: C - Air/Air I - Water/Air
xx12	Displacement
xxxxM	Marine

3.20.2 S6 Singlespeed

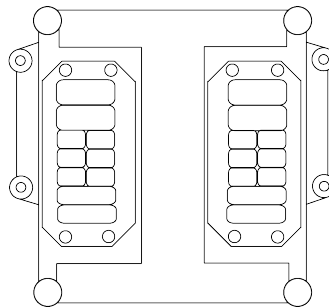


Image 3.59 S6

Controllers that support the S6

Refer to Comparison table (page 23)

Available parameters for singlespeed

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch

Low Engine Oil Pressure	-	Proprietary parameter.															
High Engine Coolant Temp	-	Proprietary parameter.															
PowerLost Due to HighTemp	-	Proprietary parameter.															
Engine stop limit exceed	-	Proprietary parameter.															
Generator Charge	-	Proprietary parameter.															
Test Engine Lamp	-	Proprietary parameter.															
Wait To Start Lamp	1081	Engine Wait to Start Lamp															
Protect Lamp	987	Protect Lamp															
Amber Warning Lamp	624	Amber Warning Lamp															
Red Stop Lamp	623	Red Stop Lamp															
Malfunction Lamp	1213	Malfunction Indicator Lamp															
Flash Protect Indicator Lamp	3041	Flash Protect Lamp															
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)															
Fast Flash Amber Warning Lamp																	
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)															
Fast Flash Red Stop Lamp																	
ECU binary inputs (controller's outputs - commands)																	
Configuration Name	SPN	J1939 Name															
Droop enable ^{1,2,3,4}	-	Proprietary parameter. Enable or disable droop function. The droop value is changeable with calibration parameter or with TSC-proprietary. The recommended source value for this command is Logical 0.															
Torque enable	-	Proprietary parameter. The calculated output torque of the engine. The data is transmitted in indicated torque as a percent of reference engine torque. The engine percent torque value will not be less than zero and it includes the torque developed in the cylinders required to overcome friction. The recommended source value for this command is Logical 0.															
Engine Start ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Starter.															
Emergency Engine Stop	-	Proprietary parameter. Normally used for engine emergency stop. When used it will set an error- / information code. The recommended source value for this command is Logical 0.															
Engine Stop ^{1,2,3,4,5,6}	-	Proprietary parameter. Normally used for engine emergency stop. Engine Stop (without error code).															
Nominal Speed 1 ^{1,2,3,4}	-	Choose nominal engine speed with these switches. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>NSSW1</th> <th>NSSW2</th> <th>Nominal speed</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Use changeable calibration parameter</td> </tr> <tr> <td>1</td> <td>0</td> <td>1500 RPM</td> </tr> <tr> <td>0</td> <td>1</td> <td>1800 RPM</td> </tr> <tr> <td>1</td> <td>1</td> <td>Low idle command</td> </tr> </tbody> </table>	NSSW1	NSSW2	Nominal speed	0	0	Use changeable calibration parameter	1	0	1500 RPM	0	1	1800 RPM	1	1	Low idle command
NSSW1	NSSW2	Nominal speed															
0	0	Use changeable calibration parameter															
1	0	1500 RPM															
0	1	1800 RPM															
1	1	Low idle command															
Nominal Speed 2 ^{1,2,3,4}	-																

Torque Limit 1	-	Choosing between 4 different torque limit curves (if available) TLSW1 TLSW2 Torque limit 0 0 Highest torque limit curve. (Curve 0)
Torque Limit 2	-	1 0 Low torque limit curve. (Curve 1) 0 1 User defined curve. (Curve 2) 1 1 User defined curve. (Curve 3)
Exhaust brake floor switch	-	Proprietary parameter.
Exhaust brake - Brake Assist Switch	-	Proprietary parameter.
Idle Command	-	Proprietary parameter.
White smoke limit request	-	Proprietary parameter. For more information about this signal contact local Scania representative.
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Enable Switch	596	Cruise Control Enable Switch
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch
Engine Test mode switch	966	Engine Diagnostic Test Mode Switch
Engine Shutdown Override Switch ^{1,2,3,4}	1237	Engine Shutdown Override Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
CAN version of DLN2	-	Proprietary parameter.
Economy Speed Low	-	Proprietary parameter.
Economy Speed High	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Nominal speed offset ^{1,2,3,4,5,6}	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for singlespeed from ver.1794335

ECU binary outputs (controller's inputs)											
Configuration Name	SPN	J1939 Name									
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch									
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch									
Low Engine Oil Pressure	-	Proprietary parameter.									
High Engine Coolant Temp	-	Proprietary parameter.									
PowerLost Due to HighTemp	-	Proprietary parameter.									
Engine stop limit exceed	-	Proprietary parameter.									
Generator Charge	-	Proprietary parameter.									
Test Engine Lamp	-	Proprietary parameter.									
Diagnostic Status	-	Proprietary parameter.									
New DTC	-	Proprietary parameter.									
Wait To Start Lamp	1081	Engine Wait to Start Lamp									
Protect Lamp	987	Protect Lamp									
Amber Warning Lamp	624	Amber Warning Lamp									
Red Stop Lamp	623	Red Stop Lamp									
Malfunction Lamp	1213	Malfunction Indicator Lamp									
Flash Protect Indicator Lamp	3041	Flash Protect Lamp									
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)									
Fast Flash Amber Warning Lamp											
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)									
Fast Flash Red Stop Lamp											
ECU binary inputs (controller's outputs - commands)											
Configuration Name	SPN	J1939 Name									
Droop enable ^{1,2,3,4}	-	Proprietary parameter. Enable or disable droop function. The droop value is changeable with calibration parameter or with TSC-proprietary. The recommended source value for this command is Logical 0.									
Torque enable	-	Proprietary parameter. The calculated output torque of the engine. The data is transmitted in indicated torque as a percent of reference engine torque. The engine percent torque value will not be less than zero and it includes the torque developed in the cylinders required to overcome friction. The recommended source value for this command is Logical 0.									
Engine Start ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Starter.									
Emergency Engine Stop	-	Proprietary parameter. Normally used for engine emergency stop. When used it will set an error- / information code. The recommended source value for this command is Logical 0.									
Engine Stop ^{1,2,3,4,5,6}	-	Proprietary parameter. Normally used for engine emergency stop. Engine Stop (without error code).									
Nominal Speed ^{1 1,2,3,4}	-	Choose nominal engine speed with these switches. <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">NSSW1</td> <td style="width: 33%;">NSSW2</td> <td style="width: 33%;">Nominal speed</td> </tr> <tr> <td>0</td> <td>0</td> <td>Use changeable calibration parameter</td> </tr> <tr> <td>1</td> <td>0</td> <td>1500 RPM</td> </tr> </table>	NSSW1	NSSW2	Nominal speed	0	0	Use changeable calibration parameter	1	0	1500 RPM
NSSW1	NSSW2	Nominal speed									
0	0	Use changeable calibration parameter									
1	0	1500 RPM									

		0	1	1800 RPM
Nominal Speed 2 ^{1,2,3,4}	-	1	1	Low idle command
Torque Limit 1	-	Choosing between 4 different torque limit curves (if available)		
		TLSW1	TLSW2	Torque limit
		0	0	Highest torque limit curve. (Curve 0)
Torque Limit 2	-	1	0	Low torque limit curve. (Curve 1)
		0	1	User defined curve. (Curve 2)
		1	1	User defined curve. (Curve 3)
Exhaust brake floor switch	-	Proprietary parameter.		
Exhaust brake - Brake Assist Switch	-	Proprietary parameter.		
Idle Command	-	Proprietary parameter.		
White smoke limit request	-	Proprietary parameter. For more information about this signal contact local Scania representative.		
TSC1 Droop Enable	-	Proprietary parameter.		
Droop Inc	-	Proprietary parameter.		
Droop Dec	-	Proprietary parameter.		
Parking Brake Switch	70	Parking Brake Switch		
Cruise Control Enable Switch	596	Cruise Control Enable Switch		
Brake Switch	597	Brake Switch		
Clutch Switch	598	Clutch Switch		
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch		
Cruise Control Resume Switch	601	Cruise Control Resume Switch		
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch		
Engine Test mode switch	966	Engine Diagnostic Test Mode Switch		
Engine Shutdown Override Switch ^{1,2,3,4}	1237	Engine Shutdown Override Switch		
ECU analog outputs (controller's inputs)				
Configuration Name	SPN	J1939 Name		
Accelerator Pedal Position	91	Accelerator Pedal Position 1		
Percent Load	92	Engine Percent Load At Current Speed		
Demand Torque	512	Driver's Demand Engine - Percent Torque		
Actual Torque	513	Actual Engine - Percent Torque		
Engine speed	190	Engine Speed		
Nominal Friction Torque	514	Nominal Friction - Percent Torque		
Coolant Temp	110	Engine Coolant Temperature		
Engine Oil Temp	175	Engine Oil Temperature 1		
Engine Oil Pressure	100	Engine Oil Pressure		
Coolant Level	111	Engine Coolant Level 1		
Fuel Rate	183	Engine Fuel Rate		
Boost Pressure	102	Engine Intake Manifold #1 Pressure		
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature		
Battery Potential (Voltage)	158	Keyswitch Battery Potential		
CAN version of DLN2	-	Proprietary parameter.		
Single Speed Droop Value	-	Proprietary parameter.		

ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Nominal speed offset 1,2,3,4,5,6	-	Proprietary parameter.
Requested Speed	-	Proprietary parameter.
Requested Droop	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Nominal speed offset settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Recommended wiring

Function	ECU B1 connector	8pin diagnostic connector	Controller
CAN H	9	6	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	10	7	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,6	1,3,4	N/A
Battery - (negative)	2,7	2,5	N/A
Key Switch	3	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **S6 Singlespeed on page 306**.

3.20.3 S6 Allspeed

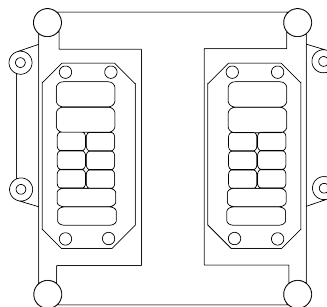


Image 3.60 S6

Controllers that support the S6

Refer to Comparison table (page 23)

Available parameters for allspeed

ECU binary outputs (controller's inputs)															
Configuration Name	SPN	J1939 Name													
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch													
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch													
Low Engine Oil Pressure	-	Proprietary parameter.													
High Engine Coolant Temp	-	Proprietary parameter.													
PowerLost Due to HighTemp	-	Proprietary parameter.													
Engine stop limit exceed	-	Proprietary parameter.													
Generator Charge	-	Proprietary parameter.													
Test Engine Lamp	-	Proprietary parameter.													
Protect Lamp	987	Protect Lamp													
Amber Warning Lamp	624	Amber Warning Lamp													
Red Stop Lamp	623	Red Stop Lamp													
Malfunction Lamp	1213	Malfunction Indicator Lamp													
Flash Protect Indicator Lamp	3041	Flash Protect Lamp													
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)													
Fast Flash Amber Warning Lamp															
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)													
Fast Flash Red Stop Lamp															
ECU binary inputs (controller's outputs - commands)															
Configuration Name	SPN	J1939 Name													
AP Low Idle Switch ³	-	Proprietary parameter.													
AP kickdown switch	-	Proprietary parameter.													
Engine Start ^{3,6}	-	Proprietary parameter.													
Emergency Engine Stop	-	Proprietary parameter.													
Engine Stop ^{3,6}	-	Proprietary parameter.													
Engine Control Allowed	-	Proprietary parameter.													
Retarder Speed Control Off	-	Proprietary parameter.													
Retarder Speed Control Set	-	Proprietary parameter.													
CC-Off	-	Proprietary parameter.													
Increased Speed Sw1 ³		Choose between 4 different PTO (power take off) modes.													
		<table border="0"> <tr> <td>ISSW1</td> <td>ISSW2</td> <td>PTO-mode</td> </tr> <tr> <td>0</td> <td>0</td> <td>Normal hand throttle</td> </tr> <tr> <td>1</td> <td>0</td> <td>Limited hand throttle</td> </tr> <tr> <td>0</td> <td>1</td> <td>Temporary changed low idle</td> </tr> <tr> <td>1</td> <td>1</td> <td>Locked engine speed</td> </tr> </table>	ISSW1	ISSW2	PTO-mode	0	0	Normal hand throttle	1	0	Limited hand throttle	0	1	Temporary changed low idle	1
ISSW1	ISSW2	PTO-mode													
0	0	Normal hand throttle													
1	0	Limited hand throttle													
0	1	Temporary changed low idle													
1	1	Locked engine speed													
Increased Speed Sw2 ³		Choosing between 4 different torque limit curves (if available)													
		<table border="0"> <tr> <td>TLSW1</td> <td>TLSW2</td> <td>Torque limit</td> </tr> <tr> <td>0</td> <td>0</td> <td>Highest torque limit curve. (Curve 0)</td> </tr> <tr> <td>1</td> <td>0</td> <td>Low torque limit curve. (Curve 1)</td> </tr> <tr> <td>0</td> <td>1</td> <td>User defined curve. (Curve 2)</td> </tr> <tr> <td>1</td> <td>1</td> <td>User defined curve. (Curve 3)</td> </tr> </table>	TLSW1	TLSW2	Torque limit	0	0	Highest torque limit curve. (Curve 0)	1	0	Low torque limit curve. (Curve 1)	0	1	User defined curve. (Curve 2)	1
TLSW1	TLSW2	Torque limit													
0	0	Highest torque limit curve. (Curve 0)													
1	0	Low torque limit curve. (Curve 1)													
0	1	User defined curve. (Curve 2)													
1	1	User defined curve. (Curve 3)													
Torque Limit 1	-														
Torque Limit 2															

Exhaust brake floor switch	-	Proprietary parameter.
Exhaust brake - Brake Assist Switch	-	Proprietary parameter.
Idle Command	-	Proprietary parameter.
White smoke limit request	-	Proprietary parameter.
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Enable Switch	595	Cruise Control Active
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch
Engine Test mode switch	966	Engine Diagnostic Test Mode Switch
Engine Shutdown Override Switch 3	1237	Engine Shutdown Override Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
CAN version of DLN2	-	Proprietary parameter.
Economy Speed Low	-	Proprietary parameter.
Economy Speed High	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit
Accelerator Pedal Position ^{3,6}	-	Proprietary parameter. Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the reference speed (with or without droop) in relation to nominal speed. The offset range is changeable with calibration parameters. (normally ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm).

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for allspeed from ver.1794335

ECU binary outputs (controller's inputs)											
Configuration Name	SPN	J1939 Name									
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch									
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch									
Low Engine Oil Pressure	-	Proprietary parameter.									
High Engine Coolant Temp	-	Proprietary parameter.									
PowerLost Due to HighTemp	-	Proprietary parameter.									
Engine stop limit exceed	-	Proprietary parameter.									
Generator Charge	-	Proprietary parameter.									
Test Engine Lamp	-	Proprietary parameter.									
Diagnostic Status	-	Proprietary parameter.									
New DTC	-	Proprietary parameter.									
Protect Lamp	987	Protect Lamp									
Amber Warning Lamp	624	Amber Warning Lamp									
Red Stop Lamp	623	Red Stop Lamp									
Malfunction Lamp	1213	Malfunction Indicator Lamp									
Flash Protect Indicator Lamp	3041	Flash Protect Lamp									
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)									
Fast Flash Amber Warning Lamp											
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)									
Fast Flash Red Stop Lamp											
ECU binary inputs (controller's outputs - commands)											
Configuration Name	SPN	J1939 Name									
AP Low Idle Switch	-	Proprietary parameter.									
AP kickdown switch	-	Proprietary parameter.									
Engine Start ^{3,6}	-	Proprietary parameter.									
Emergency Engine Stop	-	Proprietary parameter.									
Engine Stop ^{3,6}	-	Proprietary parameter.									
Engine Control Allowed	-	Proprietary parameter.									
Retarder Speed Control Off	-	Proprietary parameter.									
Retarder Speed Control Set	-	Proprietary parameter.									
CC-Off	-	Proprietary parameter.									
Increased Speed Sw1 ³	-	Choose between 4 different PTO (power take off) modes. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ISSW1</th> <th>ISSW2</th> <th>PTO-mode</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Normal hand throttle</td> </tr> <tr> <td>1</td> <td>0</td> <td>Limited hand throttle</td> </tr> </tbody> </table>	ISSW1	ISSW2	PTO-mode	0	0	Normal hand throttle	1	0	Limited hand throttle
ISSW1	ISSW2	PTO-mode									
0	0	Normal hand throttle									
1	0	Limited hand throttle									
Increased Speed Sw2 ³	-	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>0</td> <td>1</td> <td>Temporary changed low idle</td> </tr> <tr> <td>1</td> <td>1</td> <td>Locked engine speed</td> </tr> </tbody> </table>	0	1	Temporary changed low idle	1	1	Locked engine speed			
0	1	Temporary changed low idle									
1	1	Locked engine speed									
Torque Limit 1	-	Choosing between 4 different torque limit curves (if available) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TLSW1</th> <th>TLSW2</th> <th>Torque limit</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Highest torque limit curve. (Curve 0)</td> </tr> <tr> <td>1</td> <td>0</td> <td>Low torque limit curve. (Curve 1)</td> </tr> </tbody> </table>	TLSW1	TLSW2	Torque limit	0	0	Highest torque limit curve. (Curve 0)	1	0	Low torque limit curve. (Curve 1)
TLSW1	TLSW2	Torque limit									
0	0	Highest torque limit curve. (Curve 0)									
1	0	Low torque limit curve. (Curve 1)									
Torque Limit 2	-	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>0</td> <td>1</td> <td>User defined curve. (Curve 2)</td> </tr> <tr> <td>1</td> <td>1</td> <td>User defined curve. (Curve 3)</td> </tr> </tbody> </table>	0	1	User defined curve. (Curve 2)	1	1	User defined curve. (Curve 3)			
0	1	User defined curve. (Curve 2)									
1	1	User defined curve. (Curve 3)									

Exhaust brake floor switch	-	Proprietary parameter.
Exhaust brake - Brake Assist Switch	-	Proprietary parameter.
Idle Command	-	Proprietary parameter.
White smoke limit request	-	Proprietary parameter.
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Enable Switch	595	Cruise Control Active
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch
Engine Test mode switch	966	Engine Diagnostic Test Mode Switch
Engine Shutdown Override Switch ³	1237	Engine Shutdown Override Switch

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential (Voltage)	158	Keyswitch Battery Potential
CAN version of DLN2	-	Proprietary parameter.
Single Speed Droop Value	-	Proprietary parameter.

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Accelerator Pedal Position ^{3,6}	-	Proprietary parameter. Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the reference speed (with or without droop) in relation to nominal speed. The offset range is changeable with calibration parameters. (normally ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
Requested Speed	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Accelerator Pedal Position settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Accelerator Pedal Position settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Recommended wiring

Function	ECU B1 connector	8pin diagnostic connector	Controller
CAN H	9	6	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	10	7	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,6	1,3,4	N/A
Battery - (negative)	2,7	2,5	N/A
Key Switch	3	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **S6 Allspeed on page 307**.

3.20.4 S8 Singlespeed

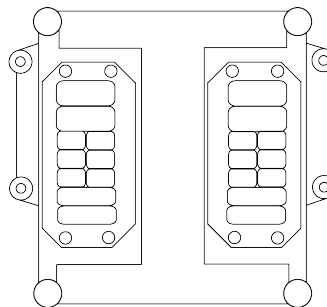


Image 3.61 S8

Controllers that support the S8

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)									
Configuration Name	SPN	J1939 Name							
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch							
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch							
Acceleration Rate Limit	2979	Vehicle Acceleration Rate Limit Status							
Low Engine Oil Level	-	Proprietary parameter.							
High Engine Oil Level	-	Proprietary parameter.							
Low Engine Oil Pressure	-	Proprietary parameter.							
High Engine Coolant Temp	-	Proprietary parameter.							
PowerLost Due to HighTemp	-	Proprietary parameter.							
Engine stop limit exceed	-	Proprietary parameter.							
Low Urea Level	-	Proprietary parameter.							
Generator Charge	-	Proprietary parameter.							
Test Engine Lamp	-	Proprietary parameter.							
Diagnostic Status	-	Proprietary parameter.							
New DTC	-	Proprietary parameter.							
Incorrect Driver Init Engine Sd	-	Proprietary parameter.							
GasLeakage	-	Proprietary parameter.							
Engine Air Filter Clogged	-	Proprietary parameter.							
Afterrun Status	-	Proprietary parameter.							
Wait To Start Lamp	1081	Engine Wait to Start Lamp							
Protect Lamp	987	Protect Lamp							
Amber Warning Lamp	624	Amber Warning Lamp							
Red Stop Lamp	623	Red Stop Lamp							
Malfunction Lamp	1213	Malfunction Indicator Lamp							
Flash Protect Indicator Lamp	3041	Flash Protect Lamp							
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)							
Fast Flash Amber Warning Lamp									
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)							
Fast Flash Red Stop Lamp									
ECU binary inputs (controller's outputs - commands)									
Configuration Name	SPN	J1939 Name							
Droop enable ^{1,2,3,4}	-	Proprietary parameter.							
Torque enable	-	Proprietary parameter.							
Engine Start ^{1,2,3,4,5,6}	-	Proprietary parameter.							
Emergency Engine Stop	-	Proprietary parameter.							
Engine Stop ^{1,2,3,4,5,6}	-	Proprietary parameter.							
Nominal speed switch 1 ^{1,2,3,4}	-	Choose nominal engine speed with these switches.							
		<table border="0"> <tr> <td>NSSW1</td> <td>NSSW2</td> <td>Nominal speed</td> </tr> <tr> <td>0</td> <td>0</td> <td>Use changeable calibration parameter</td> </tr> <tr> <td>1</td> <td>0</td> <td>1500 RPM</td> </tr> </table>	NSSW1	NSSW2	Nominal speed	0	0	Use changeable calibration parameter	1
NSSW1	NSSW2	Nominal speed							
0	0	Use changeable calibration parameter							
1	0	1500 RPM							
Nominal speed switch 2 ^{1,2,3,4}	-	<table border="0"> <tr> <td>0</td> <td>1</td> <td>1800 RPM</td> </tr> <tr> <td>1</td> <td>1</td> <td>Low idle command</td> </tr> </table>	0	1	1800 RPM	1	1	Low idle command	
		0	1	1800 RPM					
1	1	Low idle command							

Torque Limit 1	-	Choosing between 4 different torque limit curves (if available) TLSW1 TLSW2 Torque limit 0 0 Highest torque limit curve. (Curve 0)
Torque Limit 2	-	1 0 Low torque limit curve. (Curve 1) 0 1 User defined curve. (Curve 2) 1 1 User defined curve. (Curve 3)
Exhaust brake floor switch	-	Proprietary parameter.
Exhaust brake - Brake Assist Switch	-	Proprietary parameter.
Idle Command	-	Proprietary parameter.
White smoke limit request	-	Proprietary parameter.
Retarder Selection	-	Proprietary parameter.
Shutdown Override Switch	1237	Engine Shutdown Override Switch
DPF Manual Inhibit	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential	158	Keyswitch Battery Potential
Single Speed Droop Value	-	Proprietary parameter.
Urea Level	-	Proprietary parameter.
Malfunction Indicator	-	Proprietary parameter.
Oil Level Measuring Status	-	Proprietary parameter.
Starter Motor Normal Temp	-	Proprietary parameter.
Urea level inducement state	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit

APP - Nominal Speed Offset 1,2,3,4,5,6	-	Proprietary parameter. Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the reference speed (with or without droop) in relation to nominal speed. The offset range is changeable with calibration parameters. (normally ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
DPF Manual Activation	-	Proprietary parameter. 0 – No request 1 – Invalidated manual regeneration request 2 - Manual regeneration request 3 – 13 – Reserved 14 – Error 15 – Don't care

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

APP - Nominal Speed Offset settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
APP - Nominal Speed Offset settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	N/A	6	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	N/A	7	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	1,3,4	N/A
Battery - (negative)	N/A	2,5	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **S8 Singlespeed on page 308**.

3.20.5 S8 Allspeed

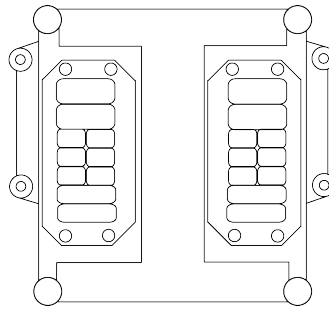


Image 3.62 S8

Controllers that support the S8

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
APP Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
APP Kickdown Switch	559	Accelerator Pedal Kickdown Switch
Acceleration Rate Limit	2979	Vehicle Acceleration Rate Limit Status
Low Engine Oil Level	-	Proprietary parameter.
High Engine Oil Level	-	Proprietary parameter.
Low Engine Oil Pressure	-	Proprietary parameter.
High Engine Coolant Temp	-	Proprietary parameter.
PowerLost Due to HighTemp	-	Proprietary parameter.
Engine stop limit exceed	-	Proprietary parameter.
Low Urea Level	-	Proprietary parameter.
Generator Charge	-	Proprietary parameter.
Test Engine Lamp	-	Proprietary parameter.
Diagnostic Status	-	Proprietary parameter.
New DTC	-	Proprietary parameter.
Incorrect Driver Init Engine Sd	-	Proprietary parameter.
GasLeakage	-	Proprietary parameter.
Engine Air Filter Clogged	-	Proprietary parameter.
Afterrun Status	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)

Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
AP Low Idle Switch Released ³	-	Proprietary parameter.
Engine Start ^{3,6}	-	Proprietary parameter.
Emergency Engine Stop	-	Proprietary parameter.
Engine Stop ^{3,6}	-	Proprietary parameter.
Lamp Test	-	Proprietary parameter.
Idle Command	-	Proprietary parameter.
White smoke limit request	-	Proprietary parameter.
Shutdown Override Switch	1237	Engine Shutdown Override Switch
DPF Manual Inhibit	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Demand Torque	512	Driver's Demand Engine - Percent Torque
Actual Torque	513	Actual Engine - Percent Torque
Engine speed	190	Engine Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Engine Oil Temp	175	Engine Oil Temperature 1
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Level	111	Engine Coolant Level 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Battery Potential	158	Keyswitch Battery Potential
Single Speed Droop Value	-	Proprietary parameter.
Urea Level	-	Proprietary parameter.
Malfunction Indicator	-	Proprietary parameter.
Oil Level Measuring Status	-	Proprietary parameter.
Starter Motor Normal Temp	-	Proprietary parameter.
Urea level inducement state	-	Proprietary parameter.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit

Accelerator Pedal Position ^{3,6}	-	Proprietary parameter. Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the reference speed (with or without droop) in relation to nominal speed. The offset range is changeable with calibration parameters. (normally ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
DPF Manual Activation	-	Proprietary parameter. 0 – No request 1 – Invalidated manual regeneration request 2 - Manual regeneration request 3 – 13 – Reserved 14 – Error 15 – Don't care

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

APP - Nominal Speed Offset settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
APP - Nominal Speed Offset settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	N/A	6	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	N/A	7	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	1,3,4	N/A
Battery - (negative)	N/A	2,5	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.

Available list of texts of fault codes see **S8 Allspeed on page 309**.

3.21 SISU engines support

ECU Type	Engine type
EEM2	xxDxx
EEM3	xxCxx

3.21.1 Engine type explanation

Engine Code	Meaning
74xxx	Cylinder volume in 0.1 liters
xxCxx	C - Common rail D - Bosch VP 44/30 solenoid controlled injection pumps
xxxTx	Turbocharged
xxxxA	Air-to-air intercooler

3.21.2 EEM2 or EEM3

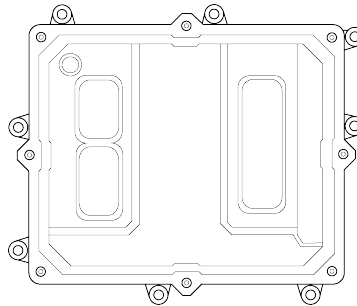


Image 3.63 EEM3

Controllers that support the EEM2 or EEM3

Refer to Comparison table (page 23)

Available parameters for "Gen-set"

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp

ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Start Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Engine Oil Temp	175	Engine Oil Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
Droop percentage request	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for "Propulsion"

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Start Request ^{3,6}	-	Proprietary parameter.
Stop Request ^{3,6}	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed

Actual Torque	513	Actual Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{3,6}	898	Engine Requested Speed/Speed Limit
Droop percentage request	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring for EEM2

Function	ECU 31pin connector	Controller
CAN H	30	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	31	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,3,8,13	N/A
Battery - (negative)	2,4,7,9	N/A
Key Switch	5	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

Recommended wiring for EEM3

Function	ECU A2 89pin connector	Controller
CAN H	53	CAN1 (extension modules/J1939) – CAN H
CAN COM	51	CAN1 (extension modules/J1939) – CAN COM
CAN L	52	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,7,12,13	N/A
Battery - (negative)	3,9,14,15	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EEM2 or EEM3 on page 310**.

3.22 Steyr engines support

ECU Type	Engine type
M1	Marine engines

3.22.1 M1

Controllers that support the M1

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Warning Light	-	Proprietary parameter.
Preheating Control Light	-	Proprietary parameter.
Engine Oil Pressure Light	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Accelerator Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Temp	110	Engine Coolant Temperature
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Keyswitch Battery Potential	158	Keyswitch Battery Potential
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Recommended wiring

No documentation available so far!

3.23 VM engines support

ECU Type	Engine type
EDC	Industrial and marine

3.23.1 EDC

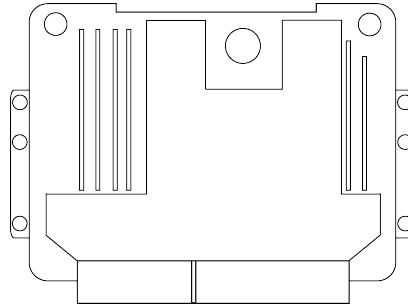


Image 3.64 EDC

Controllers that support the EDC

Refer to Comparison table (page 23)

Available parameters for "industrial"

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Water in Fuel	97	Water In Fuel Indicator 1
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
PTO Enable Switch	980	Engine PTO Governor Enable Switch
PTO Coast/Decelerate Switch	983	Engine PTO Governor Coast/Decelerate Switch
PTO Resume Switch	982	Engine PTO Governor Resume Switch
PTO Accelerate Switch	981	Engine PTO Governor Accelerate Switch
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter.
Parking Brake Switch	70	Parking Brake Switch

Cruise Control Enable Switch	596	Cruise Control Enable Switch
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Barometric Pressure	108	Barometric Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
PartTrapSootLoad	3719	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent
PartTrapAshLoad	3720	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent
Estimated Percent Fan Speed	975	Engine Fan 1 Estimated Percent Speed
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
Exhaust Gas Temperature	173	Engine Exhaust Temperature

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
PTO State	976	PTO Governor State

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Available parameters for "marine"

ECU binary outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp

Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
PTO Enable Switch	980	Engine PTO Governor Enable Switch
PTO Coast/Decelerate Switch	983	Engine PTO Governor Coast/Decelerate Switch
PTO Resume Switch	982	Engine PTO Governor Resume Switch
PTO Accelerate Switch	981	Engine PTO Governor Accelerate Switch
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request	-	Proprietary parameter.
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Enable Switch	596	Cruise Control Enable Switch
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Cruise Control Coast Switch	600	Cruise Control Coast (Decelerate) Switch
Cruise Control Resume Switch	601	Cruise Control Resume Switch
Cruise Control Accelerate Switch	602	Cruise Control Accelerate Switch
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Barometric Pressure	108	Barometric Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Estimated Percent Fan Speed	975	Engine Fan 1 Estimated Percent Speed
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Rate	183	Engine Fuel Rate
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Pressure	100	Engine Oil Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit
PTO State	976	PTO Governor State

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	Controller
CAN H	62	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	83	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,5	N/A
Battery - (negative)	2,4,6	N/A
Key Switch	28	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EDC on page 311**.

3.23.2 M1

Image 3.65 M1

Controllers that support the M1

	Selection in PC software
IntelliSys ^{NT} or IntelliGen ^{NT}	Steyr M1
IntelliDrive DCU or IntelliDrive Mobile	
IntelliDrive Lite	not supported
IntelliLite ^{NT} or IntelliCompact ^{NT}	not supported
IntelliNano ^{NT}	not supported
IntelliDrive Nano	not supported

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Warning Light	-	Proprietary parameter.
Preheating Control Light	-	Proprietary parameter.
Engine Oil Pressure Light	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Accelerator Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Engine Oil Pressure	100	Engine Oil Pressure
Coolant Temp	110	Engine Coolant Temperature
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Keyswitch Battery Potential	158	Keyswitch Battery Potential
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Recommended wiring

No documentation available so far!

3.24 Volvo engines support

ECU Type	Engine type
EDC3 Singlespeed (EMS1) EDC3 Allspeed (EMS1)	D12
EMS2	D9, D16, D724
EDC4 (EMR2)	D5, D7

3.24.1 Engine type explanation

Engine Code	Meaning
Txxxxxxx	Turbocharged
xAxxxxxx	Air to air intercooled
xxDxxxxx	Diesel fuel
xxx16xxx	Displacement indication
xxxxx3xxx	Generation
xxxxx0xx	Version
xxxxxxGx	Generator drive
xxxxxxxE	Emission controlled

Note: Standalone connection (hardwired speed potentiometer). On D12 industrial gen-set engines it's possible to connect standalone connection. If there is a ComAp panel connected via CAN bus during power up the engine will detect this and will be controlled via CAN bus. But if the ComAp panel is dead during power up the engine and if there is connected a potentiometer on standalone connector the engine will detect this and will run in stand alone mode.

3.24.2 Volvo Singlespeed EDC3 / EMS1 / EMS2

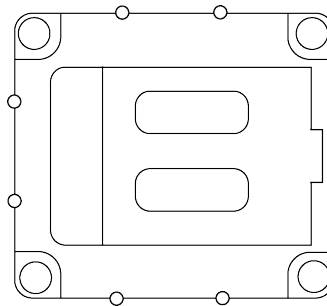


Image 3.66 EMS2

Controllers that support the EMS2

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Preheat Indication	-	Proprietary parameter. The status of the preheat relay.
Running Indication	-	Proprietary parameter. The running status of the engine.
Overspeed Alarm	-	Proprietary parameter. Status of the (virtual) overspeed alarm switch.
Oil Pressure Alarm	-	Proprietary parameter. The status of the (virtual) oil pressure alarm switch.
Oil Temperature Alarm	-	Proprietary parameter. The status of the (virtual) oil temperature alarm switch.
Coolant Temperature	-	Proprietary parameter. The status of the (virtual) coolant temperature alarm switch.
Coolant Level Alarm	-	Proprietary parameter. The status of the coolant level alarm switch.
Charge Alarm	-	Proprietary parameter. The status of the (virtual) charge alarm switch.
Buzzer	-	Proprietary parameter. Controls the buzzer.
EngineOil Filter Diff.Press	-	Proprietary parameter. The status of the engine oil filters differential pressure alarm.
Fuel Pressure Alarm	-	Proprietary parameter. The status of the Fuel pressure alarm.
Override Indication	-	Proprietary parameter. The status of the engine protection override.
General Lamptest	-	Proprietary parameter. Controls the general lamptest.
Buzzer/Lamptest	-	Proprietary parameter. Controls the buzzertest / lamptest.
EMS DiagnoseYellowLamp	-	Proprietary parameter. The status of the yellow diagnose lamp of the EMS (Mirror of PID 44, J1587).
EMS DiagnoseRedLamp	-	Proprietary parameter. The status of the red diagnose lamp of the EMS (Mirror of PID 44, J1587)
Primary Bat.Status	-	Proprietary parameter. Status of the primary battery circuit.
Secondary Bat.Status	-	Proprietary parameter. Status of the secondary battery circuit.
15 Fuse Status	-	Proprietary parameter. The of the 15 supply fuse.
30 Fuse Status	-	Proprietary parameter. The of the 30 supply fuse.
EMS Fuse Status	-	Proprietary parameter. The of the EMS supply fuse.
Extra Fuse Status	-	Proprietary parameter. The of the extra supply fuse.
Water in Fuel	97	Water In Fuel Indicator 1
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp

Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Approaching Shutdown	1109	Engine Protection System Approaching Shutdown

ECU binary inputs (controller's outputs - commands)

Configuration Name	SPN	J1939 Name
Start Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Starter.
Stop Request ^{1,2,3,4,5,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
Idle Speed Select ^{1,2,3,4}	-	Proprietary parameter. The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommended source value for this command is Idle/Nominal.
Frequency Select ^{1,2,3,4,5,6}	-	Proprietary parameter.
Preheat Request ^{1,2,3,4}	-	Proprietary parameter. Status of the Preheat request. The recommended source value for this command is Logical 0.
Fuel disable request	-	Proprietary parameter.

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temp	175	Engine Oil Temperature 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature

Battery Potential	158	Keyswitch Battery Potential
Idle engine speed	-	Proprietary parameter.
Maximum engine speed	-	Proprietary parameter.
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity
EngOil Filter Diff.Press	99	Engine Oil Filter Differential Pressure
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Requested speed	898	Engine Requested Speed/Speed Limit
Accelerator Pedal Position 1,2,3,4,5,6	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	N/A	1	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	N/A	2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	4	N/A
Battery - (negative)	N/A	3	N/A
Key Switch	N/A	5	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM
Stop request	N/A	6	Any binary output configured as inverted ECUCommError

Note: If the engine doesn't crank, check the state of engine mounted auxiliary stop device.

IMPORTANT: It is important that there is no continuous active stop signal on pin 6. The active stop signal depends on the configuration and represents either +24VDC or GND is present on the pin 6. If there is a constant active stop signal a number of problems will occur:

- It is impossible to change parameters.
- It is impossible to reprogram the control unit.
- The ECU could be damaged when power is removed.

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EDC3 (EMS1) or (EMS2) singlespeed only on page 312**.

Frequency change procedure

Customers, who are using ComAp control unit, must transmit certain messages to the D9 / D16 in the same way as Volvo Penta's CIU in order to change from 1500 to 1800 RPM (or opposite).

Procedure if not energized:

1. Power up the ECU.
2. Change the Frequency select setpoint of transmitted value.
3. Send a stop request – press the Stop button.

The whole procedure (step 1 to 3) must not exceed 10 seconds.

Procedure with power on:

1. Send a stop request – press the Stop button.
2. Change the Frequency select setpoint of transmitted value.
3. Send a stop request – press the Stop button.

The whole procedure (step 1 to 3) must not exceed 10 seconds.

3.24.3 Volvo Allspeed EDC3 / EMS1 / EMS2

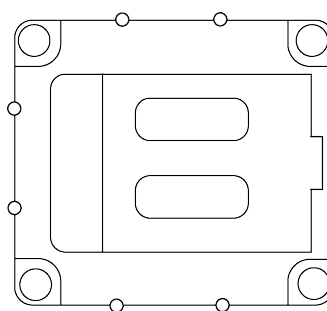


Image 3.67 EMS2

Controllers that support the EMS2

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Water in Fuel	97	Water In Fuel Indicator 1
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
Approaching Shutdown	1109	Engine Protection System Approaching Shutdown
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Running Indication	-	Proprietary parameter. The running status of the engine.
Oil Pressure Alarm	-	Proprietary parameter.
Oil Temperature Alarm	-	Proprietary parameter. The status of the (virtual) oil temperature alarm switch.
Oil Level Alarm	-	Proprietary parameter. The status of the oil level alarm switch.
Charge Alarm	-	Proprietary parameter. The status of the (virtual) charge alarm switch.
Coolant Temperature	-	Proprietary parameter.
Coolant Level Alarm	-	Proprietary parameter. The status of the coolant level alarm switch.
Fuel Pressure Alarm	-	Proprietary parameter. The status of the Fuel pressure alarm.
Water in Fuel Alarm	-	Proprietary parameter. The status of the water in fuel alarm switch.
Sea Water Pressure	-	Proprietary parameter. Status of the (virtual) sea water pressure alarm switch.
Fresh Water Pressure	-	Proprietary parameter. Status of the (virtual) fresh water pressure alarm switch.
Piston Cooling Pressure	-	Proprietary parameter. Status of the piston cooling pressure alarm switch.
Boost Temperature	-	Proprietary parameter. Status of the (virtual) boost temperature alarm switch.
Exhaust Temperature	-	Proprietary parameter.
Overspeed Alarm	-	Proprietary parameter. Status of the (virtual) overspeed alarm switch.
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Stop Request ^{3,6}	-	Proprietary parameter. The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.

Current Gear	523	Transmission Current Gear
Crank Request ^{3,6}	-	Proprietary parameter. The command used for engine running. The recommended source value for this command is Starter.

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Oil Temp	175	Engine Oil Temperature 1
Fuel Rate	183	Engine Fuel Rate
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Battery Potential	158	Keyswitch Battery Potential
Idle engine speed	-	Proprietary parameter.
Maximum engine speed	-	Proprietary parameter.
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity
EngOil Filter Diff.Press	99	Engine Oil Filter Differential Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Throttle Position ^{3,6}	-	Proprietary parameter.
Requested speed	898	Engine Requested Speed/Speed Limit

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Accelerator Pedal Position settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	Speed request	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Accelerator Pedal Position settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	N/A	1	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	N/A	2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	4	N/A
Battery - (negative)	N/A	3	N/A
Key Switch	N/A	5	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM
Stop request	N/A	6	Any binary output configured as inverted ECUCommError

Note: If the engine doesn't crank, check the state of engine mounted auxiliary stop device.

IMPORTANT: It is important that there is no continuous active stop signal on pin 6. The active stop signal depends on the configuration and represents either +24VDC or GND is present on the pin 6. If there is a constant active stop signal a number of problems will occur:

- It is impossible to change parameters.
- It is impossible to reprogram the control unit.
- The ECU could be damaged when power is removed.

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **EDC3 (EMS1) or (EMS2) allspeed only on page 313**.

3.24.4 EDC4 (EMR2)

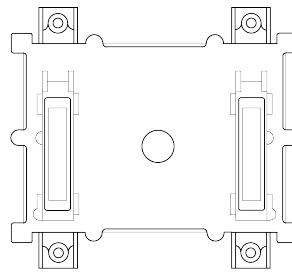


Image 3.68 EMR2

For more information see **EMR2** on page 76.

3.24.5 EDC7 (with KWP2000)

Controllers that support the EDC7

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
AP low idle switch	558	Accelerator Pedal 1 Low Idle Switch
AP kick down switch	559	Accelerator Pedal Kickdown Switch
Parking Brake Switch	70	Parking Brake Switch
Cruise Control Active	595	Cruise Control Active
Cruise Control Enable Switch	596	Cruise Control Enable Switch
Brake Switch	597	Brake Switch
Clutch Switch	598	Clutch Switch
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Running Indication	-	Proprietary parameter.
Diagnostic state	-	Proprietary parameter.
Oil Pressure Alarm	-	Proprietary parameter.
Oil Temperature Alarm	-	Proprietary parameter.
Oil Level Alarm	-	Proprietary parameter.
Charge Alarm	-	Proprietary parameter.
Coolant Temperature	-	Proprietary parameter.

Coolant Level Alarm	-	Proprietary parameter.
Water in Fuel Alarm	-	Proprietary parameter.
Shift In Process	574	Transmission Shift In Process
Converter Lockup	573	Transmission Torque Converter Lockup Engaged
Momentary engine overspeed enable	161	Transmission Input Shaft Speed
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Crank Request	-	Proprietary parameter.
Stop Request	-	Proprietary parameter.
Current Gear	523	Transmission Current Gear
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Torque Mode	899	Engine Torque Mode
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Nominal Friction Torque	514	Nominal Friction - Percent Torque
Cruise control set speed	86	Cruise Control Set Speed
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
Barometric Pressure	108	Barometric Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Fuel Rate	183	Engine Fuel Rate
Battery Potential	158	Keyswitch Battery Potential
Common Rail Pressure	-	Proprietary parameter.
Out Shaft Speed	191	Transmission Output Shaft Speed
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name
Throttle Position	-	Proprietary parameter.
Requested speed	898	Engine Requested Speed/Speed Limit
Torque Limit	518	Engine Requested Torque/Torque Limit

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A

Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes see **EDC7 (with KWP2000) on page 314**.

3.25 Waukesha engines support

ECU Type	Engine type
ESM	VHP & APG engine family

3.25.1 ESM

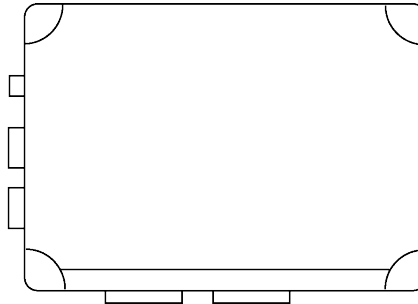


Image 3.69 ESM

Controllers that support the ESM

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Main Fuel Valve	-	Proprietary parameter. Status of the main fuel valve.
Pre-chamber Fuel Valve	-	Proprietary parameter. Status of the pre-chamber fuel valve (if applicable).
Engine Running	-	Proprietary parameter. Whether the engine is running or not running.
Starter Motor	-	Proprietary parameter. Whether the starter motor is engaged or not.
Pre/Post Lube	-	Proprietary parameter. Whether the pre/post lube pump is running.
Yellow Warning Lamp	-	Proprietary parameter. This lamp is used to relay trouble code information that is reporting a problem with the engine system but the engine need not be immediately stopped.
Red Shutdown Lamp	-	Proprietary parameter. This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Engine Knocking	-	Proprietary parameter. Whether the engine is in uncontrollable knock.
Start Engine Signal	-	Proprietary parameter. Whether the start engine signal is active.
Normal Shutdown	-	Proprietary parameter. Whether the normal shutdown signal is active.
Emergency Shutdown	-	Proprietary parameter.

		Whether the emergency shutdown signal is active.
Remote rpm Select	-	Proprietary parameter. Whether the remote rpm analog input is active or inactive.
Run High Idle	-	Proprietary parameter. Whether the run high idle digital input is active.
Alter Dynamics/Synchr Mode	-	Proprietary parameter. Whether the alternate governor dynamics is active.
Lockout Button/Ignit Module	-	Proprietary parameter. Whether either the lockout button has been depressed or the IPM-D has failed, or is not powered.
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine Speed	-	Proprietary parameter. Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Oil Pressure	-	Proprietary parameter. Gage pressure of oil in engine lubrication system as provided by oil pump.
Intake Manifold Press	-	Proprietary parameter. Gage pressure of air measured downstream on the compressor discharge side of the turbocharger. If there is one boost pressure to report and this range and resolution is adequate, this parameter should be used.
Throttle Position	-	Proprietary parameter. The ratio of actual position of the analog engine speed/torque request input device to the maximum position of the input device. This parameter is intended for the primary accelerator control in an application.
Coolant Temp	-	Proprietary parameter. Temperature of liquid found in engine cooling system.
Battery Voltage	-	Proprietary parameter. Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Intake Manifold Temp	-	Proprietary parameter. Temperature of pre-combustion air found in intake manifold of engine air supply system.
Engine Oil Temp	-	Proprietary parameter. Temperature of the engine lubricant.
First exhaust temperature	-	Proprietary parameter. For more information about this commands, please contact local Waukesha representative.
Second exhaust temperature	-	Proprietary parameter. For more information about this commands, please contact local Waukesha representative.
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Controller's analog output for speed control configuration

There is no speed control over datalink available for this particular ECU.

Recommended wiring

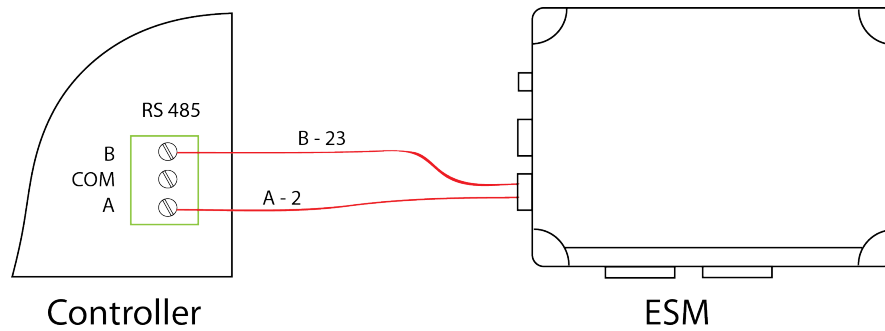


Image 3.70 Recommended wiring of ESM

Function	ECU 47pin connector	Controller
RS485 A	2	RS485 – RS485 A
RS485 COM	N/A	RS485 – RS485 COM
RS485 B	23	RS485 – RS485 B
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	28	SG OUT Analog Speed Control range -2.5VDC – +2.5VDC
Analog Speed Control	29	SG COM
Analog Speed Control Shield	N/A	N/A

Note: Check that RS485 bus terminating resistors or appropriate jumpers are connected.

Available list of texts of fault codes see **ESM on page 316**.

Recommended controller setting

Controller	Setpoint	Value	Interface
InteliGen ^{NT}	RS232(1) mode	ECU LINK	
	RS232(2) mode		
InteliSys ^{NT}	RS485(X)conv.	ENABLED	RS 485(1), RS 485(2) RS 232(1) ¹ , RS 232(2) ²
		DISABLED	
InteliSys ^{NT}	RS232(2) mode	ECU LINK	RS 485(2) RS 232(1) ³ , RS 232(2) ⁴
	RS485(X)conv.	ENABLED	
		DISABLED	

Waukesha wiring recommendations

Two modbus wires are available at the end of the Customer Interface Harness (loose wires). The two wires are grey and labeled RS 485A- and RS 485B+.

¹external RS232-485 converter is required

²external RS232-485 converter is required

³external RS232-485 converter is required

⁴external RS232-485 converter is required

RS-485 networking needs termination resistors if long wire runs are used. Termination resistors of 120 are placed across the RS-485 A- and B+ wires at each device and at the MODBUS master (InteliGen^{NT}, InteliSys^{NT} controllers has jumper connecting this resistor closed as default). For short distances of 10 m or less and with slower baud rates (ComAp uses 9600 bps), termination resistors are not needed.

Typically, short distances of 32 ft. (10 m) would not require termination resistors; however, if you experience communication errors, first check the programmed baud rate. ComAp uses 9600 bps which is Waukesha default setting. If communication errors persist, termination resistors may be necessary even for short distances.

Diagnostic lamps

It is possible to configure Yellow Warning Lamp and Red Shutdown Lamp as binary inputs. Displaying of fault codes in the alarm list is conditioned by configuration of these inputs. Once they are not configured the alarms are blocked and not displayed.

3.26 Yanmar engines support

ECU Type	Engine type
TNV	All TNV Common Rail Series

3.26.1 TNV

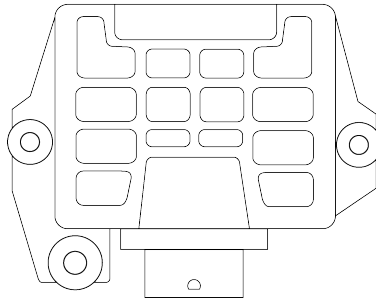


Image 3.71 TNV

Controllers that support the TNV

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
AP low idle switch	558	Accelerator Pedal 1 Low Idle Switch
Preheat	-	Proprietary parameter.
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfuction Lamp	1213	Malfuction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
ECU binary inputs (controller's outputs - commands)		
Configuration Name	SPN	J1939 Name
Shutdown Requests	-	Proprietary parameter.
ECU analog outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
Engine speed	190	Engine Speed
Starter mode	1675	Engine Starter Mode

AP Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
ECU Temperature	1136	Engine ECU Temperature
Desired Operating Speed	515	Engine's Desired Operating Speed
Coolant Temp	110	Engine Coolant Temperature
Oil Temp	175	Engine Oil Temperature 1
Barometric Pressure	108	Barometric Pressure
Air Inlet Temperature	172	Engine Intake Air Temperature
Electrical Potential	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Engine Oil Pressure	100	Engine Oil Pressure

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{3,6}	898	Engine Requested Speed/Speed Limit
Accelerator Pedal Position	-	Proprietary parameter.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite, 3 - IntelliDrive Lite, 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU connector	Controller
CAN H	40	CAN1 (extension modules/J1939) – CAN H
CAN COM	30	CAN1 (extension modules/J1939) – CAN COM
CAN L	39	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	34	N/A
Battery - (negative)	33,45	N/A
Key Switch	7	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**. Available list of texts of fault codes see **TNV on page 317**.

3.27 Standard J1939 engines support

ECU Type	Engine type
Standard J1939 engine	supports only J1939-71 parameters
Standard J1939 monitor	supports only J1939-71 parameters without control functionality

3.27.1 Standard J1939 engine

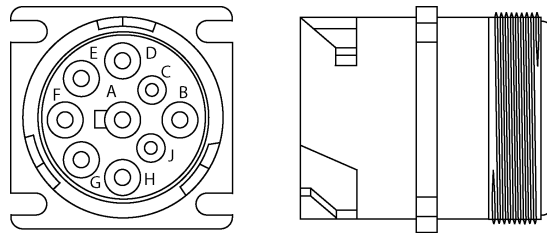


Image 3.72 Standard J1939 engine

Controllers that support the Standard J1939 engine

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
DPF Regen. Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF Pas.Reggen.Status	3699	Aftertreatment Diesel Particulate Filter Passive Regeneration Status
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF Inhibit DueTo Clutch	3704	Diesel Particulate Filter Active Regeneration Inhibited Due to Clutch Disengaged
DPF Inhibit DueTo Breake	3705	Diesel Particulate Filter Active Regeneration Inhibited Due to Service Brake Active
DPF Inhibit DueTo Speed	3709	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed
DPF Inhibit DueTo Neutral	3708	Diesel Particulate Filter Active Regeneration Inhibited Due to Out of Neutral
DPF Inhibit DueTo Idle	3707	Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle
DPF Inhibit DueTo PTO	3706	Diesel Particulate Filter Active Regeneration Inhibited Due to PTO Active
DPF Inhibit DueTo Park.Brake	3710	Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set
DPF Inhibit DueTo Exh.Temp	3711	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature
DPF Inhibit DueTo SysFault	3712	Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active
DPF Inhibit DueTo SysTimeout	3713	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout
DPF Inhibit DueTo SysLockout	3714	Diesel Particulate Filter Active Regeneration Inhibited Due to Temporary System Lockout
DPF Inhibit DueTo Peranent Lockout	3715	Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up

DPF Inhibit DueTo LowSpeed	3717	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Below Allowed Speed
DPF Auto Reg.Configuration	3718	Diesel Particulate Filter Automatic Active Regeneration Initiation Configuration
HydrocarbonDoserEna	5504	Requested Fuel Mass Rate
DPF Inhibit DueTo Exh.Press	5629	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Pressure
DPF ConditionNotRegen	3750	Aftertreatment 1 Diesel Particulate Filter Conditions Not Met for Active Regeneration
Coolant Pre-heated State	3553	Engine Coolant Pre-heated State
AL Fuel Leakage	1239	Engine Fuel Leakage 1
Water in Fuel	97	Water In Fuel Indicator 1
SCR System Cleaning Inhibited Due to Inhibit Switch	6918	SCR System Cleaning Inhibited Due to Inhibit Switch
PTO Enable Switch	980	Engine PTO Governor Enable Switch
PTO Cost/Decelerate Switch	983	Engine PTO Governor Coast/Decelerate Switch
PTO Resume Switch	982	Engine PTO Governor Resume Switch
PTO Accelerate Switch	981	Engine PTO Governor Accelerate Switch
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine

ECU binary inputs (controller's outputs - commands)

Configuration Name	SPN	J1939 Name
DPF Reg. Inhibit Switch ^{1,2,3,4}	3695	Aftertreatment Regeneration Inhibit Switch
DPF Reg. Force Switch ^{1,2,3,4}	3696	Aftertreatment Regeneration Force Switch
Engine Auxiliary Shutdown Switch ^{5,6}	970	Engine Auxiliary Shutdown Switch

ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Engine Torque Mode	899	Engine Torque Mode
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Controlling Device Address	1483	Source Address of Controlling Device for Engine Control
Engine Starter Mode	1675	Engine Starter Mode
Inlet Air Mass Flow Rate	132	Engine Intake Air Mass Flow Rate
Intake NOx	3216	Aftertreatment 1 Selective Catalytic Reduction Intake NOx
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
Fuel Filter Intake Abs Pressure	5417	Engine Fuel Filter (Suction Side) Intake Absolute Pressure
Fuel Temperature 2	3468	Engine Fuel Temperature 2
Soot Load Percent	3719	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent
Ash Load Percent	3720	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command

DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Act.Reg.ForcedStatus	4175	Diesel Particulate Filter Active Regeneration Forced Status
Diesel Exhaust Fluid Concentration	3516	Aftertreatment 1 Diesel Exhaust Fluid Concentration
Diesel Exhaust Fluid Temperature 2	3515	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
Exhaust Gas Temperature 1	3241	Aftertreatment 1 Exhaust Temperature 1
DPF Intake Gas Temperature	3242	Aftertreatment 1 Diesel Particulate Filter Intake Temperature
DPF Differential Pressure	3251	Aftertreatment 1 Diesel Particulate Filter Differential Pressure
DPF Outlet Gas Temperature	3246	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature
DPF Intake Pressure 1	3609	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
DPF Outlet Pressure 1	3610	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure
Exhaust Gas Temp - Right Manifold	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Exhaust Gas Temp - Left Manifold	2434	Engine Exhaust Manifold Bank 1 Temperature 1
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
SCR Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity
Diesel Exhaust Fluid Tank 1 Heater	3363	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater
T-Coolant water (EMU) AUX	441	Auxiliary Temperature 1
Auxiliary Temperature 2	442	Auxiliary Temperature 2
Auxiliary Pressure #1	1387	Auxiliary Pressure #1
Pre-filter Oil Pressure	1208	Engine Pre-filter Oil Pressure
Auxiliary Coolant Pressure	1203	Engine Auxiliary Coolant Pressure
Turbocharger 1 Intake Temp	1180	Engine Turbocharger 1 Turbine Intake Temperature
Turbocharger 2 Intake Temp	1181	Engine Turbocharger 2 Turbine Intake Temperature
Turbo 1 Inlet Pressure	1176	Engine Turbocharger 1 Compressor Intake Pressure
Turbo 2 Inlet Pressure	1177	Engine Turbocharger 2 Compressor Intake Pressure
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Exhaust Gas Port 17 Temp	1153	Engine Exhaust Gas Port 17 Temperature
Exhaust Gas Port 18 Temp	1154	Engine Exhaust Gas Port 18 Temperature
Exhaust Gas Port 19 Temp	1155	Engine Exhaust Gas Port 19 Temperature

Exhaust Gas Port 20 Temp	1156	Engine Exhaust Gas Port 20 Temperature
ECU Temperature	1136	Engine ECU Temperature
Intake Manifold 2 Temperature	1131	Engine Intake Manifold 2 Temperature
Intake Manifold 3 Temperature	1132	Engine Intake Manifold 3 Temperature
Intake Manifold 4 Temperature	1133	Engine Intake Manifold 4 Temperature
Intake Manifold 5 Temperature	1802	Engine Intake Manifold 5 Temperature
Right Air Filter Restriction	2809	Engine Air Filter 2 Differential Pressure
Intake Manifold Abs Press	3563	Engine Intake Manifold #1 Absolute Pressure
T-Charge Air	2629	Engine Turbocharger 1 Compressor Outlet Temperature
SCR Catalyst Intake Gas Temperature	4360	Aftertreatment 1 SCR Intake Temperature
SCR Catalyst Outlet Gas Temperature	4363	Aftertreatment 1 SCR Outlet Temperature
Intake Manifold 6 Temperature	1803	Engine Intake Manifold 6 Temperature
Turbocharger 1 Boost Pressure	1127	Engine Turbocharger 1 Boost Pressure
Turbocharger 2 Boost Pressure	1128	Engine Turbocharger 2 Boost Pressure
Turbocharger 3 Boost Pressure	1129	Engine Turbocharger 3 Boost Pressure
Turbocharger 4 Boost Pressure	1130	Engine Turbocharger 4 Boost Pressure
Alternator Bearing 1 Temperature	1122	Engine Alternator Bearing 1 Temperature
Alternator Bearing 2 Temperature	1123	Engine Alternator Bearing 2 Temperature
Alternator Winding 1 Temperature	1124	Engine Alternator Winding 1 Temperature
Alternator Winding 2 Temperature	1125	Engine Alternator Winding 2 Temperature
Alternator Winding 3 Temperature	1126	Engine Alternator Winding 3 Temperature
Turbocharger Wastegate Valve Position	1693	Engine Turbocharger Wastegate Valve Position
Trip Avg Fuel Rate	1029	Trip Average Fuel Rate
Rated Power	166	Engine Rated Power
Rated Speed	189	Engine Rated Speed
Estimated Percent Fan Speed	975	Engine Fan 1 Estimated Percent Speed
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Inj. Timing Rail 1 Pressure	156	Engine Injector Timing Rail 1 Pressure
Turbocharger 1 Speed	103	Engine Turbocharger 1 Speed
Nominal Friction - % Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Operating Speed Asymetry	519	Engine's Desired Operating Speed Asymmetry Adjustment
Coolant Temp	110	Engine Coolant Temperature
Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Turbo Oil Temp	176	Engine Turbocharger Oil Temperature
IntercoolTemp	52	Engine Intercooler Temperature
Intercooler Thermostat Opening	1134	Engine Charge Air Cooler Thermostat Opening
Trap Inlet Pressure	81	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Air Filter Differential Pressure	107	Engine Air Filter 1 Differential Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Coolant Filter Diff. Pressure	112	Engine Coolant Filter Differential Pressure

AccPedal 1 Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator Pedal Position	974	Remote Accelerator Pedal Position
Accelerator Pedal Position2	29	Accelerator Pedal Position 2
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Barometric Pressure	108	Barometric Pressure
Cab Interior Temperature	170	Cab Interior Temperature
Ambient Air Temperature	171	Ambient Air Temperature
Air Inlet Temperature	172	Engine Intake Air Temperature
Fuel Filter Diff.Press	95	Engine Fuel Filter Differential Pressure
EngOil Filter Diff.Press	99	Engine Oil Filter Differential Pressure
Gas Supply Pressure	159	Engine Gaseous Fuel Supply Pressure 1
SCR System Cleaning Lamp Command	6915	SCR System Cleaning Lamp Command
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Transmission Oil Pressure	127	Transmission Oil Pressure
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Extended Crankcase Blow-by Pressure	22	Engine Extended Crankcase Blow-by Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1

ECU analog inputs (controller's outputs)

Configuration Name	SPN	J1939 Name
Requested speed ^{1,2,3,4,5,6}	898	Engine Requested Speed/Speed Limit
PTO State	976	PTO Governor State

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:

1 - IntelliLite^{NT}, 2 - IntelliLite , 3 - IntelliDrive Lite , 4 - IntelliCompact^{NT}, 5 - IntelliNano^{NT}, 6 - IntelliDrive Nano

Controller's analog output for speed control configuration

Requested speed settings for IntelliGen ^{NT} or IntelliSys ^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested speed settings for IntelliDrive DCU, IntelliDrive Mobile		
Source	Speed Request	
Convert	YES	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

	9pin diagnostic connector	Controller
CAN H	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout see **SAE - J1939 diagnostic connector on page 18**.
Available list of texts of fault codes see **Standard J1939 engine on page 318**.

3.27.2 Standard J1939 monitor

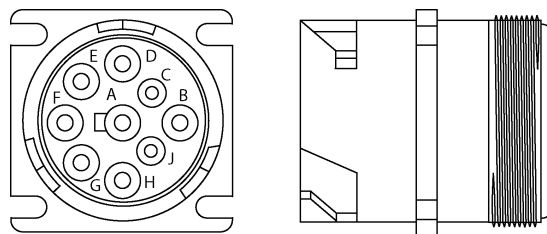


Image 3.73 Standard J1939 engine

Controllers that support the Standard J1939 monitor

Refer to Comparison table (page 23)

Available parameters

ECU binary outputs (controller's inputs)		
Configuration Name	SPN	J1939 Name
DPF Regen. Status	3700	Aftertreatment Diesel Particulate Filter Active Regeneration Status
DPF ActRegInhibitDueToInhSw	3703	Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
DPF Pas.Reggen.Status	3699	Aftertreatment Diesel Particulate Filter Passive Regeneration Status
DPF Act. Reg. Inhibit Status	3702	Diesel Particulate Filter Active Regeneration Inhibited Status
DPF Inhibit DueTo Clutch	3704	Diesel Particulate Filter Active Regeneration Inhibited Due to Clutch Disengaged
DPF Inhibit DueTo Breake	3705	Diesel Particulate Filter Active Regeneration Inhibited Due to Service Brake Active
DPF Inhibit DueTo Speed	3709	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed
DPF Inhibit DueTo Neutral	3708	Diesel Particulate Filter Active Regeneration Inhibited Due to Out of Neutral
DPF Inhibit DueTo Idle	3707	Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle
DPF Inhibit DueTo PTO	3706	Diesel Particulate Filter Active Regeneration Inhibited Due to PTO Active
DPF Inhibit DueTo Park.Brake	3710	Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set
DPF Inhibit DueTo Exh.Temp	3711	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature
DPF Inhibit DueTo SysFault	3712	Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active

DPF Inhibit DueTo SysTimeout	3713	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout
DPF Inhibit DueTo SysLockout	3714	Diesel Particulate Filter Active Regeneration Inhibited Due to Temporary System Lockout
DPF Inhibit DueTo Peranent Lockout	3715	Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout
DPF ActRegInhibNotWarmUp	3716	Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up
DPF Inhibit DueTo LowSpeed	3717	Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Below Allowed Speed
DPF Auto Reg.Configuration	3718	Diesel Particulate Filter Automatic Active Regeneration Initiation Configuration
HydrocarbonDoserEna	5504	Hydrocarbon Doser Purging Enable
DPF Inhibit DueTo Exh.Press	5629	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Pressure
DPF ConditionNotRegen	3750	Aftertreatment 1 Diesel Particulate Filter Conditions Not Met for Active Regeneration
Coolant Pre-heated State	3553	Engine Coolant Pre-heated State
AL Fuel Leakage	1239	Engine Fuel Leakage 1
Water in Fuel	97	Water In Fuel Indicator 1
SCR System Cleaning Inhibited Due to Inhibit Switch	6918	SCR System Cleaning Inhibited Due to Inhibit Switch
PTO Enable Switch	980	Engine PTO Governor Enable Switch
PTO Cost/Decelerate Switch	983	Engine PTO Governor Coast/Decelerate Switch
PTO Resume Switch	982	Engine PTO Governor Resume Switch
PTO Accelerate Switch	981	Engine PTO Governor Accelerate Switch
Protect Lamp	987	Protect Lamp
Amber Warning Lamp	624	Amber Warning Lamp
Red Stop Lamp	623	Red Stop Lamp
Malfunction Lamp	1213	Malfunction Indicator Lamp
Flash Protect Indicator Lamp	3041	Flash Protect Lamp
Flash Amber Warning Lamp	3040	Flash Amber Warning Lamp (AWL)
Fast Flash Amber Warning Lamp		
Flash Red Stop Lamp	3039	Flash Red Stop Lamp (RSL)
Fast Flash Red Stop Lamp		
Wait To Start Lamp	1081	Engine Wait to Start Lamp
Shutdown Engine	1110	Engine Protection System has Shutdown Engine
DPF Reg. Inhibit Switch(RX)	3695	Aftertreatment Regeneration Inhibit Switch
DPF Reg. Force Switch(RX)	3696	Aftertreatment Regeneration Force Switch
Engine Auxilliary Shutdown Sw(RX)	970	Engine Auxilliary Shutdown Switch

ECU binary inputs (controller's outputs - commands)

Configuration Name	SPN	J1939 Name
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ECU analog outputs (controller's inputs)

Configuration Name	SPN	J1939 Name
Engine Torque Mode	899	Engine Torque Mode
Engine speed	190	Engine Speed
Actual Torque	513	Actual Engine - Percent Torque
Demand Torque	512	Driver's Demand Engine - Percent Torque
Coolant Pressure	109	Engine Coolant Pressure 1
Coolant Level	111	Engine Coolant Level 1
Override control mode(RX)	695	Engine Override Control Mode
Req Speed Ctrl Conditions(RX)	696	Engine Requested Speed Control Conditions

Override Control Mode Prior(RX)	897	Override Control Mode Priority
Requested speed(RX)	898	Engine Requested Speed/Speed Limit
Intake NOx	3216	Aftertreatment 1 Selective Catalytic Reduction Intake NOx
Outlet NOx	3226	Aftertreatment 1 Outlet NOx
Fuel Filter Intake Abs Pressure	5417	Engine Fuel Filter (Suction Side) Intake Absolute Pressure
Fuel Temperature 2	3468	Engine Fuel Temperature 2
Soot Load Percent	3719	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent
Ash Load Percent	3720	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent
DPF Lamp Command	3697	Diesel Particulate Filter Lamp Command
DPF Status	3701	Aftertreatment Diesel Particulate Filter Status
HEST Lamp Command	3698	Exhaust System High Temperature Lamp Command
DPF Act.Reg.ForcedStatus	4175	Diesel Particulate Filter Active Regeneration Forced Status
Diesel Exhaust Fluid Concentration	3516	Aftertreatment 1 Diesel Exhaust Fluid Concentration
Diesel Exhaust Fluid Temperature 2	3515	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2
Exhaust Gas Temperature 1	3241	Aftertreatment 1 Exhaust Temperature 1
DPF Intake Gas Temperature	3242	Aftertreatment 1 Diesel Particulate Filter Intake Temperature
DPF Differential Pressure	3251	Aftertreatment 1 Diesel Particulate Filter Differential Pressure
DPF Outlet Gas Temperature	3246	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature
DPF Intake Pressure 1	3609	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
DPF Outlet Pressure 1	3610	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure
Right Air Filter Restriction	2809	Engine Air Filter 2 Differential Pressure
Intake Manifold Abs Press	3563	Engine Intake Manifold #1 Absolute Pressure
T-Charge Air	2629	Engine Turbocharger 1 Compressor Outlet Temperature
SCR Catalyst Intake Gas Temperature	4360	Aftertreatment 1 SCR Intake Temperature
SCR Catalyst Outlet Gas Temperature	4363	Aftertreatment 1 SCR Outlet Temperature
Exhaust Gas Temp - Right Manifold	2433	Engine Exhaust Manifold Bank 2 Temperature 1
Exhaust Gas Temp - Left Manifold	2434	Engine Exhaust Manifold Bank 1 Temperature 1
DEF Tank 1 Level	1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level
Diesel Exhaust Fluid Tank 1 Temperature	3031	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature
DEF Tank 1 Low Level Indicator	5245	Aftertreatment Selective Catalytic Reduction Operator Inducement Active
SCR Operator Inducement Severity	5246	Aftertreatment SCR Operator Inducement Severity
Diesel Exhaust Fluid Tank 1 Heater	3363	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater
T-Coolant water (EMU) AUX	441	Auxiliary Temperature 1
Auxiliary Temperature 2	442	Auxiliary Temperature 2
Auxiliary Pressure #1	1387	Auxiliary Pressure #1
Pre-filter Oil Pressure	1208	Engine Pre-filter Oil Pressure
Auxiliary Coolant Pressure	1203	Engine Auxiliary Coolant Pressure
Turbocharger 1 Intake Temp	1180	Engine Turbocharger 1 Turbine Intake Temperature
Turbocharger 2 Intake Temp	1181	Engine Turbocharger 2 Turbine Intake Temperature
Turbo 1 Inlet Pressure	1176	Engine Turbocharger 1 Compressor Intake Pressure
Turbo 2 Inlet Pressure	1177	Engine Turbocharger 2 Compressor Intake Pressure
Exhaust Gas Port 1 Temp	1137	Engine Exhaust Gas Port 1 Temperature
Exhaust Gas Port 2 Temp	1138	Engine Exhaust Gas Port 2 Temperature
Engine Starter Mode	1675	Engine Starter Mode
Inlet Air Mass Flow Rate	132	Engine Intake Air Mass Flow Rate

Exhaust Gas Port 3 Temp	1139	Engine Exhaust Gas Port 3 Temperature
Exhaust Gas Port 4 Temp	1140	Engine Exhaust Gas Port 4 Temperature
Exhaust Gas Port 5 Temp	1141	Engine Exhaust Gas Port 5 Temperature
Exhaust Gas Port 6 Temp	1142	Engine Exhaust Gas Port 6 Temperature
Exhaust Gas Port 7 Temp	1143	Engine Exhaust Gas Port 7 Temperature
Exhaust Gas Port 8 Temp	1144	Engine Exhaust Gas Port 8 Temperature
Exhaust Gas Port 9 Temp	1145	Engine Exhaust Gas Port 9 Temperature
Exhaust Gas Port 10 Temp	1146	Engine Exhaust Gas Port 10 Temperature
Exhaust Gas Port 11 Temp	1147	Engine Exhaust Gas Port 11 Temperature
Exhaust Gas Port 12 Temp	1148	Engine Exhaust Gas Port 12 Temperature
Exhaust Gas Port 13 Temp	1149	Engine Exhaust Gas Port 13 Temperature
Exhaust Gas Port 14 Temp	1150	Engine Exhaust Gas Port 14 Temperature
Exhaust Gas Port 15 Temp	1151	Engine Exhaust Gas Port 15 Temperature
Exhaust Gas Port 16 Temp	1152	Engine Exhaust Gas Port 16 Temperature
Exhaust Gas Port 17 Temp	1153	Engine Exhaust Gas Port 17 Temperature
Exhaust Gas Port 18 Temp	1154	Engine Exhaust Gas Port 18 Temperature
Exhaust Gas Port 19 Temp	1155	Engine Exhaust Gas Port 19 Temperature
Exhaust Gas Port 20 Temp	1156	Engine Exhaust Gas Port 20 Temperature
ECU Temperature	1136	Engine ECU Temperature
Intake Manifold 2 Temperature	1131	Engine Intake Manifold 2 Temperature
Intake Manifold 3 Temperature	1132	Engine Intake Manifold 3 Temperature
Intake Manifold 4 Temperature	1133	Engine Intake Manifold 4 Temperature
Intake Manifold 5 Temperature	1802	Engine Intake Manifold 5 Temperature
Intake Manifold 6 Temperature	1803	Engine Intake Manifold 6 Temperature
Turbocharger 1 Boost Pressure	1127	Engine Turbocharger 1 Boost Pressure
Turbocharger 2 Boost Pressure	1128	Engine Turbocharger 2 Boost Pressure
Turbocharger 3 Boost Pressure	1129	Engine Turbocharger 3 Boost Pressure
Turbocharger 4 Boost Pressure	1130	Engine Turbocharger 4 Boost Pressure
Alternator Bearing 1 Temperature	1122	Engine Alternator Bearing 1 Temperature
Alternator Bearing 2 Temperature	1123	Engine Alternator Bearing 2 Temperature
Alternator Winding 1 Temperature	1124	Engine Alternator Winding 1 Temperature
Alternator Winding 2 Temperature	1125	Engine Alternator Winding 2 Temperature
Alternator Winding 3 Temperature	1126	Engine Alternator Winding 3 Temperature
Turbocharger Wastegate Valve Position	1693	Engine Turbocharger Wastegate Valve Position
Trip Avg Fuel Rate	1029	Trip Average Fuel Rate
Rated Power	166	Engine Rated Power
Rated Speed	189	Engine Rated Speed
Estimated Percent Fan Speed	975	Engine Fan 1 Estimated Percent Speed
Injector Metering Rail Pressure	157	Engine Injector Metering Rail 1 Pressure
Controlling Device Address	1483	Source Address of Controlling Device for Engine Control
Inj. Timing Rail 1 Pressure	156	Engine Injector Timing Rail 1 Pressure
Turbocharger 1 Speed	103	Engine Turbocharger 1 Speed
Nominal Friction - % Torque	514	Nominal Friction - Percent Torque
Desired Operating Speed	515	Engine's Desired Operating Speed
Operating Speed Asymetry	519	Engine's Desired Operating Speed Asymmetry Adjustment
Coolant Temp	110	Engine Coolant Temperature

Fuel Temp	174	Engine Fuel Temperature 1
EngineOil Temp	175	Engine Oil Temperature 1
Turbo Oil Temp	176	Engine Turbocharger Oil Temperature
IntercoolTemp	52	Engine Intercooler Temperature
Intercooler Thermostat Opening	1134	Engine Charge Air Cooler Thermostat Opening
Trap Inlet Pressure	81	Aftertreatment 1 Diesel Particulate Filter Intake Pressure
Boost Pressure	102	Engine Intake Manifold #1 Pressure
Intake Manifold Temp	105	Engine Intake Manifold 1 Temperature
Air Intake Pressure	106	Engine Intake Air Pressure
Air Filter Differential Pressure	107	Engine Air Filter 1 Differential Pressure
Exhaust Gas Temp	173	Engine Exhaust Temperature
Coolant Filter Diff. Pressure	112	Engine Coolant Filter Differential Pressure
AccPedal 1 Low Idle Switch	558	Accelerator Pedal 1 Low Idle Switch
Accelerator Pedal Position	91	Accelerator Pedal Position 1
Percent Load	92	Engine Percent Load At Current Speed
Remote Accelerator Pedal Position	974	Remote Accelerator Pedal Position
Accelerator Pedal Position2	29	Accelerator Pedal Position 2
Fuel Rate	183	Engine Fuel Rate
Throttle Position	51	Engine Throttle Valve 1 Position 1
Barometric Pressure	108	Barometric Pressure
Cab Interior Temperature	170	Cab Interior Temperature
Ambient Air Temperature	171	Ambient Air Temperature
Air Inlet Temperature	172	Engine Intake Air Temperature
Fuel Filter Diff.Press	95	Engine Fuel Filter Differential Pressure
EngOil Filter Diff.Press	99	Engine Oil Filter Differential Pressure
Gas Supply Pressure	159	Engine Gaseous Fuel Supply Pressure 1
SCR System Cleaning Lamp Command	6915	SCR System Cleaning Lamp Command
Electrical Potential (Voltage)	168	Battery Potential / Power Input 1
Battery Potential (Voltage)	158	Keyswitch Battery Potential
Transmission Oil Pressure	127	Transmission Oil Pressure
Fuel Delivery Pressure	94	Engine Fuel Delivery Pressure
Extended Crankcase Blow-by Pressure	22	Engine Extended Crankcase Blow-by Pressure
Engine Oil Level	98	Engine Oil Level
Engine Oil Pressure	100	Engine Oil Pressure
Crankcase Pressure	101	Engine Crankcase Pressure 1
Torque Limit (RX)	518	Engine Requested Torque/Torque Limit
Frequency Selection(RX)	4080	Generator Frequency Selection
PTO State(RX)	976	PTO Governor State
ECU analog inputs (controller's outputs)		
Configuration Name	SPN	J1939 Name

Recommended wiring

	9pin diagnostic connector	Controller
CAN H	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	C	CAN1 (extension modules/J1939) – CAN COM

CAN L	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	N/A	N/A
Battery - (negative)	N/A	N/A
Key Switch	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	N/A	SG OUT
Analog Speed Control	N/A	SG COM

For more information about diagnostic connector layout **see SAE - J1939 diagnostic connector on page 18**.
 Available list of texts of fault codes **see Standard J1939 monitor on page 319**.

4 List of texts of ECU fault codes

4.1 EEM4

Fault Code (SPN)	Text
3	Fuel Injectors
51	ThrottlePos
91	AccelPedalPos
94	Fuel Presssure
97	Water In Fuel
98	EngineOilLevel
100	Oil Pressure
101	CrankcasePress
102	Boost Pressure
105	IntakeAir Temp
106	AirInletPress
107	Air Filter
108	Ambient Press
109	Coolant Press
110	Coolant Temp
111	Coolant Level
153	CrankcasePress
157	Rail Pressure
168	BAT Voltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	Engine Speed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	Grid Heater
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	Vehicle CAN
651	SolenoidValve1
652	SolenoidValve2
653	SolenoidValve3
654	SolenoidValve4
655	SolenoidValve5

656	SolenoidValve6
677	EngStartRelay
723	Cam Speed Sig
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwitc
1043	Int.12VSupply
1076	MPROP Control
1077	MPROP Temp
1109	EngSdApproach
1110	Engine Sd
1136	ECU Temp
1485	MainRelay
3509	5V Supply 1
3510	5V Supply 2
3511	5V Supply 3
3512	12V Supply 1
4201	CrankSpeed Sig
9006	VehicleCANoff
9008	IDmoduleCANoff
9010	AmbientPress
9021	5Vdc Supply 1
9022	5Vdc Supply 2
9023	5Vdc Supply 3
9024	WaterInFuelSup
9025	SelfTestWtchdg
9026	SelfTestVoltHi
9027	SelfTestVoltLo
9030	MainRelay1Shrt
9031	MainRelay2Shrt
9032	MainRelay3Shrt
9033	MainRelay
9034	MainRelayDfct
9035	NormalRecovery
9036	Full restart
9070	CrankSpeedSens
9071	CrankSpeedSens
9072	CrankSpeedSens
9080	CamSpeedSensor
9081	CamSpeedSensor
9082	CamSpeedSensor
9083	CamSpeedSensor
9090	EngineSpeedErr
9107	InvalidECUAddr
9131	SolenoidValve1
9132	SolenoidValve2
9133	SolenoidValve3

9134	SolenoidValve4
9135	SolenoidValve5
9136	SolenoidValve6
9140	Throttle2Sens
9141	Throttle3Sens
9150	Rail Pressure
9151	PressReliefVlv
9152	FuelFiltrPress
9153	FuelFiltrPress
9174	MPROP
9230	EngSpecMismtch
9231	EngSNMismatch
9233	IDM-NotPresent
9234	IDM-NotComptbl
9235	ID Module
9236	IDM-MemDefect
9237	IDM-Watchdog
9238	IDM-Brownout
9239	EngSpecMissing
9240	EngSNMissing
9241	IDM-NotPresent
9242	GeneratedByPTE
9243	MaxECUByPTE
9305	BadDIConfig
9306	PTO InputError
9310	ExternalFlt1
9311	ExternalFlt2
9312	TorqCtrlInput
520200	Powerstages
520201	Engine CAN
520202	Main Relay 1
520203	Main Relay 2
520208	Rail PRV
520209	Fuel Injectors
520210	Fuel Injectors
520212	Internal 0105
520213	Internal 0106
520214	Internal 0107
520215	Internal 0108
520216	Internal 0109
520217	Internal 0110
520218	Internal 0111
520219	Internal 0112
520220	Internal 0113
520221	Internal 0114
520222	Internal 0115
520223	Internal 0116

520224	Internal 0117
520225	Internal 0118
520226	Internal 0119
520227	Internal 0120
520228	Internal 0121
520229	Internal 0122
520230	Engine Spec
520232	Digital Inputs
520233	Internal 0128
520234	Internal 0129
520235	Internal 0130
520236	Internal 0131
520240	InjectorBank 0
520241	InjectorBank 1
520243	Rail PRV
520244	Rail PRV
520245	Rail PRV
520246	Rail PRV
520247	Internal 0123
520297	Internal 0132
520298	Internal 0133

4.2 ADEM A3 or ADEM A4

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
95	FuelFiltDifPre
97	WaterInFuellnd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay

898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.3 Caterpillar ADEM A4 with EMCP3.x or ADEM A4

with EMCP4.x

Fault Code (SPN)	Text
38	ExtTankFuelLvl
51	ThrottlePos
82	StartAirPress
91	AccelPedalPos
94	FuelDelPress
95	FuelFiltDifPre
96	Fuel Level
97	WaterInFuelInd
98	EngineOilLevel
99	OilFilterDifPr
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
137	FireExtinPress
153	CrankcasePress
158	BattPotential
167	BattChrgSystV
168	BatteryVoltage
171	AmbientAirTemp
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
234	Hidden
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
625	SCADA DataLink

626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
701	Custom Event 1
702	Custom Event 2
703	Custom Event 3
704	Custom Event 4
705	Custom Event 5
706	Custom Event 6
898	RequestedSpeed
924	Digital Out 1
925	Digital Out 2
970	AuxEngSdSwitch
971	EngDerateSwitc
1109	EngSdApproach
1110	Engine Sd
1122	GenRBearingTmp
1137	ExhaustTemp 1
1138	ExhaustTemp 2
1139	ExhaustTemp 3
1140	ExhaustTemp 4
1141	ExhaustTemp 5
1142	ExhaustTemp 6
1143	ExhaustTemp 7
1144	ExhaustTemp 8
1145	ExhaustTemp 9
1146	ExhaustTemp10
1147	ExhaustTemp11
1148	ExhaustTemp12
1149	ExhaustTemp13
1150	ExhaustTemp14
1151	ExhaustTemp15
1152	ExhaustTemp16
1203	AuxCoolantPres

1231	Accessory DL
1239	Fuel Leakage
1485	ECU MainRelay
1656	Hidden
1664	Start Fail
2433	RExhaustTemp
2434	LExhaustTemp
2436	Gen Frequency
2440	Gen Voltage
2448	Gen Current
2452	Gen Rev. Power
2648	ServiceTime
4000	AirDampClosed
4001	ATS in NormPos
4002	ATS in EmerPos
4003	BattChrgFail
4004	GCB Closed
4005	MCB Closed
4006	Hidden
4007	Hidden
4008	Engine Sd
4193	CoolantPumpTmp

4.4 CM500

Fault Code (SPN)	Text
29	Hand Throttle
91	Hidden
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
102	Boost Press
105	Intake Temp
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
135	FuelPump
156	FuelTiming
157	FuelRail Press
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
190	EngineSpeed
191	OutShaftSpeed
558	AP Idle
620	5V SupplyFail
626	PrehActuator
627	PowerLost
629	EEPROMChecksum
630	CalibrMemFail
632	FuelShutoff
633	FuelActuator
635	EngineTiming
639	J1939 CAN Bus
974	RemAPSensor
1043	IntManifold
1076	FuelPump
1077	FuelPump
1078	FuelPump
1083	AuxTempSensor
1084	AuxPressSensor
1129	IntakePressure
1131	IntakeMan2Temp
1132	IntakeMan3Temp
1172	Turbo Temp
1173	Turbo 2 Temp
1244	FuelingAct

1349	InjectorRail#2
1347	FuelPressure
1380	LowOilLevel
1384	Shutdown J1939

4.5 CM558

Fault Code (SPN)	Text
51	ThrottlePos
100	EngOil Press
105	Intake Temp
109	Coolant Press
110	EngCool Temp
168	BatteryVoltage
190	EngineSpeed
444	Battery 2 Volt
623	RedStopLamp
624	DiagnosticLamp
629	EEPROMChecksum
630	CalibrMemFail
632	FuelShutoff
633	FuelActuator
639	J1939 CAN Bus
724	Heated Oxygen
1136	ECU Temp
1204	ElectricalLoad
1442	Fuel Valve 1
2634	Main Relay
3464	ThrottleCmd
3509	SensorSupply1
3510	SensorSupply2
3563	IntakePress 1
3938	GenSpdGovBias
520352	IgnitSdRelay
520353	CarburInletGas

4.6 CM570

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
627	PowerLost
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed

970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.7 CM800

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
627	PowerLost
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed

970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.8 CM850

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
157	FuelRail Press
158	BattPotential
166	CylPowerImbal
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
611	APCDieselFlow
612	CrankshaftSpd
620	5V SupplyFail
626	PrehActuator
627	PowerLost
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
633	FuelActuator
636	Crank Sensor
637	TimingSensor
639	Hidden
651	InjectorCyl#1
652	InjectorCyl#2

653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
697	PWM1-Gauge1
723	SecSpeedSens
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
1075	ElectrLiftPump
1109	EngSdApproach
1110	Engine Sd
1347	FuelPressure
1485	ECU MainRelay
2802	ECMDataLost
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3512	SensorSupply4
3597	ECUSupplyVolt
3938	GenSpdGovBias
4182	GenFrequencPot
4183	DroopPotentiom

4.9 CM2150

4.10 CM2250

Fault Code (SPN)	Text
27	EGRValvePos
81	DPF Pressure
97	WaterInFuelInd
100	EngOil Press
101	CrankcasePress
102	Boost Press
103	TBC1Speed
105	Intake Temp
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
168	BatteryVoltage
171	AmbientAirTemp
190	EngineSpeed
411	ExhaustGasPres
412	EGR Temp
611	FuellInletMeter
627	PowerLost
629	EEPROMChecksum
633	FuelActuator
639	Hidden
641	VGT Actuator
647	CoolingFan
651	InjectorCy#1
652	InjectorCy#2
653	InjectorCy#3
654	InjectorCy#4
655	InjectorCy#5
656	InjectorCy#6
657	InjectorCy#7
658	InjectorCy#8
659	InjectorCy#9
660	InjectorCy#10
661	InjectorCy#11
662	InjectorCy#12
663	InjectorCy#13
664	InjectorCy#14
665	InjectorCy#15
666	InjectorCy#16
723	SecSpeedSens
729	AirHeaterRelay
1075	ElectrLiftPump
1136	ECU Temp

1209	ExhaustGasPres
1231	CAN Bus OFF
1347	FuelPressure
1378	OilChangeTime
2789	SysDiagCode#1
2791	EGR Actuator
2797	InjectorBank
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3512	SensorSupply4
3513	SensorSupply5
3514	SensorSupply6
3555	AmbientAirDens
3597	ECUSupplyVolt
4795	Aftertreatment
4796	Aftertreatment
520320	CrankcasDepres

4.11 CM2350

Fault Code (SPN)	Text
27	EGRValvePos
81	DPF Pressure
91	Acc Ped Pos
94	FuelPressure
95	FuelFilterPres
97	WaterInFuelInd
98	EngOilLevel
100	Eng Oil Press
101	CrankcasePress
102	Boost Press
103	TBC1Speed
104	TC Lube
105	Intake Temp
107	AirFilter
108	Bar Press
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
168	BatteryVoltage
171	AmbientAirTemp
174	Fuel Temp
175	Oil Temp
188	IdleSpeed
190	EngineSpeed
191	Overspeed
251	RTC
411	ExhaustGasPres
412	EGR Temp
441	AuxTempSensor
442	AuxTempSensor
558	LowIdleSwitch
612	RPM Loss
626	StartDevEmpty
629	ECM Failure
630	ECM Memory
633	FuelActuator
639	J1939 CAN Bus
640	ExtShutdown
641	VGT Actuator
644	Ext SpdCommand
647	CoolingFan

649	ExhBackPress
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
659	InjectorCyl#9
660	InjectorCyl#10
661	InjectorCyl#11
662	InjectorCyl#12
663	InjectorCyl#13
664	InjectorCyl#14
665	InjectorCyl#15
666	InjectorCyl#16
697	Aux PWM
701	Custom Event 1
723	SecSpeedSens
729	AirHeaterRelay
862	CrankcaseFiltr
974	RemAcc Ped Pos
1075	ElectrLiftPump
1081	WaitToStrtFail
1109	EngSdApproach
1127	TC1BoostPress
1136	ECU Temp
1172	TBC1Temp
1176	TBC1Pressure
1209	ExhaustGasPres
1213	YellowLamp
1231	CAN Bus OFF
1235	CAN Bus3 OFF
1239	EngFuelLeak
1267	IdleShutdown
1322	Eng Misfire
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1347	FuelPressure
1349	FuelRail2Press

1378	OilChangeTime
1387	AuxPresSensr1
1388	AuxPresSensr2
1563	CM ID
1569	TorqueDerate
1623	TachOutput
1632	Eng Torque
1639	FanSpeed
1668	CAN Bus#4 OFF
1675	Overcrank
1761	DEF Level
1800	Batt Temp
2006	SrcAddr6Abnorm
2623	Acc Ped 2 Pos
2629	TBC OutTemp
2630	Eng AirCooler
2633	VGT Nozzle
2634	Pwr Relay
2789	SysDiagCode#1
2791	EGR Actuator
2797	InjectorBank
2884	AuxGov
2978	PercentTorque
3031	DEF Temp
3060	EngCoolingSys
3216	AT Nox
3217	AT O2 Sensor
3218	NOxInPower
3226	Nox Sensor
3227	AT Out O2 Sens
3228	NOxOutPower
3242	DPFIntakeTemp
3246	DPFOutletTemp
3249	ExhaustGasTemp
3251	DPF Sensor
3255	AT2 IntakeNOx
3265	AT Out2 Nox
3353	Alt Fail
3361	AT FuelTemp
3362	DEF DosingUnit
3363	DEF Tank Htr
3364	DEF Quality
3480	AT FuelPress
3481	AT FuelRate

3482	AT FuelShutoff
3490	ATPurgeAirAct
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3512	SensorSupply4
3513	SensorSupply5
3514	SensorSupply6
3515	DEF Temp2
3521	DEF Property
3555	AmbientAirDens
3556	AT Dose
3597	ECUSupplyVolt
3610	DPF OutPress
3667	EngAirShutoff
3695	RegInhibitSw
3703	DPFRegInhibit
3713	DPFRegTimeout
3750	DPF1 Regen
3826	DEF AvgCons
3936	DPF System
4094	NOxLimits
4096	DEF Tank
4097	AT FuelValve
4182	GenFreqAdj
4183	DroopAdj
4184	GainAdj
4331	SCR ActualDose
4334	DEFPressSensor
4337	DEF DoseTemp
4339	SCR Feedback
4340	DEF Line Htr1
4342	DEF Line Htr2
4344	DEF Line Htr3
4360	SCRIntakeTemp
4363	SCROutletTemp
4364	SCR Efficiency
4376	DEFRetValve
4490	HumidSensor
4765	DOCIntakeTemp
4766	DOC OutGasTemp
4792	SCR System
4793	DOCMissing
4794	SCR Catalyst
4795	DPF Missing
4796	Aftertreatment
4809	DOC

	WarmupTemp
4810	DOC Out Temp
5018	DOC Clogged
5019	EGR OutPress
5024	NOxSensorHtr
5031	NOxSensorHtr
5125	SensorSupply7
5246	SCR Operator
5298	DOC Efficiency
5319	DPFRegInc
5357	Fuel Inj Error
5380	FuelValve
5394	DEFValve
5395	IdleFuelQual
5396	ECV HoseOff
5397	DPFRegFreq
5484	Cooling Fan2
5491	DEFLineHtrRely
5571	FuelRailValve
5585	CrankFuelPress
5625	BackPressReg
5626	BackPresCalibr
5741	AT OutSootSens
5742	DPFTempModule
5743	SCR TempModule
5745	DEF DoseHtr
5746	DEF DoseHtr
5747	AT Out1Htr
5793	EngFuelState
5797	DOCTempModule
5798	DEF Htr Err
5838	EGRValveMalf
5839	DEF Consumptn
5840	DEF DoseMalf
5841	DEF QualMalf
5842	SCR MonSys
6301	WtrInFuelInd2
6653	ColdStartInjMe
6655	ECU PwrLamp
6713	VGT Software
6881	SCR Override
6882	DOC TempRate
6918	SCR Inhibit
6928	SCR Timeout
520199	Cruise Ctrl
520320	CDV
520435	GlowPlugMod
520595	CrankcaseVent

520668	AT1 Out NOx
520716	DEFValveHtr
520784	FanBlade
520791	BoostCurve
520808	EmShutdown
520809	AirSO Maintnce

4.12 PGI Interface

Fault Code (SPN)	Text
27	EGRValvePos
81	DPF Pressure
84	SpeedSensor
91	AccelPedalPos
93	SwitchData
94	FuelDelPress
95	FuelFilDifPres
97	WaterInFuel
99	OilFilterDifPr
100	EngOil Press
101	CrankcasePress
102	Boost Press
103	TBC1Speed
105	Intake Temp
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
166	CylPowerImbal
168	BatteryVoltage
171	AmbientAirTemp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
183	Fuel Rate
190	EngineSpeed
191	OutShaftSpeed
251	RTCPowerInterr
411	ExhaustGasPres
412	EGR Temp
441	AuxTempSensIn1
558	AP Idle
597	BrakeSwitch
611	APCDieselFlow
612	CrankshaftSpd
623	RedStopLamp
627	PowerLost
629	EEPROMChecksum
630	CalibrMemFail
633	FuelActuator
639	Hidden

640	AuxCmdDualSd
641	VGT Actuator
644	ExtSpeedInput
647	CoolingFan
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
659	InjectorCyl#9
660	InjectorCyl#10
661	InjectorCyl#11
662	InjectorCyl#12
663	InjectorCyl#13
664	InjectorCyl#14
665	InjectorCyl#15
666	InjectorCyl#16
697	PWM1-Gauge1
701	AuxInput1Act
702	AuxInOut#2
703	AuxInOut#3
723	SecSpeedSens
729	AirHeaterRelay
974	RemAPSensor
1073	EngComprBrake
1075	ElectrLiftPump
1112	EngineBrake#3
1128	IntakeMan2Pres
1131	IntakeMan2Temp
1132	IntakeMan3Temp
1133	IntakeMan4Temp
1136	ECU Temp
1137	ExhaustTemp 1
1138	ExhaustTemp 2
1139	ExhaustTemp 3
1140	ExhaustTemp 4
1141	ExhaustTemp 5
1142	ExhaustTemp 6
1143	ExhaustTemp 7
1144	ExhaustTemp 8
1145	ExhaustTemp 9
1146	ExhaustTemp 10
1147	ExhaustTemp 11
1148	ExhaustTemp 12
1149	ExhaustTemp 13
1150	ExhaustTemp 14
1151	ExhaustTemp 15
1152	ExhaustTemp 16
1172	Turbo Temp
1208	Pre-OilFilterP

1209	ExhaustGasPres
1231	CAN Bus OFF
1235	CAN Bus OFF
1242	BrakePower
1265	OilBurnValve
1322	MisfireCyls
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1329	MisfireCyl7
1330	MisfireCyl8
1331	MisfireCyl9
1332	MisfireCyl10
1333	MisfireCyl11
1334	MisfireCyl12
1335	MisfireCyl13
1336	MisfireCyl14
1337	MisfireCyl15
1338	MisfireCyl16
1347	Fuel-pump
1377	MultUnitSynch
1378	OilChangeTime
1380	LowOilLevel
1387	AuxPressure
1388	AuxPressSens#1
1484	Severe Fault
1563	ECMIIdentificat
1632	LowOilLevel
1634	CVN Error
1800	BatteryTemp
2433	RExhaustTemp
2434	LExhaustTemp
2623	AccelPedalPos
2630	ChargeAirTemp
2789	SysDiagCode#1
2791	EGR Actuator
2797	InjectorBank
3050	AftertreatDOC
3058	EngineEGR
3241	AftExhGas Tmp#1
3242	DPFIntakGas Tmp
3245	AftExhGas Tmp#3
3246	DPFOutItGas Tmp
3249	AftExhGas Tmp#2
3251	APFDiffPresSns
3481	AftFuelRate
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3512	SensorSupply4

3513	SensorSupply5
3514	SensorSupply6
3549	Post-OilFilter
3555	AmbientAirDens
3556	AftFuelInj#1
3597	ECUSupplyVolt
3610	DPFOutletPress
3703	DPF RegenInhib
3936	DPF System
3938	GenSpdGovBias
4182	GenFrequencPot
4183	DroopCircuit
4184	GainCircuit
4185	OverspeedSDRel
4186	LOP SD Relay
4187	HET SD Relay
4188	Pre-LowOilPres
4223	Pre-HighEngTmp
4795	Aftertreatment
4796	Aftertreatment
5298	Aftertreatment
520199	CruiseControl
520320	CrankcasDepres
520441	EGROutPresSens
520442	EGRMixTempSens
520448	CrankcaseVent
524286	TemporaryUse

4.13 GCS

Fault Code (SPN)	Text
111	ECM-IntFailure
115	MagPickupSenSd
121	MgPickupSenWrn
122	IntkManPressLH
123	IntkManPressLL
128	IntkManPressRH
129	IntkManPressRL
135	OilPrsSenShrtH
141	OilPrsSenShrtL
143	EngOilPressLow
144	CoolT SenShortH
145	CoolT SenShortL
146	EngCoolTmpHigh
151	EngCoolTCritH
152	EngCoolTempLow
153	IntakeManTmpLB
154	IntakManTmpSen
155	CritIntakeManT
159	IntkManTmpSenH
161	IntkManTmpSenL
166	RackPositSensH
167	RackPositSensL
168	RackActPositLB
169	RackActPositLB
171	FuelRackActPos
174	RackActuatrPos
179	RackPositSensH
181	RackPositSensL
182	RackActPositRB
183	RackActPositRB
197	CoolantLvLow
212	OilTempSensorH
213	OilTempSensorL
214	OilTmpCritHigh
219	EngOilLevellow
221	BarPressSensH
222	BarPressSensL
223	OilBurnValvSol
228	CoolPresCritLo
231	CoolPressSensH
232	CoolPressSensL
234	EngSpeedHigh

235	CoolLvCritLow
253	OilLvCritLow
254	FuelShutoffVal
261	FuelTempHigh
263	FuelTmpSenShrH
265	FuelTmpSenShrL
266	FuelTmpCritHig
343	ECM-IntHWFail
415	OilPresCritLow
421	OilTempHigh
422	CoolLvSensor
471	OilLevelLow
488	IntakeManTmpH
581	FuelSuppPumpPH
582	FuelSuppPumpPL
1211	FuelShutoffVlv
1212	FuelShutoffVlv
1411	GenOutFreqPot
1412	DroopAdjPotent
1413	ContrConfigErr
1416	FailToShutdown
1417	ECMPowrdwnFail
1418	GainAdjPotent
1424	DiagLampError
1425	CommSdLampErr
1426	CommWrnLampErr
1427	OSLampError
1428	LOPLampError
1429	HETLampError
1431	PreLOPLampErr
1432	PreHETLampErr
1433	LocEmergStop
1434	RemEmergStop
1435	EngineCold
1438	FailToCrank
1443	BattVoltLow
1473	ECMWatchdogFls
1479	FailToStrtlamp
2297	FuelSuppPumpLa
2974	RackPosSensor1
2975	RackPosSensor2
112	EngTimingActtr
113	EngTimActCirc
116	FuelPresSensSH
117	FuelPresSensSL

118	FuelPumpSensSH
119	FuelPumpSensSL
224	CentinelActShr
236	EngPositionSen
252	EngOilLevelSen
259	FuelShutoffVlv
316	FuelSuppPumpSH
318	FuelSuppPumpSt
326	EngOilLevellow
359	FailedToStart
423	FuelActtrStuck
441	Batt1VoltLow
442	Batt1VoltHigh
451	InjectrPSensSH
452	InjectrPSensSL
455	FuelCtrlValvSH
467	TimRailActCirc
468	FuelRailActCrc
498	EngOilLvSenSH
499	EngOilLvSenSL
514	FuelCtrlValve
554	FuelPresSenErr
555	EnginBlowbyWrn
556	EngineBlowbySD
611	EngHotShutdown
649	ChangeLubrOil
688	EngOilLv1High
689	EngSpeedSenErr
719	BlowbyPrSensSH
729	BlowbyPrSensSL
1419	FuelRailError
1421	TimingRailDrv1
1422	TimingRailDrv2
1423	FuelPumpDiagEr
1436	HPI-PTFfuelSyst
2111	EngCoolTmp2SSH
2112	EngCoolTmp2SSL
2113	EngCoolTmp2Wrn
2114	EngCoolTemp2SD

4.14 ADM2

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch

971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.15 ADM3

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch

971	EngDerateSwch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.16 DDEC IV

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed

970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.17 DDEC V

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed

970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.18 EMR2

Fault Code (SPN)	Text
84	SpeedSensor
91	AccelPedalPos
98	EngineOilLevel
100	EngOil Press
102	Boost Press
105	Intake Temp
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
171	AmbientAirTemp
174	Fuel Temp
190	EngineSpeed
200	RackPosition
201	Hand Throttle
202	AutoCalibrFail
203	CAN-MsgTimeout
204	PWM1
205	PWM2
206	IntMemoryFault
207	BattVoltToLow
208	OutputEngStop
209	ActorRackPos
210	CalibrMemFault
231	J1939 Datalink
535	Actuator Diff
536	Hidden
563	Main Relay 3
572	DigitalOutput6
743	CAN Bus Comm
752	Program Test
765	Param Store
766	RAMTest/PwrCur
898	RequestedSpeed

4.19 EMR3-E

Fault Code (SPN)	Text
29	Hand Throttle
84	SpeedSensor
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
100	EngOil Press
102	Boost Press
105	Intake Temp
107	AirFiltDiffPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
158	IgnitNotDetect
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
190	EngineSpeed
520	FrmMngTOTSC1TR
563	Main Relay 3
624	DiagnosticLamp
630	EEPROM Access
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
676	AirHeaterRelay
677	EngStartRelay
701	AuxInput1Act
702	AuxInOut#2
703	ECU IntError
704	CoolTempLamp
705	OilPressLamp
729	AirHeaterRelay
730	AirHeaterValve
898	RequestedSpeed

923	EngPowerOutput
975	Fan Actuator
1072	InterEngBrake
1074	EngBrkFlapAct
1079	Sensorvoltage
1080	ECUIntError
1081	PreheatLamp
1109	EngSdApproach
1231	CAN Bus OFF
1235	CAN Bus OFF
1237	OverrideSwitch
1322	MisfireCyls
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1346	Misfire
1450	MisfireCyl7
1451	MisfireCyl8
1638	CustomerSensor
2634	Main Relay
2791	EGR Actuator
523212	FrmMngTOEngPrt
523216	FrmMngTOPrHt
523218	FrmMngTORxCCVS
523222	FrmMngTOTCO1
523238	FrmMngTOSwtOut
523239	FrmMngDecV1
523240	FrmMngFunModCt
523350	InjVlvBnk1A
523351	InjVlvBnk1B
523352	InjVlvBnk2A
523353	InjVlvBnk2B
523354	InjVlvChipA
523355	InjVlvChipB
523370	CompresionTest
523420	Watchdog
523450	MultiStateSw
523451	MultiStateSw
523452	MultiStateSw
523470	RailPressValve
523490	ShutoffCond
523500	FrmMngTxTO

523550	TPU Defect
523561	BIP Cyl1
523562	BIP Cyl2
523563	BIP Cyl3
523564	BIP Cyl4
523565	BIP Cyl5
523566	BIP Cyl6
523567	BIP Cyl7
523568	BIP Cyl8
523600	SerialComm
523601	ReferenceVolt
523602	Fan Speed
523604	FrmMngTOEngTmp
523605	FrmMngTOTSC1AE
523606	FrmMngTOTSC1AR
523607	FrmMngTOTSC1DE
523608	FrmMngTOTSC1DR
523609	FrmMngTOTSC1PE
523610	FrmMngTOTSC1VE
523611	FrmMngTOTSC1VR
523612	ECUIntMonitor
523613	RailPressure
523615	MeterUnitValve
523617	HWEMonCom

4.20 EMR3-S

Fault Code (SPN)	Text
29	Hand Throttle
84	SpeedSensor
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
100	EngOil Press
102	Boost Press
105	Intake Temp
107	AirFiltDiffPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
158	IgnitNotDetect
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
190	EngineSpeed
520	FrmMngTOTSC1TR
563	Main Relay 3
624	DiagnosticLamp
630	EEPROM Access
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
676	AirHeaterRelay
677	EngStartRelay
701	AuxInput1Act
702	AuxInOut#2
703	ECU IntError
704	CoolTempLamp
705	OilPressLamp
729	AirHeaterRelay
730	AirHeaterValve
898	RequestedSpeed

923	EngPowerOutput
975	Fan Actuator
1072	InterEngBrake
1074	EngBrkFlapAct
1079	Sensorvoltage
1080	ECUIntError
1081	PreheatLamp
1109	EngSdApproach
1231	CAN Bus OFF
1235	CAN Bus OFF
1237	OverrideSwitch
1322	MisfireCyls
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1346	Misfire
1450	MisfireCyl7
1451	MisfireCyl8
1638	CustomerSensor
2634	Main Relay
2791	EGR Actuator
523212	FrmMngTOEngPrt
523216	FrmMngTOPrHt
523218	FrmMngTORxCCVS
523222	FrmMngTOTCO1
523238	FrmMngTOSwtOut
523239	FrmMngDecV1
523240	FrmMngFunModCt
523350	InjVlvBnk1A
523351	InjVlvBnk1B
523352	InjVlvBnk2A
523353	InjVlvBnk2B
523354	InjVlvChipA
523355	InjVlvChipB
523370	CompresionTest
523420	Watchdog
523450	MultiStateSw
523451	MultiStateSw
523452	MultiStateSw
523470	RailPressValve
523490	ShutoffCond
523500	FrmMngTxTO

523550	TPU Defect
523561	BIP Cyl1
523562	BIP Cyl2
523563	BIP Cyl3
523564	BIP Cyl4
523565	BIP Cyl5
523566	BIP Cyl6
523567	BIP Cyl7
523568	BIP Cyl8
523600	SerialComm
523601	ReferenceVolt
523602	Fan Speed
523604	FrmMngTOEngTmp
523605	FrmMngTOTSC1AE
523606	FrmMngTOTSC1AR
523607	FrmMngTOTSC1DE
523608	FrmMngTOTSC1DR
523609	FrmMngTOTSC1PE
523610	FrmMngTOTSC1VE
523611	FrmMngTOTSC1VR
523612	ECUIntMonitor
523613	RailPressure
523615	MeterUnitValve
523617	HWEMonCom

4.21 EMR4

Fault Code (SPN)	Text
29	Hand Throttle
84	SpeedSensor
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
100	EngOil Press
102	Boost Press
105	Intake Temp
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
158	IgnitNotDetect
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
190	EngineSpeed
520	FrmMngTOTSC1TR
563	Main Relay 3
624	DiagnosticLamp
630	EEPROM Access
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
676	AirHeaterRelay
677	EngStartRelay
701	AuxInput1Act
702	AuxInOut#2
703	ECU IntError
704	CoolTempLamp
705	OilPressLamp
729	AirHeaterRelay
730	AirHeaterValve

898	RequestedSpeed
923	EngPowerOutput
975	Fan Actuator
1072	InterEngBrake
1074	EngBrkFlapAct
1079	Sensorvoltage
1080	ECUIntError
1081	PreheatLamp
1109	EngSdApproach
1231	CAN Bus OFF
1235	CAN Bus OFF
1237	OverrideSwitch
1322	MisfireCyls
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1346	Misfire
1450	MisfireCyl7
1451	MisfireCyl8
1638	CustomerSensor
2634	Main Relay
2791	EGR Actuator
523212	FrmMngTOEngPrt
523216	FrmMngTOPrHt
523218	FrmMngTORxCCVS
523222	FrmMngTOTCO1
523238	FrmMngTOSwtOut
523239	FrmMngDecV1
523240	FrmMngFunModCt
523350	InjVlvBnk1A
523351	InjVlvBnk1B
523352	InjVlvBnk2A
523353	InjVlvBnk2B
523354	InjVlvChipA
523355	InjVlvChipB
523370	CompressionTest
523420	Watchdog
523450	MultiStateSw
523451	MultiStateSw
523452	MultiStateSw
523470	RailPressValve

523490	ShutoffCond
523500	FrmMngTxTO
523550	TPU Defect
523561	BIP Cyl1
523562	BIP Cyl2
523563	BIP Cyl3
523564	BIP Cyl4
523565	BIP Cyl5
523566	BIP Cyl6
523567	BIP Cyl7
523568	BIP Cyl8
523600	SerialComm
523601	ReferenceVolt
523602	Fan Speed
523604	FrmMngTOEngTmp
523605	FrmMngTOTSC1AE
523606	FrmMngTOTSC1AR
523607	FrmMngTOTSC1DE
523608	FrmMngTOTSC1DR
523609	FrmMngTOTSC1PE
523610	FrmMngTOTSC1VE
523611	FrmMngTOTSC1VR
523612	ECUIntMonitor
523613	RailPressure
523615	MeterUnitValve
523617	HWEMonCom

4.22 E-control

Fault Code (SPN)	Text
0	RS485
29	FPP2
51	TPS1
84	Roadspeed
91	FPP1
94	FuelPress
100	EngOil Press
102	Boost Press
105	IAT
106	AMP
108	BPpressure
109	Coolant Press
110	ECT
168	BatteryVoltage
173	EGTtemperature
174	FTvoltage
190	CrankSignalFI
441	EMWT1
442	EMWT2
443	ERWT1voltage
444	ERWT2voltage
515	EngineSpeed
558	IVSstuck
628	FLASH
629	EEPROMChecksum
630	RAM
636	CRANKsignal
639	CAN-J1939fault
645	Tachoutput
651	Injector1
652	Injector2
653	Injector3
654	Injector4
655	Injector5
656	Injector6
657	Injector7
658	Injector8
659	Injector9
660	Injector10
695	OverrrdCtrlMode
697	PWM1-Gauge1

698	PWM2-Gauge2
699	PWM3-Gauge3
700	PWM4-Gauge4
701	AuxInput1Act
702	AuxInOut#2
703	AuxInOut#3
704	AUX1
705	AUX2
706	AUX3
710	AUXpull-down
711	AUXpull-down2
712	AUXpull-down3
713	AUXpull-down4
723	SecSpeedSens
724	EGO1 Open/Lazy
731	Knock1sensor
920	BuzzerControl
925	PWM6
926	PWM7
1079	SupplyVoltage
1080	Sensorsupply2
1127	TIP Voltage
1192	WGPvoltage
1213	MILcontrol
1239	FuelRunOutLong
1268	Sparkcoil1
1269	Sparkcoil2
1270	Sparkcoil3
1271	Sparkcoil4
1272	Sparkcoil5
1273	Sparkcoil6
1274	Sparkcoil7
1275	Sparkcoil8
1276	Sparkcoil9
1277	Sparkcoil10
1321	Start Relay
1323	Cylinder1
1324	Cylinder2
1325	Cylinder3
1326	Cylinder4
1327	Cylinder5
1328	Cylinder6
1329	Cylinder7
1330	Cylinder8

1347	Fuel-pump
1348	Fuelpump
1384	Shutdown J1939
1386	ERWT2 Voltage
1485	Powerrelay
1692	Boostcontrol
2000	CAN-J1939Fault
2646	PWM8 Short
2647	PWM9 Short
3050	Catalystinact
3051	CatalInactGas2
3056	UEGO return V
3217	UEGOSenseCell
3218	UEGOPumpVShort
3221	UEGOprocessor
3222	UEGO
3225	UEGOPump
3227	EGO1open/lazy
3256	EGO1open/lazy
3266	EGO4 Open/Lazy
3468	Gaseousfuel
3673	TPS2voltage
4236	Closes-loopGB1
4237	Adap-learnGB1
4238	Closes-loopGB2
4239	Adap-learnGB1
520197	Knock2sensor
520199	FPP1/2Invalid
520200	AdpLrnGasBank1
520201	AdpLrnGasBank2
520202	AdaptLearn LPG
520203	AdaptLearn NG
520204	C-L GasolBank1
520205	C-L GasolBank2
520206	ClosedLoop LPG
520207	Closed-loop NG
520208	EGO2 Open/Lazy
520209	EGO3 Open/Lazy
520210	EGO4 Open/Lazy
520211	CatalInactGas1
520212	CatalInactGas2
520213	CatalInactLPG
520214	CatalInactOnNG
520215	AUXAnaPullDn1V

520216	AUXAnaPullUp1V
520217	AUXAnaPullUp2V
520218	AUXAnaPullUp3V
520219	AUXAnaPullUp1
520220	AUXAnaPullUp2
520221	AUXAnaPullUp3
520222	AUX digital 1
520223	AUX digital 2
520224	AUX digital 3
520230	PWM5
520240	GasFuelTempVFI
520241	Knock2
520250	FPP1
520251	TPS2 voltage
520252	IACwiring
520260	MegaJector
520270	Gov1/2/3Fail
520401	FuelImpurityH
520800	InCam/DistFI
520801	ExhtCamPosErr
520803	MegaJectorFI
522525	CatalystInact
522540	PWM3-Gauge3
522593	MegaJectorComm
522594	MegaJectorVolt
522595	MegaJectorAct
522596	MegaJectorCirc
522597	MegaJectorComm
522598	PWM4 Short
522599	Injector1Short
522600	Injector4Short
522601	Injector2Short
522602	Injector3Short
522603	GasFuelTempVFI
522604	Power relay
522606	EGO2 Open/Lazy
522655	CLGasBank1/LPG
522660	AdpLrnGas1/LPG
522697	MicroprocFail
522710	TPS1 voltage
522711	TPS2 voltage
522712	FPP1 voltage
522737	EGO1 Open/Lazy
522752	CAMInputSignal
524260	SensorSupplyV2
524261	SensorSupplyV1

4.23 E-control

Fault Code (SPN)	Text
0	RS485
29	FPP2
51	TPS1
84	Roadspeed
91	FPP1
94	FuelPress
100	EngOil Press
102	Boost Press
105	IAT
106	AMP
108	BPpressure
109	Coolant Press
110	ECT
168	BatteryVoltage
173	EGTtemperature
174	FTvoltage
190	CrankSignalFI
441	EMWT1
442	EMWT2
443	ERWT1voltage
444	ERWT2voltage
515	EngineSpeed
558	IVSstuck
628	FLASH
629	EEPROMChecksum
630	RAM
636	CRANKsignal
639	CAN-J1939fault
645	Tachoutput
651	Injector1
652	Injector2
653	Injector3
654	Injector4
655	Injector5
656	Injector6
657	Injector7
658	Injector8
659	Injector9
660	Injector10
695	OverrrdCtrlMode
697	PWM1-Gauge1

698	PWM2-Gauge2
699	PWM3-Gauge3
700	PWM4-Gauge4
701	AuxInput1Act
702	AuxInOut#2
703	AuxInOut#3
704	AUX1
705	AUX2
706	AUX3
710	AUXpull-down
711	AUXpull-down2
712	AUXpull-down3
713	AUXpull-down4
723	SecSpeedSens
724	EGO1 Open/Lazy
731	Knock1sensor
920	BuzzerControl
925	PWM6
926	PWM7
1079	SupplyVoltage
1080	Sensorsupply2
1127	TIP Voltage
1192	WGPvoltage
1213	MILcontrol
1239	FuelRunOutLong
1268	Sparkcoil1
1269	Sparkcoil2
1270	Sparkcoil3
1271	Sparkcoil4
1272	Sparkcoil5
1273	Sparkcoil6
1274	Sparkcoil7
1275	Sparkcoil8
1276	Sparkcoil9
1277	Sparkcoil10
1321	Start Relay
1323	Cylinder1
1324	Cylinder2
1325	Cylinder3
1326	Cylinder4
1327	Cylinder5
1328	Cylinder6
1329	Cylinder7
1330	Cylinder8

1347	Fuel-pump
1348	Fuelpump
1384	Shutdown J1939
1386	ERWT2 Voltage
1485	Powerrelay
1692	Boostcontrol
2000	CAN-J1939Fault
2646	PWM8 Short
2647	PWM9 Short
3050	Catalystinact
3051	CatalInactGas2
3056	UEGO return V
3217	UEGOSenseCell
3218	UEGOPumpVShort
3221	UEGOprocessor
3222	UEGO
3225	UEGOPump
3227	EGO1open/lazy
3256	EGO1open/lazy
3266	EGO4 Open/Lazy
3468	Gaseousfuel
3673	TPS2voltage
4236	Closes-loopGB1
4237	Adap-learnGB1
4238	Closes-loopGB2
4239	Adap-learnGB1
520197	Knock2sensor
520199	FPP1/2Invalid
520200	AdpLrnGasBank1
520201	AdpLrnGasBank2
520202	AdaptLearn LPG
520203	AdaptLearn NG
520204	C-L GasolBank1
520205	C-L GasolBank2
520206	ClosedLoop LPG
520207	Closed-loop NG
520208	EGO2 Open/Lazy
520209	EGO3 Open/Lazy
520210	EGO4 Open/Lazy
520211	CatalInactGas1
520212	CatalInactGas2
520213	CatalInactLPG
520214	CatalInactOnNG
520215	AUXAnaPullDn1V

520216	AUXAnaPullUp1V
520217	AUXAnaPullUp2V
520218	AUXAnaPullUp3V
520219	AUXAnaPullUp1
520220	AUXAnaPullUp2
520221	AUXAnaPullUp3
520222	AUX digital 1
520223	AUX digital 2
520224	AUX digital 3
520230	PWM5
520240	GasFuelTempVFI
520241	Knock2
520250	FPP1
520251	TPS2 voltage
520252	IACwiring
520260	MegaJector
520270	Gov1/2/3Fail
520401	FuelImpurityH
520800	InCam/DistFI
520801	ExhtCamPosErr
520803	MegaJectorFI
522525	CatalystInact
522540	PWM3-Gauge3
522593	MegaJectorComm
522594	MegaJectorVolt
522595	MegaJectorAct
522596	MegaJectorCirc
522597	MegaJectorComm
522598	PWM4 Short
522599	Injector1Short
522600	Injector4Short
522601	Injector2Short
522602	Injector3Short
522603	GasFuelTempVFI
522604	Power relay
522606	EGO2 Open/Lazy
522655	CLGasBank1/LPG
522660	AdpLrnGas1/LPG
522697	MicroprocFail
522710	TPS1 voltage
522711	TPS2 voltage
522712	FPP1 voltage
522737	EGO1 Open/Lazy
522752	CAMInputSignal
524260	SensorSupplyV2
524261	SensorSupplyV1

4.24 E-control LCI

Fault Code (SPN)	Text
0	Gov1/2/3fail
29	FPP2voltage
51	TPS1voltage
84	Roadspeed
91	FPP1voltage
94	FPvoltage
100	EngOil Press
102	Boost Press
105	IATvoltage
106	MAPpressure
108	BPpressure
109	Coolant Press
110	ECTvoltage
168	BatteryVoltage
173	EGTtemperature
174	FTvoltage
441	EMWT1voltage
442	EMWT2voltage
515	EngineSpeed
558	IVSstuck
616	Startrelay
628	FLASH
629	EEPROMChecksum
630	RAM
632	FuelShutoff
636	CRANKsignal
639	CAN-J1939fault
645	Tachoutput
651	Injector1
652	Injector2
653	Injector3
654	Injector4
655	Injector5
656	Injector6
657	Injector7
658	Injector8
659	Injector9
660	Injector10
697	PWM1-Gauge1
698	PWM2-Gauge2
699	PWM3-Gauge3

700	PWM4-Gauge4
701	AuxInput1Act
702	AuxInOut#2
703	AuxInOut#3
704	AUX1
705	AUX2
706	AUX3
707	AUXdigital1
708	AUXdigital2
709	AUXdigital3
710	AUXpull-down
711	AUXpull-down2
712	AUXpull-down3
713	AUXpull-down4
723	SecSpeedSens
731	Knock1sensor
920	BuzzerControl
924	PWM5
925	PWM6
926	PWM7
1079	Sensorvoltage
1080	Sensorsupply2
1110	J1939request
1192	WGPvoltage
1213	MILcontrol
1268	Sparkcoil1
1269	Sparkcoil2
1270	Sparkcoil3
1271	Sparkcoil4
1272	Sparkcoil5
1273	Sparkcoil6
1274	Sparkcoil7
1275	Sparkcoil8
1276	Sparkcoil9
1277	Sparkcoil10
1323	Cylinder1
1324	Cylinder2
1325	Cylinder3
1326	Cylinder4
1327	Cylinder5
1328	Cylinder6
1329	Cylinder7
1330	Cylinder8
1347	Fuel-pump

1348	Fuelpump
1385	ERWT1voltage
1485	Powerrelay
3050	Catalystinact
3217	EGO1open/lazy
3227	EGO1open/lazy
3256	EGO1open/lazy
3468	Gaseousfuel
3673	TPS2voltage
4236	Closes-loopGB1
4237	Adap-learnGB1
4238	Closes-loopGB2
4239	Adap-learnGB1
520197	Knock2sensor
520252	IACwiring
520260	MegaJector

4.25 MEFI4B or MEFI5B

Fault Code (SPN)	Text
38	FuelLevel2
51	ThrottlePos
84	Speed Sensor
94	FuelDelPress
96	FuelLevel1
98	EngineOilLevel
100	EngOil Press
105	Intake Temp
106	AirInletPress
108	BaroSensor
109	Coolant Press
110	EngCool Temp
113	GovIntHigh
174	Fuel Temp
175	OilTemp
620	5V SupplyFail
627	SystemVoltage
630	CalMemory
636	Crank Fault
651	Injector1
652	Injector2
653	Injector3
654	Injector4
655	Injector5
656	Injector6
657	Injector7
658	Injector8
723	SecSpeedSens
3563	ScipSensor
65537	OxygenSensor
65538	EgrNotTracking
65539	Est
65540	EstOrBypass
65541	Coil A Fault
65542	Coil B Fault
65543	Coil C Fault
65544	Coil D Fault
65545	Coil E Fault
65546	Coil F Fault
65547	Coil G Fault
65548	Coil H Fault

65549	Knock1Inactive
65550	Knock2Inactive
65551	RomAndCheckSum
65552	OxygenSensor1
65553	OxygenSensor2
65554	FuelPumpRelay
65555	Inj A Short
65556	Inj B Short
65557	Recirc Fault
65558	Depswr Ref
65559	CANBus HWFault
65560	CanBusGovCmd
65561	OxyVoltageA1
65562	OxyVoltageA2
65563	OxyVoltageB1
65564	OxyVoltageB2
65565	OxyFuelTrimA
65566	OxyFuelTrimB
65567	OxyResponseA1
65568	OxyResponseB1
65570	CamPhaserW
65571	CamPhaserX
65572	CamPhaserY
65573	CamPhaserZ
65580	CPU
65581	MHC
65582	NvRAM
65590	Misfire
65591	MisfireCyl1
65592	MisfireCyl2
65593	MisfireCyl3
65594	MisfireCyl4
65595	MisfireCyl5
65596	MisfireCyl6
65597	MisfireCyl7
65598	MisfireCyl8
65599	MisfireRandom
65600	TacModuleFault
65601	EtcTps2
65602	EtcTps1
65604	EtcPps2
65605	EtcPps1
65610	EtcTps12Corr
65613	EtcPps12Corr

65615	EtcActuation
65616	EtcProcess
65618	EtcReturn
65620	V5Buff A
65621	V5Buff B
65671	Cat A Temp
65672	Cat B Temp
65673	Cat A Temp
65674	Cat B Temp
65675	Cat A Efficien
65676	Cat B Efficien
65677	Cat A Exotherm
65678	Cat B Exotherm
65690	VarGov
65701	Gener Warning1
65702	Gener Warning2
65703	Stop Engine
65710	EmergencyStop
65723	CamSensorW
65724	CamSensorX
65725	CamSensorY
65726	CamSensorZ
66001	StarterRelayLS
66002	StarterRelayHS
66003	MilDriver
66004	SvsLamp
66005	GovStatusLamp
66006	DTCLamp3
66007	BuzzerDriver
66008	DTCLamp1
66009	DTCLamp2
66010	SlowModeLamp
66011	SpeedBasedOut
66012	TransUpShift
66013	Powertrain
66014	Powertrain
66015	CanisterPurge
66016	EGR
66017	FuelPump1Relay
66018	Tachometer
66019	OxyHeaterA1
66020	OxyHeaterB1
66021	OxyHeaterA2
66022	OxyHeaterB2

66025	FuelPump2Relay
66026	ShiftInterrupt
66030	InterCooler
66035	BoostControl
66040	OEMOutput1
66041	OEMOutput2
66042	OEMOutput3
66043	OEMOutput4

4.26 MEFI 6

Fault Code (SPN)	Text
27	EGRValvePos
38	ExtTankFuelLvl
51	ThrottlePos
84	Speed Sensor
87	CruiseSpdHigh
91	AccelPedalPos
94	FuelDelPress
96	Fuel Level
98	EngineOilLevel
100	EngOil Press
103	TBC1Speed
105	Intake Temp
106	AirInletPress
108	BarometricPres
109	Coolant Press
110	EngCool Temp
113	GovIntHigh
132	MassAirFlow
135	FuelPump
158	BattPotential
159	FuelRailPres
167	SysVolt
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
188	SpeedAtIdleLow
190	EngineSpeed
237	VIN
245	OdometerNotPrg
527	SpdControlLamp
596	CruiseContInpA
597	BrakeSwitch
599	CruiseCtrSet
600	CruiseCtrCoast
601	CruiseCtResume
602	CruiseCtrAccel
620	5V SupplyFail
623	RedStopLamp
627	PowerLost
628	EMSProgFailure
630	CalibrMemFail
632	FuelShutoff

636	CrankSensor
637	Pickup Crank
639	J1939 CAN Bus
650	ActuatorSupply
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
680	InjPressRegul
723	SecSpeedSens
731	Knock1sensor
836	EngRPMOutput
837	ContModuleVSS
876	ClutchRelay
911	Maintenance
931	FuelPumpSec
987	CheckEngLamp
1071	Fan1
1127	BoostPress
1188	WastegateOut
1195	ImmKeyNoProg
1196	ImmKeyIncorr
1213	MILcontrol
1239	Fuel Leakage
1268	IgnitionCoil#1
1269	IgnitionCoil#2
1270	IgnitionCoil#3
1271	IgnitionCoil#4
1272	IgnitionCoil#5
1273	IgnitionCoil#6
1274	IgnitionCoil#7
1275	IgnitionCoil#8
1321	Start Relay
1322	MisfireCyls
1323	MisfireCyl1
1324	MisfireCyl2
1325	MisfireCyl3
1326	MisfireCyl4
1327	MisfireCyl5
1328	MisfireCyl6
1329	MisfireCyl7

1330	MisfireCyl8
1352	Cyl1Knock
1353	Cyl2Knock
1354	Cyl3Knock
1355	Cyl4Knock
1356	Cyl5Knock
1357	Cyl6Knock
1358	Cyl7Knock
1359	Cyl8Knock
1360	Cyl9Knock
1361	Cyl10Knock
1362	Cyl11Knock
1363	Cyl12Knock
1393	IgnCoilASecCir
1394	IgnCoilBSecCir
1395	IgnCoilCSecCir
1396	IgnCoilDSecCir
1397	IgnCoilESecCir
1398	IgnCoilFSecCir
1399	IgnCoilGSecCir
1400	IgnCoilHSecCir
1442	FuelPresReg2
1634	CVN Error
1635	CMM_CODECAL
1765	FuelValve
2000	ECU failure
2430	ECSensor
2434	ExGasTempB2
2628	FuelShutoffVlv
2645	Main Relay
2659	EGRFlow
2807	FuelShutoffVlv
2923	PwrSteerPress
3050	CatEffBellowB1
3051	CatEffBellowB2
3053	FuelCapLamp
3061	ColdStart
3217	O2B1S1
3223	O2B1S1HtrLow
3227	PostCatFuel
3232	O2B1S2
3256	O2B1S2
3261	O2B2S1
3266	PostCatFuel

3271	O2B2S2
3464	ThrottleCmd
3472	SecAirFlow
3476	SecAirValv Bt
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3563	IntakePress 1
3673	Throttle
4002	StarterReqCirc
4256	CrankRPMTooLow
65537	OxygenSensor
65538	EgrNotTracking
65539	Est
65540	EstOrBypass
65541	Coil A Fault
65542	Coil B Fault
65543	Coil C Fault
65544	Coil D Fault
65545	Coil E Fault
65546	Coil F Fault
65547	Coil G Fault
65548	Coil H Fault
65549	Knock1Inactive
65550	Knock2Inactive
65551	RomAndChecksum
65552	OxygenSensor1
65553	OxygenSensor2
65555	ChangeOil
65600	TacModuleFault
65554	FuelPumpRelay
65556	Inj B Short
65557	Recirc Fault
65558	Depspwr Ref
65559	CANBus HWFault
65560	CanBusGovCmd
65561	OxyVoltage
65562	PostO2Voltage
65565	OxyFuelTrim
65567	OxyResponse
65580	CPU
65581	MHC
65582	NvRam
65585	FuelSellInput
65601	EtcTps2
65602	EtcTps1
65604	EtcPps2
65605	EtcPps1

65613	EtcPps12
65615	EtcActuation
65616	EtcProcess
65618	EtcReturn
65675	CatEfficiencyA
65676	CatEfficiencyB
65701	CoolantLevel
65702	Gener Warning2
65703	Stop Engine
65723	CamSensorW
65724	CamSensorX
65725	CamSensorY
65728	CamSensorZ
66002	StarterRelay
66003	MilDriver
66011	GasLockOFF
66013	PowertrainDrr
66014	PowertrainSw
66015	FuelControlVlv
66019	OxyHeater
66021	PostOxy Heater
75701	Gener Warning1
522545	MIL_Lamp
522608	O2 Heater
522609	Rear O2
522610	Throttle
522611	Throttle Area1
522612	Throttle Area3
522613	Throttle Area3
522614	ThrottleFailed
522615	ThrottleClosed
522616	ThrottlePos
522617	ThrottleNotDwn
522630	O2LeanBank1
522631	O2RichBank1
522632	O2LeanBank2
522633	O2RichBank2
522635	LFBK1LeanFuel
522636	LFBK1RichFuel
522637	LFBK2LeanFuel
522638	LFBK2RichFuel
522690	SPI Bus Error
522691	ChecksumError
522692	RedundantFlt
522694	ChecksumError
522695	RMC_PAPMPP
522696	RMC_PEDMPP
522698	RMC_CLOCKPP

522699	RMC_INHWP
522700	RMC_TIMEOUTPP
522712	APS_1_CC1
522713	APS_2_CC1
522729	ADPT_OBD_GAIN
522730	ADPT_OBD_OFF
522731	ADPT_OBD_PRES
522735	O2 Bank1
522736	O2 Bank1
522739	O2 HeaterBank1
522740	O2 HeaterBank1
522743	OBDII Lean1
522744	OBDII Lean1
522745	OXY_SENS_MSR
522746	OXY_S2_MSR
522747	OXY_SENS_PER
522748	OXY_S2_ PERIODE
522749	OXY_SENS_RL_R
522750	OXY_S2_RL_ RESP
522752	FailToStart
522755	FuelPump
523821	OilLamp
524260	5VPowerSupply
524261	5VPowerSupply
524266	ThrottleMotor
524286	ThrottleMotor
524287	TorqReduction

4.27 SECM

Fault Code (SPN)	Text
51	ThrottlePos
100	EngOil Press
102	Boost Press
105	Intake Temp
109	Coolant Press
110	EngCool Temp
158	BattPotential
190	EngineSpeed
632	FuelShutoff
651	InjectorCyl#1
724	Heated Oxygen
911	ServiceFault1
912	ServiceFault2
913	ServiceFault3
1079	Sensorvoltage
1116	GasFuelAdapt
1118	GasO2
1119	ActExhaustOxyg
1213	MILcontrol
1268	IgnitionCoil#1
1269	IgnitionCoil#2
1270	IgnitionCoil#3
1271	IgnitionCoil#4
1272	IgnitionCoil#5
1273	IgnitionCoil#6
1274	IgnitionCoil#7
1275	IgnitionCoil#8
1379	ServiceFault4
1442	LSD FltDither1
1443	LSD FltDither2
3057	GasPostO2
3464	ThrottleCmd

4.28 LECM E6

Fault Code (SPN)	Text
516096	AFR Lean
516097	AFR Rich
516100	MAP1SnsrVoltLo
516101	MAP1SnsrVoltHi
516102	MAP2SnsrVoltLo
516103	MAP2SnsrVoltHi
516104	MAPDiff OOR
516105	MAP Hi
516110	MAT1Snsr InpLo
516112	MAT1Snsr InpHi
516113	MAT2SnsrVoltLo
516114	MAT2SnsrVoltHi
516115	LossofMAT Snsr
516116	MAT Hi
516121	UEGO1 Failure
516122	UEGONrnstVltLo
516123	UEGO1 Snsr Flt
516124	UEGO AINSnsrLo
516125	UEGO AINSnsrHi
516126	UEGONrnstVltHi
516127	NOx Snsr1 Alrm
516128	NOx Snsr2 Alrm
516129	NOxSnsrHtr Opn
516130	NOxSnsrHtrShrt
516131	NOx Snsr Open
516132	NOx Snsr Short
516133	Nox O2 SnsrOpn
516134	Nox O2SnsrShrt
516135	NOx ContrlFail
516161	CH4 Snsr InpLo
516162	CH4 Snsr InpHi
516167	TPS1 InpVoltLo
516168	TPS1 InpVoltHi
516169	TPS2 InpVoltLo
516170	TPS2 InpVoltHi
516171	Boost PSVoltLo
516172	Boost PSVoltHi
516173	Thrott1 PWMfit
516174	Thrott2 PWMfit
516175	Bypass PWM fit
516176	EID Driver fit
516177	Lam CCorr >Max
516178	Lam CCorr <Min

516179	GQCL CCorr>Max
516180	GQCL CCorr<Min
516181	NOx CCorr<Min
516182	NOx CCorr>Max
516183	CAN1 Port Flt
516184	CAN2 Port Flt
516185	CAN3 Port Flt
516186	CAN4 Port Flt
516187	CAN1 Tx Error
516188	CAN2 Tx Error
516189	CAN3 Tx Error
516190	CAN4 Tx Error
516191	CAN1 Rx Error
516192	CAN2 Rx Error
516193	CAN3 Rx Error
516194	CAN4 Rx Error
516206	Misfire Detect
516209	PTP SnsrVoltLo
516210	PTP SnsrVoltHi
516211	MixThrtt1NotOK
516212	MixThrtt2NotOK
516213	Bypass Not OK
516216	Throttle Limit
516217	NOxSnsr1Wtchdg
516218	NOxSnsr2Wtchdg
516221	Tecjet1 FGT Hi
516222	Tecjet1 FGP Hi
516223	Tecjet1 CoilHi
516225	Tecjet1 FGT Lo
516226	Tecjet1 FGP Lo
516229	Tcjet1FGTLoLim
516230	Tecjet1dPLoLim
516231	Tcjet1FGPLoLim
516233	Tcjet1FGTHiLim
516234	Tecjet1dPHiLim
516235	Tcjet1FGPHiLim
516236	Tecjet1 Flo NR
516239	Tecjet2 FGT Hi
516240	Tecjet2 FGP Hi
516243	Tecjet2 FGT Lo
516244	Tecjet2 FGP Lo
516245	Tecjet2 CoilLo
516246	Tcjet2BattV Lo
516247	Tcjet2FGTLoLim

516248	Tecjet2dPLoLim
516249	Tcjet2FGPLoLim
516250	Tcjet2BattV Hi
516251	Tcjet2FGTHiLim
516252	Tecjet2dPHiLim
516253	Tcjet2FGPHiLim
516254	Tecjet2 Flo NR
516255	Tecjet1VlvePos
516256	Tecjet1 dP Hi
516257	Tcjet1VlvPosHi
516258	Tecjet1 dP Lo
516259	Tcjet1VlvPosLo
516260	Tecjet1 SD
516261	Tcjet1 Int Fit
516262	Tcjet1ZeroPrs
516263	Tecjet2 dP Hi
516264	Tcjet2VlvPosHi
516265	Tecjet2 dP Lo
516266	Tcjet2VlvPosLo
516307	ProAct1 Alarm
516308	ProAct2 Alarm
516309	Fseries Alarm
516310	easYgenWtchdog
516311	Bio Gas NA
516312	FuelBlndRatLo
516313	FuelBlndRatHi
516314	FuelBlndProcLo
516315	FuelBlndProcHi
516316	PwrFB RatioLim
516317	LdReducFBRatio
516318	Throttle atMax
516319	LoadSetpnt NR
516320	TJ2 PosLimiter
516321	FB Proclimiter
516322	easYgenStpCmnd
516323	TC ModulWtchdg
516380	EID OpnPrmCyl1
516381	EID OpnPrmCyl2
516382	EID OpnPrmCyl3
516383	EID OpnPrmCyl4
516384	EID OpnPrmCyl5
516385	EID OpnPrmCyl6
516386	EID OpnPrmCyl7
516387	EID OpnPrmCyl8
516388	EID OpnPrmCyl9
516389	EIDOpnPrmCyl10
516390	EIDOpnPrmCyl11
516391	EIDOpnPrmCyl12

516392	EIDOpnPrmCyl13
516393	EIDOpnPrmCyl14
516394	EIDOpnPrmCyl15
516395	EIDOpnPrmCyl16
516396	EIDOpnPrmCyl17
516397	EIDOpnPrmCyl18
516398	EIDOpnPrmCyl19
516399	EIDOpnPrmCyl20
516400	EIDShrtCyl1
516401	EIDShrtCyl2
516402	EIDShrtCyl3
516403	EIDShrtCyl4
516404	EIDShrtCyl5
516405	EIDShrtCyl6
516406	EIDShrtCyl7
516407	EIDShrtCyl8
516408	EIDShrtCyl9
516409	EIDShrtCyl10
516410	EIDShrtCyl11
516411	EIDShrtCyl12
516412	EIDShrtCyl13
516413	EIDShrtCyl14
516414	EIDShrtCyl15
516415	EIDShrtCyl16
516416	EIDShrtCyl17
516417	EIDShrtCyl18
516418	EIDShrtCyl19
516419	EIDShrtCyl20
516500	PlugLife Cyl1
516501	PlugLife Cyl2
516502	PlugLife Cyl3
516503	PlugLife Cyl4
516504	PlugLife Cyl5
516505	PlugLife Cyl6
516506	PlugLife Cyl7
516507	PlugLife Cyl8
516508	PlugLife Cyl9
516509	PlugLife Cyl10
516510	PlugLife Cyl11
516511	PlugLife Cyl12
516512	PlugLife Cyl13
516513	PlugLife Cyl14
516514	PlugLife Cyl15
516515	PlugLife Cyl16
516516	PlugLife Cyl17
516517	PlugLife Cyl18
516518	PlugLife Cyl19
516519	PlugLife Cyl20

516520	EID CrnkSensor
516521	EID SyncSensor
516522	EID Cam Sensor
516523	EID Timing Err
516524	EID Overspeed
516525	EID MappingFlt
516526	EIDBoostVoltLo
516527	EIDBoostVoltHi
516547	EID CrankSignl
516548	EID ToothCount
516549	EID SyncConfig
516550	EID Sync Synch
516551	EID Sync Loss
516552	EID SyncSignal
516553	EIDSyncTthCnt
516554	EID Cam Config
516555	EID Cam Synch
516556	EID Cam Loss
516557	EID Cam Signal
516558	EIDCamToothCnt
516559	EID CAN1Severe
516560	EIDCAN1Intrmtn
516561	EID CAN2Severe
516562	EIDCAN2Intrmtn
516563	EID CAN3Severe
516564	EIDCAN3Intrmtn
516687	UEGO1 VMShort
516688	UEGO1 VMVubLoV
516689	UEGO1VMShrtBat
516690	UEGO1VMOpnWire
516691	UEGO1 UNShort
516692	UEGO1 UNVubLoV
516693	UEGO1UNShrt B+
516694	UEGO1UNOpnWire
516695	UEGO1IA/IPShrt
516696	UEGO1IA/VubLoV
516697	UEGO1IA/ShrtB+
516698	UEGO1IAOpnWire
516699	UEGO1HTROpnWir
516700	UEGO1 HTR Shrt
516701	UEGO1HTROvrTmp
516702	UEGO1 run Fail
516703	UEGO1Fail Heat
516704	UEGO1CtlTmpWnd
516705	UEGO1AirCalLim
516706	UEGO1AirCalFlt
516707	LECM Boot Up
516708	MAP diff OOR

516709	Loss MAP Sensr
516710	BackfreIntMan
516711	MAP HH
516712	EngOverspeed
516713	ExternalE-Stop
516714	InternalE-Stop
516715	Loss Load Snsr
516716	Load HiHi
516717	Loss MAT Snsr
516718	MAT HiHi
516719	LubeOilTmpHiHi
516720	FueVlv1Msmtch
516721	FueVlv2Msmtch
516722	Air Temp HIHI
516732	Thrott1PWMflt
516733	Thrott2PWMflt
516734	Bypass PWM fit
516735	EID Driver flt
516736	CAN1 Port Flt
516737	CAN2 Port Flt
516738	CAN3 Port Flt
516739	CAN4 Port Flt
516749	Misfire Detect
516750	MixThrot1NotOK
516751	MixThrot2NotOK
516752	Bypass Not OK
516753	UncntrlDvrpwr
516754	Tecjet1 Wtchdg
516755	Tecjet2 Wtchdg
516756	Knock Watchdog
516757	IgnitionWtchdg
516758	Proact1 Wtchdg
516759	Proact2 Wtchdg
516760	FSries1Wtchdg
516761	TJ1CANFloDmnd
516762	TJ2CANFloDmnd
516763	TJ1 Valve Pos
516764	Tecjet1 SD
516765	TJ1 Intrnl Flt
516766	TJ1ZeroPrsDet
516767	TJ1 KeySWOFF
516768	TJ2 VlvPosErr
516769	Tecjet2 SD
516770	TJ2 Intrnl Flt
516771	TJ2ZeroPrsDet
516772	TJ2 KeySWOFF
516773	IO Lock Assrtd
516783	Proact1 RunEna

516784	Proact1Gnrl SD
516785	Proact2 RunEna
516786	Proact2Gnrl SD
516787	F-SriesBoostSD
516788	easYgen Wtchdg
516789	TC Modl Wtchdg
516858	Start Fail
516859	Engine Stall
516860	IgnitionOffRun
516861	IgnOffCool
516862	EID IgnitionSD
516863	EID HiTemp SD
516864	EID DrvrEnabSD
516865	EIDDrvrEnaSDSU
516866	Knock SnsrFail

4.29 ECM

Fault Code (SPN)	Text
91	Hidden
100	EngOil Press
102	Boost Press
105	Intake Temp
108	BarometricPres
109	Coolant Press
110	EngCool Temp
157	FuelRail Press
172	AirInlet Temp
174	Fuel Temp
190	EngineSpeed
628	EMSProgFailure
633	FuelActuator
636	Crank Sensor
639	Hidden
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
675	Glow plug lamp
676	Hidden
677	Hidden
723	SecSpeedSens
987	CheckEngLamp
1077	CPU Monitor IC
1079	Sensorvoltage
1080	Sensorsupply2
1239	Fuel Leakage
1240	NoPumpPresFeed
1347	SCV OC +B S GS
1485	ECU MainRelay
10001	EGR Position
10002	EGR Valve Ctrl
10003	InjectNozzCom1
10004	InjectNozzCom2
10005	ChargeCircuit1
10006	ChargeCircuit2
10007	CPU fault
10008	A/D Conversion
10009	5V SupplyFail3
10010	5V SupplyFail4

10011	5V SupplyFail5
10013	EEPROM fault
1131	ManifTempSens
1381	/Chinese/
158	BattHighVolt
10050	InjectorICMalf
10052	InjICheckSum
10051	InjectComm
10046	Sw-IC1Int
10048	Sw-IC1Comm
10045	ADIC
697	5V SupplyFail3
10033	RAM malfunction
10032	QR code

4.30 EDC

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDiffPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay

898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay
65579	Hidden
65585	CoolantTmpSens
65588	BoostPressSens
65589	FuelTempSens
65592	OilPressSens
65594	OilTempSens
0x10051	Cyl 1 error
0x10052	Cyl2 error
0x10053	Cyl3 error
0x10054	Cyl4 error
0x10055	Cyl5 error
0x10056	Cyl6 error
0x10059	PWM Powerstage
0x1005A	AD-Channel
0x1005B	High pressure
0x10061	Cyl 1 ShortCir
0x10062	Cyl2 ShortCir
0x10063	Cyl3 ShortCir
0x10064	Cyl4 ShortCir
0x10065	Cyl5 ShortCir
0x10066	Cyl6 ShortCir
0x10067	Cyl 1 OpenLoad
0x10068	Cyl2 OpenLoad
0x10069	Cyl3 OpenLoad
0x1006A	Cyl4 OpenLoad
0x1006B	Cyl5 OpenLoad
0x1006C	Cyl6 OpenLoad
0x1006D	Rail monitor
0x10071	Bank 1 error
0x10072	Bank 1 error
0x10073	Bank 2 error
0x10074	Bank 2 error
0x1007B	Misfire
0x1007C	Chip error
0x1007E	InjectionLimit
0x10084	SRA2EDC
0x10085	Load-IdleRange
0x30085	Drift Limit
0x10086	Supply Voltage

0x20086	AirMassSignal
0x30086	AirMassSignal
0x40086	Reference
0x10087	PosGovernor
0x10088	NegGovernor
0x20088	GovernorCheck
0x10089	EGR PowerStage
0x20089	EGR PowerStage
0x30089	EGR PowerStage
0x1008A	EGR Bypass
0x1008B	ThrottActuator
0x2008B	ValveActuator
0x3008B	TVA
0x1008D	PosGovernor
0x1008E	NegGovernor
0x1008F	RgnNrm time
0x10091	BoostPressure
0x10092	BPA
0x20092	BPA
0x30092	BPA
0x10093	TurbineSpeed
0x10094	EPctl
0x10095	PCR deviation
0x20095	PCR Check
0x10096	Cyl 1 Timing
0x20096	Cyl2 Timing
0x30096	Cyl3 Timing
0x40096	Cyl4 Timing
0x10097	Cyl 1 Calibr
0x20097	Cyl2 Calibr
0x30097	Cyl3 Calibr
0x40097	Cyl4 Calibr
0x10098	Cylinder 5
0x20098	Cylinder 6
0x30098	Cylinder 5
0x40098	Cylinder 6
0x10099	P2 pressure
0x1009A	TurbineSpeed
0x1009B	Hi TurbineSpd
0x1009C	P3 pressure
0x1009D	InnerCtrITemp
0x1009E	OuterCtrITemp
0x1009F	EGSys-NOxEstlv
0x100A1	Lambda Nox

0x200A1	Lambda Nox
0x100A2	Nox Sensor
0x100A3	Nox Sensor
0x100A4	Nox Sensor
0x100A5	DM1DCU timeout
0x100A6	SCR1 timeout
0x200A6	SCR2 timeout
0x100A8	LowUreaLevel
0x200A8	LowUreaLevel
0x300A8	Urea Sensor
0x400A8	Wrong urea
0x100A9	GasTemp
0x200AB	GasPipePress
0x100AB	VDC1
0x100AC	EGR
0x200AC	EngGsFlowRt
0x100AD	ExhaustGasTemp
0x100AE	AirHumidity
0x100AF	SPN1 message
0x200AF	SPN2 message
0x300AF	SPN3 message
0x400AF	SPN4 message

4.31 EDC Tier3 (EDC7)

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDiffPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay

898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay
65579	Hidden
65585	CoolantTmpSens
65588	BoostPressSens
65589	FuelTempSens
65592	OilPressSens
65594	OilTempSens
65617	Cyl 1 error
65618	Cyl2 error
65619	Cyl3 error
65620	Cyl4 error
65621	Cyl5 error
65622	Cyl6 error
65625	PWM Powerstage
65626	AD-Channel
65627	High pressure
65633	Cyl 1 ShortCir
65634	Cyl2 ShortCir
65635	Cyl3 ShortCir
65636	Cyl4 ShortCir
65637	Cyl5 ShortCir
65638	Cyl6 ShortCir
65639	Cyl 1 OpenLoad
65640	Cyl2 OpenLoad
65641	Cyl3 OpenLoad
65642	Cyl4 OpenLoad
65643	Cyl5 OpenLoad
65644	Cyl6 OpenLoad
65645	Rail monitor
65649	Bank 1 error
65650	Bank 1 error
65651	Bank 2 error
65652	Bank 2 error
65659	Misfire
65660	Chip error
65662	InjectionLimit
65668	SRA2EDC
65669	Load-IdleRange
196741	Drift Limit
65670	Supply Voltage

131206	AirMassSignal
196742	AirMassSignal
262278	Reference
65671	PosGovernor
65672	NegGovernor
131208	GovernorCheck
65673	EGR PowerStage
131209	EGR PowerStage
196745	EGR PowerStage
65674	EGR Bypass
65675	ThrottActuator
131211	ValveActuator
196747	TVA
65677	PosGovernor
65678	NegGovernor
65679	RgnNrm time
65681	BoostPressure
65682	BPA
131218	BPA
196754	BPA
65683	TurbineSpeed
65684	EPctl
65685	PCR deviation
131221	PCR Check
65686	Cyl 1 Timing
131222	Cyl2 Timing
196758	Cyl3 Timing
262294	Cyl4 Timing
65687	Cyl 1 Calibr
131223	Cyl2 Calibr
196759	Cyl3 Calibr
262295	Cyl4 Calibr
65688	Cylinder 5
131224	Cylinder 6
196760	Cylinder 5
262296	Cylinder 6
65689	P2 pressure
65690	TurbineSpeed
65691	Hi TurbineSpd
65692	P3 pressure
65693	InnerCtrITemp
65694	OuterCtrITemp
65695	EGSys-NOxEstlv
65697	Lambda Nox

131233	Lambda Nox
65698	Nox Sensor
65699	Nox Sensor
65700	Nox Sensor
65701	DM1DCU timeout
65702	SCR1 timeout
131238	SCR2 timeout
65704	LowUreaLevel
131240	LowUreaLevel
196776	Urea Sensor
262312	Wrong urea
65705	GasTemp
131243	GasPipePress
65707	VDC1
65708	EGR
131244	EngGsFlowRt
65709	ExhaustGasTemp
65710	AirHumidity
65711	SPN1 message
131247	SPN2 message
196783	SPN3 message
262319	SPN4 message

4.32 ADEM III

Fault Code (SPN)	Text
29	Hand Throttle
100	EngOil Press
105	Intake Temp
108	BarometricPres
109	Coolant Press
110	EngCool Temp
132	TurboHeatLimit
157	FuelRailPress
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
190	EngineSpeed
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
659	InjectorCyl#9
660	InjectorCyl#10
661	InjectorCyl#11
662	InjectorCyl#12
677	EngStartRelay
723	SecSpeedSens
729	AirHeaterRelay
1108	SdOverridden
1127	BoostPress
1239	Fuel Leakage
1661	CrankTermRelay
1980	OverspeedLamp
1981	OilPressLamp
1984	ShutdownLamp
1985	J1 5V SupplyEr
1986	RemoteOperLamp
1987	CoolTempLamp
1993	WarningLamp
1994	DiagnosticLamp
1995	PersModuleErr
1997	FuelValveErr
1998	J2 5V SupplyEr

4.33 Delphi DCM

Fault Code (SPN)	Text
51	ThrottlePos
84	Speed Sensor
86	CruiseControl
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
156	FuelTiming
157	FuelRail Press
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
623	RedStopLamp
624	DiagnosticLamp
626	PrehActuator
627	PowerLost
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2

653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
731	Knock1sensor
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
974	RemAPSensor
1075	ElectrLiftPump
1076	FuelPump
1079	Sensorvoltage
1080	Sensorsupply2
1083	ECU Temperat
1109	EngSdApproach
1110	Engine Sd
1213	MILcontrol
1485	ECU MainRelay
1804	IntakeAirHeatr
2648	ServiceTime

4.34 JDEC

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
100	EngOil Press
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRail Press
158	BattPotential
168	BatteryVoltage
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
237	VIN
412	EGR Temp
515	EngDesOpSpeed
611	InjectorWiring
620	5V SupplyFail
627	PowerLost
629	EEPROMChecksum
632	FuelShutoff
636	Crank Sensor
637	TimingSensor
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
1076	FulnPuFCtrlVlv
1077	FuellnPumpCtrl

1078	FuellnPumpSens
1079	Sensorvoltage
1080	Sensorsupply2
1109	EngSdApproach
1110	Engine Sd
1172	Turbo Temp
1347	FuelPressure
1348	FuelPumpAsse#2
1485	ECU MainRelay
1569	EngProtDerate
2000	ECU failure
2630	ChargeAirTemp

4.35 ECM

Fault Code (SPN)	Text
29	APP2
91	APP1
100	EngOil Press
102	Boost Press
108	BarometricPres
110	EngCool Temp
157	FuelRailPress
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
190	EngineSpeed
628	ProgramMemory
633	FuelActuator
636	Crank Sensor
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
676	GlowPlugRelay
677	EngStartRelay
679	InjPressRegul
723	SecSpeedSens
1077	FuelPump
1239	Fuel Leakage
1347	FuelPressure
1485	ECU MainRelay
3246	DPFOutltGasTmp
3251	DPFDiffPres
3252	DPFDiffPres 2
3509	SensorSupply1
3510	SensorSupply2
3511	SensorSupply3
3512	SensorSupply4
3701	DPF Status
4765	DOC IntTemp
523523	InjectorCyl1&4
523524	InjectorCyl2&3
523525	InjectorVolt
523527	ECU CPU Error
523535	InjectorVolt
523536	EGR Feedback
523537	EGR MotorTemp
523539	PumpSeizing1

523540	PumpSeizing2
523541	EGR LiftSensor
523543	APP CANbus
523544	GlowRelay
523547	CAN2busOff
523548	CAN-KBT Error
523572	EGR PosSensor
523574	EGR ActCoil
523575	EGR ActValve
523576	EGR MtrHiTemp
523577	EGR MtSensor
523578	EGR Comms
523580	IntakeThrottle
523582	IntakeThrottle
523589	LoCoolantTemp
523590	RegenTimeout
523591	CAN CCVS
523592	CAN CM1
523593	CAN DDC1
523594	CAN ETC2
523595	CAN ETC5
523596	CAN TSC1
523598	CAN EBC1
523599	ExhTempSensor
523601	HiExhaustTemp
523602	HiRegenFreq
523604	CAN1 bus off
523605	proprietary
523700	EEPROM CRC
523701	EEPROM DST1
523702	EEPROM DST2

4.36 LIDEC1

Fault Code (SPN)	Text
27	EGRValvePos
29	FPP2
81	DPF Pressure
91	FPP1
94	FuelDelPress
97	Water In Fuel
98	EngineOilLevel
100	EngOil Press
105	IntakeAir Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
157	FuelRailPress
158	BattPotential
171	AmbientAirTemp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
190	Engine Speed
1136	ECU Temp
1172	Turbo 1 Temp
1174	Turbo 3 Temp
1176	Turbo 1 Press
1178	Turbo 3 Press
1349	InjectorRail#2
1638	CustomerSensor
1761	DEF Level
1800	BatteryTemp
2629	Turbo1 OutTemp
2630	ChargeAirTemp
2799	Turbo2 OutTemp
2801	Turbo4 OutTemp

4.37 EDC Master, EDC Slave and MFR interface

system

Fault Code (SPN)	Text
81	DPF Pressure
94	FuelDelPress
98	EngineOilLevel
100	EngOil Press
102	Boost Press
105	Intake Temp
109	Coolant Press
110	EngCool Temp
168	BatteryVoltage
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
190	Engine Speed
609	Controller#2
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
1131	IntakeMan2Temp
3009	Overspped
3014	No Ignition
3069	RedundSpdProt
3076	Wrong MFR
3687	UnderpresValve
3732	Initial Fail
3751	Starter Relay
3752	Camshaft Sens
3753	Mainshaft Sens
3771	M/S CAN Fail
3772	M/S Ignition
3775	Rail Pressure
3804	MFR/EDC CAN TO
3806	EDC M/S CAN TO
3813	Starter Fail
3815	ExhaustBackP
3823	Missfiring
3923	Coolant Temp 2

5000	SupplyVoltFail
5016	Overspeed
5017	OverrideActive
5019	EngineCANFail
5034	CustCAN TO KSM
5035	FuelFilterWtrL

4.38 ECU7 (ADEC) & SAM module

Fault Code (SPN)	Text
3	HI T-Fuel
4	SS T-Fuel
5	HI T-ChargeAir
6	SS T-ChargeAir
9	HI T-CoolInter
10	SS T-CoolInter
15	LO P-Lube Oil
16	SS P-Lube Oil
19	HI T-ExhaustA
20	SS T-ExhaustA
21	HI T-ExhaustB
22	SS T-ExhaustB
23	LO CoolLevel
24	SS CoolLevel
25	HI P-Diff Oil
26	SS P-Diff Oil
30	SS Overspeed
31	HI ETC1Overspd
32	SS ETC1Overspd
33	HI P-DiffFuel
34	SS P-DiffFuel
36	HI ETC2Overspd
37	SS ETC2Overspd
44	LO CoolLvlInt
51	HI T-Lube Oil
52	SS T-Lube Oil
57	LO P-coolant
58	SS P-Coolant
59	SS T-CoolantL3
60	SS T-CoolantL4
65	LO P-Fuel
66	SS P-Fuel
67	HI T-Coolant
68	SS T-Coolant
81	AL RailLeakage
82	HI P-Fuel
83	LO P-Fuel
89	SS Speed Low
90	SS IdleNtReach

91	SS ReleaseSpd
92	SS StarterSpd
93	SS T-Preheat
94	LO T-Preheat
95	AL Prelubric
102	AL FuelConsCnt
104	AL EngHoursCnt
118	LO ECUPwrSupp
119	LOLO ECUPower
120	HI ECUPwrSupp
121	HIHI ECUPower
122	HI T-ECU
141	AL PwrTooHigh
142	AL MCR1HourExc
176	AL LifeDataNA
177	AL LifeDataInc
180	AL CAN1NodeLst
181	AL CAN2NodeLst
182	AL CANWrongPar
183	AL CANNoPUData
184	AL CANPUDataEr
186	AL CAN1BusOff
187	AL CAN1ErrPass
188	AL CAN2BusOff
189	AL CAN2ErrPass
201	SD T-Coolant
202	SD T-Fuel
203	SD T-ChargeAir
205	SD T-CoolInter
206	SD T-ExhaustA
207	SD T-ExhaustB
208	SD P-ChargeAir
211	SD P-Lube Oil
212	SD P-Coolant
215	SD P-HD

216	SD T-Lube Oil
219	SD T-IntakeAir
220	SD LvlCoolWatr
221	SD P-Diff Oil
222	SD LeakFuelLvl
223	SD LvlCoolIntr
227	SD OilPressure
228	SD P-Fuel
229	AL StopCamshaf
230	SD CranksftSpd
231	SD CamshaftSpd
232	SD ChrgrSpeed1
239	SD P-Diff Fuel
240	SD P-Fuel
245	SD ECUPwrSupp
266	SD SpeedDemand
269	SD LoadAnalog
270	SD FreqInput
301	AL TimingCIA1
302	AL TimingCIA2
303	AL TimingCIA3
304	AL TimingCIA4
305	AL TimingCIA5
306	AL TimingCIA6
307	AL TimingCIA7
308	AL TimingCIA8
309	AL TimingCIA9
310	AL TimingCIA10
311	AL TimingCIB1
312	AL TimingCIB2
313	AL TimingCIB3
314	AL TimingCIB4
315	AL TimingCIB5
316	AL TimingCIB6
317	AL TimingCIB7
318	AL TimingCIB8
319	AL TimingCIB9
320	AL TimingCIB10
321	AL WiringCIA1
322	AL WiringCIA2

323	AL WiringCIA3
324	AL WiringCIA4
325	AL WiringCIA5
326	AL WiringCIA6
327	AL WiringCIA7
328	AL WiringCIA8
329	AL WiringCIA9
330	AL WiringCIA10
331	AL WiringCIB1
332	AL WiringCIB2
333	AL WiringCIB3
334	AL WiringCIB4
335	AL WiringCIB5
336	AL WiringCIB6
337	AL WiringCIB7
338	AL WiringCIB8
339	AL WiringCIB9
340	AL WiringCIB10
341	AL OpenLdCIA1
342	AL OpenLdCIA2
343	AL OpenLdCIA3
344	AL OpenLdCIA4
345	AL OpenLdCIA5
346	AL OpenLdCIA6
347	AL OpenLdCIA7
348	AL OpenLdCIA8
349	AL OpenLdCIA9
350	AL OpenLdCIA10
351	AL OpenLdCIB1
352	AL OpenLdCIB2
353	AL OpenLdCIB3
354	AL OpenLdCIB4
355	AL OpenLdCIB5
356	AL OpenLdCIB6
357	AL OpenLdCIB7
358	AL OpenLdCIB8
359	AL OpenLdCIB9
360	AL OpenLdCIB10
361	AL PwrStageLow
362	AL PwrStagHigh
363	AL StopPwrStag
365	AL StopMVWirin
371	AL Wiring TO1
381	AL WiringTOP1
382	AL WiringTOP2

383	AL WiringTOP3
384	AL WiringTOP4
390	AL MCRExceeded
400	AL DigitInp 1
401	AL DigitInp 2
402	AL DigitInp 3
403	AL DigitInp 4
404	AL DigitInp 5
405	AL DigitInp 6
406	AL DigitInp 7
407	AL DigitInp 8
408	AL Emerg Stop
410	LO U-PDU
411	LOLO U-PDU
412	HI U-PDU
413	HIHI U-PDU
414	HI WtrFuelPref
417	SD WtrFuelpref
438	LO P-Fuel 2
439	HI P-Fuel 2
441	AL Syst2Leaks
444	SD U-PDU
445	SD P-Amb Air
446	SD P-HD2
448	HI P-ChargeAir
449	SS P-ChargeAir
450	SD TorqueInp
454	SS PowerReduct
463	SD AUX 2
464	SD P-AUX 1
468	SD T-AUX 1
469	SD AUX 1
470	SD T-ECU
471	SD CoilCurr
472	AL Stop SD
474	AL Wiring FO
475	AL CR Trigger
476	AL CrashRecErr
478	Hidden
479	Hidden
480	AL ExtEngProt
510	AL Override
515	AL Starter
543	AL >1 FDHSlave
544	AL ConfigChang
549	AL PwrInterrupt

555	AL Call MTU
576	AL ESCMOverrid
594	AL L1 UDVFault
595	AL L2 UDVFault
598	AL L1 UDVFault
599	AL L2 UDVFault
610	AL HPFuel1Wir
611	AL HPFuel2Wir
612	AL PresValve1
613	AL PresValve2

4.39 ECU8 & Smart connect

Fault Code (SPN)	Text
52	IntercoolerTmp
94	FuelDelPress
100	EngOil Press
109	Coolant Press
110	EngCool Temp
111	Coolant Level
158	BattPotential
174	Fuel Temp
175	EngOil Temp
188	SpeedAtIdleLow
190	EngineSpeedLow
898	RequestedSpeed
1136	ECU Temp
2629	Turbo1 OutTemp
520837	Starter Speed
520838	EngRunUpSpeed
502875	SpdDemFail
521128	SmartConnLost

4.40 DDEC 10

4.41 ECU9

Fault Code (SPN)	Text
51	ThrottlePos
52	IntercoolerTmp
94	FuelPress
95	FuelFilDifPres
97	WaterInFuel
98	EngineOilLevel
99	OilFilterDifPr
100	EngOil Press
101	CrankcasePress
102	Boost Pressure
103	ETC1 Overspeed
104	ETC1 P-Lubeoil
105	T-Charge Air
107	AirFiltDifPres
108	Ambient Press
109	Coolant Press
110	Coolant Temp
111	Coolant Level
112	P-Coolant Diff
157	FuelRailPress
158	BattPotential
171	AmbientAirTemp
172	AirInlet Temp
173	Exhaust Temp
174	Fuel Temp
175	EngOil Temp
176	T-Lubeoil ETC
188	SpeedAtIdleLow
190	EngineSpeed
247	TotalEngHours
250	AL FuelDefect
441	AuxTempSensIn1
623	RedStopLamp
624	DiagnosticLamp
898	RequestedSpeed
966	AL DevelopPR
1083	AuxTempSensor
1131	T-Charge Air
1136	ECU Temp
1168	P-Lubeoil ETC
1169	ETC2 Overspeed
1170	ETC3 Overspeed

1171	ETC4 Overspeed
1172	Turbo Temp
1176	P-IntakeAFtr1
1177	P-IntakeAFtr2
1203	P-CoolantInter
1208	Pre-OilFilterP
1237	OverrideSwitch
1239	Fuel Leakage
1349	InjectorRail#2
1380	LowOilLevel
1385	L2 T-Aux1
1387	AuxPressure
1638	T-Hydraulicoil
1761	Niveau RM Tank
2433	RExhaustTemp
2434	LExhaustTemp
2602	LvlHydraulOil
2629	Turbo1 OutTemp
2631	SD P-ChargeMix
3031	SD T-RM Tank
3226	Nox Value
3242	DPFIntakGasTmp
3246	DPFOutltGasTmp
3251	DPFDiffPresSns
3468	SD-T-Fuel B
3517	Lvl DEF Tank B
3543	AL TurningActv
3562	P-Charge Mix B
3563	P-Charge Air
3668	LvlCoolantInt
3673	Throttle B
3703	DPF RegenInhib
4193	CoolantPumpTmp
4337	T - DEF
4348	AdBlueQuantity
4360	T-Exh BefSCR
4363	T-Exh AftSCR
4375	SCR Revolution
4390	T - DEF Hi
4401	AL SCR AdBlue
4413	T-Exh BefSCR
4415	T-Exh AftSCR
4441	SCR F2 SU
4490	Air Humidity
4765	T-Exhaust DOC

4990	BatteryNotChrg
5422	P-Charge Air B
5571	P-Fuel Return
520406	P-OilNivPump
520837	Starter Speed
520838	EngRunUpSpeed
520872	AL Wiring
520873	Selected Mode
520874	No Valid Mode
520875	Speed Demand
520876	Stop Button
520877	Start Button
520878	Up Button
520879	Down Button
520880	Ext. SpdDemand
520881	Spd Demand Inc
520882	Bin SpdLimit
520883	Droop 2 Switch
520884	FreqSwitch
520885	Test Overspeed
520886	OverrideButton
520887	Alarm Reset
520888	CylinderCutOut
520889	RequestBinTest
520890	ExtProtection
520891	Prelubrication
520892	ExtInc IdleBin
520893	RequestDBR
520900	Wiring CylA1
520901	Wiring CylA2
520902	Wiring CylA3
520903	Wiring CylA4
520904	Wiring CylA5
520905	Wiring CylA6
520906	Wiring CylA7
520907	Wiring CylA8
520908	Wiring CylA9
520909	Wiring CylA10
520910	Wiring CylB1
520911	Wiring CylB2
520912	Wiring CylB3
520913	Wiring CylB4
520914	Wiring CylB5
520915	Wiring CylB6

520916	Wiring CylB7
520917	Wiring CylB8
520918	Wiring CylB9
520919	Wiring CylB10
520923	SS T-Coolant
520924	Power too high
520930	Open LdCylA1
520931	Open LdCylA2
520932	Open LdCylA3
520933	Open LdCylA4
520934	Open LdCylA5
520935	Open LdCylA6
520936	Open LdCylA7
520937	Open LdCylA8
520938	Open LdCylA9
520939	Open LdCylA10
520940	Open LdCylB1
520941	Open LdCylB2
520942	Open LdCylB3
520943	Open LdCylB4
520944	Open LdCylB5
520945	Open LdCylB6
520946	Open LdCylB7
520947	Open LdCylB8
520948	Open LdCylB9
520949	Open LdCylB10
521026	PwrReduction
521027	ALStopSD

4.42 EIM

Fault Code (SPN)	Text
1171	ETC4 Overspeed
1172	Turbo Temp
1176	P-IntakeAFtr1
1177	P-IntakeAFtr2
1203	P-CoolantInter
1208	Pre-OilFilterP
1237	OverrideSwitch
1239	Fuel Leakage
1349	InjectorRail#2
1380	LowOilLevel
1385	L2 T-Aux1
1387	AuxPressure
1638	T-Hydraulicoil
1761	Niveau RM Tank
2433	RExhaustTemp
2434	LExhaustTemp
2602	LvlHydraulOil
2629	Turbo1 OutTemp
2631	SD P-ChargeMix
3031	SD T-RM Tank
3226	Nox Value
3242	DPFIntakGasTmp
3246	DPFOutItGasTmp
3251	DPFDiffPresSns
3468	SD-T-Fuel B
3517	Lvl DEF Tank B
3543	AL TurningActv
3562	P-Charge Mix B
3563	P-Charge Air
3668	LvlCoolantInt
3673	Throttle B
3703	DPF RegenInhib
4193	CoolantPumpTmp
4337	T - DEF
4348	AdBlueQuantity
4360	T-Exh BefSCR
4363	T-Exh AftSCR
4375	SCR Revolution
4390	T - DEF Hi
4401	AL SCR AdBlue
4413	T-Exh BefSCR
4415	T-Exh AftSCR
4441	SCR F2 SU

4490	Air Humidity
4765	T-Exhaust DOC
4990	BatteryNotChrg
5422	P-Charge Air B
5571	P-Fuel Return
520406	P-OilNivPump
520837	Starter Speed
520838	EngRunUpSpeed
520872	AL Wiring
520873	Selected Mode
520874	No Valid Mode
520875	Speed Demand
520876	Stop Button
520877	Start Button
520878	Up Button
520879	Down Button
520880	Ext. SpdDemand
520881	Spd Demand Inc
520882	Bin SpdLimit
520883	Droop 2 Switch
520884	FreqSwitch
520885	Test Overspeed
520886	OverrideButton
520887	Alarm Reset
520888	CylinderCutOut
520889	RequestBinTest
520890	ExtProtection
520891	Prelubrication
520892	ExtInc IdleBin
520893	RequestDBR
520900	Wiring CylA1
520901	Wiring CylA2
520902	Wiring CylA3
520903	Wiring CylA4
520904	Wiring CylA5
520905	Wiring CylA6
520906	Wiring CylA7
520907	Wiring CylA8
520908	Wiring CylA9
520909	Wiring CylA10
520910	Wiring CylB1
520911	Wiring CylB2
520912	Wiring CylB3
520913	Wiring CylB4

520914	Wiring CylB5
520915	Wiring CylB6
520916	Wiring CylB7
520917	Wiring CylB8
520918	Wiring CylB9
520919	Wiring CylB10
520923	SS T-Coolant
520924	Power too high
520930	Open LdCylA1
520931	Open LdCylA2
520932	Open LdCylA3
520933	Open LdCylA4
520934	Open LdCylA5
520935	Open LdCylA6
520936	Open LdCylA7
520937	Open LdCylA8
520938	Open LdCylA9
520939	Open LdCylA10
520940	Open LdCylB1
520941	Open LdCylB2
520942	Open LdCylB3
520943	Open LdCylB4
520944	Open LdCylB5
520945	Open LdCylB6
520946	Open LdCylB7
520947	Open LdCylB8
520948	Open LdCylB9
520949	Open LdCylB10

4.43 MIP 4000

Alarm Code	Meaning	Alarm Level
1	Message Emergency stop	red alarm
2	Message stop	red alarm
3	Message alarm	yellow alarm
5	Manual Emergency Stop - Safety chain failure	red alarm
6	Engine Emergency Stop - Safety chain failure	red alarm
11	Status X20 " module faulty	red alarm
24	Circuit breaker MIP panel failed	yellow alarm
27	Engine cooling water level low	red alarm
28	Mixture cooling water level low	red alarm
31	Gas pressure > Max (gas line A)	red alarm
32	Gas pressure < Min (gas line A)	red alarm
34	Gas leakage test failure (gas line A)	yellow alarm
39	MIP panel board temperature > limit value 1	yellow alarm
40	MIP panel board temperature > limit value 2	red alarm
41	MIP panel board temperature (Hardware)	yellow alarm
46	Engine baseframe oil level switch alarm	red alarm
47	Engine cooling water circuit < limit alarm	yellow alarm
48	Engine cooling water circuit < shut down	red alarm
49	Lube oil refill: oil ejection disturbed	yellow alarm
50	Auxiliary drives voltage monitor MIP	yellow alarm
53	Generator winding temperature U1 > limit value 1	yellow alarm
54	Generator winding temperature U1 > limit value 2	red alarm
55	Generator winding temperature U1 (Hardware)	red alarm
56	Generator winding temperature V1 >	yellow

	limit value 1	alarm
57	Generator winding temperature V1 > limit value 2	red alarm
58	Generator winding temperature V1 (Hardware)	red alarm
59	Generator winding temperature W1 > limit value 1	yellow alarm
60	Generator winding temperature W1 > limit value 2	red alarm
61	Generator winding temperature W1 (Hardware)	red alarm
65	Engine stop	red alarm
66	Red alarm Engine	red alarm
67	Yellow alarm Engine	yellow alarm
68	Generator speed low	red alarm
71	Bearing temperature 1 drive end > limit value 1	yellow alarm
72	Bearing temperature 1 drive end > limit value 2	red alarm
73	Bearing temperature 1 drive end (Hardware)	red alarm
78	Load control setpoint/actual value deviation	yellow alarm
81	Gas valve 2 failure (gas line A)	red alarm
82	Gas valve 1 failure (gas line A)	red alarm
84	Synchronisation GCB failure	red alarm
86	GCB - Feedback (On/Off) incorrect	red alarm
87	GCB can not be opened	yellow alarm
88	GCB can not be opened - reverse power	red alarm
89	GCB can not be closed	red alarm
90	MCB failure	yellow alarm
92	MCB can not be closed	yellow alarm
94	Generator protection - overfrequency	red alarm
95	Generator protection - underfrequency	red alarm

96	Generator protection - overvoltage	red alarm
97	Generator protection - undervoltage	red alarm
98	Generator protection - overload	red alarm
99	Generator protection - reverse power	red alarm
100	Generator protection - overcurrent limit 1	red alarm
101	Generator protection - overcurrent limit 2	red alarm
103	Generator protection - unbalanced load	red alarm
104	Generator protection - power factor control fault (leading)	red alarm
105	Generator protection - power factor control fault (lagging)	red alarm
106	Generator protection - max. difference current L1/L2	red alarm
107	Generator protection - max. difference current L1/L3	red alarm
108	Generator protection - max. difference current L2/L3	red alarm
109	Generator protection - phase failure L1	red alarm
110	Generator protection - phase failure L2	red alarm
111	Generator protection - phase failure L3	red alarm
112	Mains protection - failure	yellow alarm
113	Mains protection - f >	yellow alarm
114	Mains protection - f <	yellow alarm
115	Mains protection - V >	yellow alarm
116	Mains protection - $\hat{A} V <$	yellow alarm
117	Mains protection - df_dt	yellow alarm
118	Mains protection - asymmetry	yellow alarm
119	Mains protection - phase jump	yellow alarm
130	Cooling water preheating failure	yellow alarm
131	Waste/Prelube oil pump fault	yellow alarm
133	Generator - nominal frequency not reached	yellow alarm
134	Communication to external control	yellow

	failure	alarm
137	PLC - battery weak	yellow alarm
138	PLC - forcing value active	yellow alarm
139	Safety chain relais failure	red alarm
140	PLC <-> Engine communication failure	red alarm
146	Generator nominal voltage not reached	yellow alarm
161	GCB was opened	red alarm
163	Cooling unit fault (MIP)	yellow alarm
179	Bearing temperature 1 non drive end \hat{A} > limit value 1	yellow alarm
180	Bearing temperature 1 non drive end > limit value 2	red alarm
181	Bearing temperature 1 non drive end (Hardware)	red alarm
182	Test bench program is active	yellow alarm
183	GCB tripped/fault	red alarm
190	Failure power measurement module	red alarm
191	Communication to module 1 failed	yellow alarm
192	Communication to module 2 failed	yellow alarm
193	Communication to module 3 failed	yellow alarm
194	Communication to module 4 failed	yellow alarm
195	Communication to module 5 failed	yellow alarm
196	Communication to module 6 failed	yellow alarm
197	Communication to module 7 failed	yellow alarm
198	Communication to module 8 failed	yellow alarm
199	Communication to module 9 failed	yellow alarm
200	Communication to module 10 failed	yellow alarm
201	Communication in island parallel operation failed	red alarm
204	Failure 2th power measurement module	red alarm
230	Generator protection - voltage asymmetry	red alarm

231	Generator protection - current asymmetry	red alarm
232	Generator protection - neutral current max.	red alarm
233	Generator protection - capacitive reactive power monitoring	red alarm
248	Phase failure L1 - 2th power measurement module	red alarm
249	Phase failure L2 - 2th power measurement module	red alarm
250	Phase failure L3 - 2th power measurement module	red alarm
251	Communication to module 11 failed	yellow alarm
252	Communication to module 12 failed	yellow alarm
253	Communication to module 13 failed	yellow alarm
254	Communication to module 14 failed	yellow alarm
255	Communication to module 15 failed	yellow alarm
256	Communication to module 16 failed	yellow alarm
257	Communication to module 17 failed	yellow alarm
258	Communication to module 18 failed	yellow alarm
259	Communication to module 19 failed	yellow alarm
260	Communication to module 20 failed	yellow alarm
261	Communication to module 21 failed	yellow alarm
262	Communication to module 22 failed	yellow alarm
263	Communication to module 23 failed	yellow alarm
264	Communication to module 24 failed	yellow alarm
265	Communication to module 25 failed	yellow alarm
266	Communication to module 26 failed	yellow alarm
267	Communication to module 27 failed	yellow alarm
268	Communication to module 28 failed	yellow alarm
269	Communication to module 29 failed	yellow alarm
270	Communication to module 30 failed	yellow alarm
271	Node switch plc configured wrong	yellow

		alarm
274	Mains protection - V > (average)	yellow alarm
275	Mains protection - V >>	yellow alarm
276	Mains protection - V <<	yellow alarm
327	Mains protection from external	yellow alarm
328	Differential protection/earth protection external tripped	red alarm
330	Generator AVR: Error	red alarm
344	Gear oil temperature > limit value 1	yellow alarm
345	Gear oil temperature > limit value 2	red alarm
346	Gear oil pressure < min.	red alarm
347	Gear oil temperature < limit value	red alarm
348	Gear oil temperature (Hardware)	red alarm
366	Generator protection - overcurrent 3	red alarm
367	Generator protection - overcurrent 4	red alarm
379	Mains protection - \hat{A} time-dependent undervoltage 1-3	yellow alarm
380	Mains protection - \hat{A} time-dependent undervoltage 4-6	yellow alarm
381	Mains protection - time-dependent undervoltage 1 activate	yellow alarm
382	Mains protection - time-dependent undervoltage 1	yellow alarm
384	Mains protection - LVFRT1	yellow alarm
385	Mains protection - LVFRT2	yellow alarm
391	Main switch auxiliaries MIP open	red alarm
392	Breakdown generator voltage 2th power measurement module	red alarm
393	Load control system - load reduction	yellow alarm
394	Low load	yellow alarm
397	Start-/Stop sequence: time for load ramp down exceeded	red alarm
398	Lube oil refill - time exceeded	red alarm
400	Check for accurate reading of the alarm parameters	yellow alarm

401	LO P-Lube Oil (FC 015)	yellow alarm
402	SS P-Lube Oil (FC 016)	red alarm
403	HI T-Exhaust A (FC 019)	yellow alarm
404	SS T-Exhaust A (FC 020)	yellow alarm
405	HI T-Exhaust B (FC 021)	yellow alarm
406	SS T-Exhaust B (FC 022)	yellow alarm
407	HI P-Diff-Lube Oil (FC 025)	yellow alarm
408	SS P-Diff-Lube Oil (FC 026)	red alarm
409	SS Engine Overspeed (FC 030)	red alarm
410	HI ETC1 Overspeed (FC 031)	yellow alarm
411	SS ETC1 Overspeed (FC 032)	red alarm
412	HI ETC2 Overspeed (FC 036)	yellow alarm
413	SS ETC2 Overspeed (FC 037)	red alarm
414	HI T-Lube Oil (FC 051)	yellow alarm
415	SS T-Lube Oil (FC 052)	red alarm
416	HI T-Intake Air (FC 053)	yellow alarm
417	HIHI T-Intake Air (FC 054)	yellow alarm
418	LO P-Coolant (FC 057)	yellow alarm
419	SS P-Coolant (FC 058)	red alarm
420	HI P-Crank Case (FC 063)	yellow alarm
421	SS P-Crank Case (FC 064)	red alarm
422	HI T-Coolant (FC 067)	yellow alarm
423	SS T-Coolant (FC 068)	red alarm
424	SS Engine Speed too Low (FC 089)	red alarm
425	SS Idle Speed Not Reached (FC 090)	red alarm
426	SS Release Speed Not Reached (FC 091)	red alarm
427	SS Starter Speed Not Reached (FC	red

	092)	alarm
428	SS T-Preheat (FC 093)	red alarm
429	LO T-Preheat (FC 094)	yellow alarm
430	AL Prelubrication Fault (FC 095)	red alarm
431	AL Eng Hours Counter Defect (FC 104)	yellow alarm
432	LO ECU Power Supply Voltage (FC 118)	yellow alarm
433	LOLO ECU Power Supply Voltage (FC 119)	red alarm
434	HI ECU Power Supply Voltage (FC 120)	yellow alarm
435	HIHI ECU Power Supply Voltage (FC 121)	red alarm
436	HI T-ECU (FC 122)	yellow alarm
437	AL LifeData not available (FC 176)	red alarm
438	AL LifeData restore incomplete (FC 177)	red alarm
439	AL CAN1 Node Lost (FC 180)	yellow alarm
440	AL CAN2 Node Lost (FC 181)	yellow alarm
441	AL CAN Wrong Parameters (FC 182)	red alarm
442	AL CAN No PU-Data (FC 183)	red alarm
443	AL CAN PU-Data Flash Error (FC 184)	red alarm
444	AL CAN1 Bus Off (FC 186)	yellow alarm
445	AL CAN1 Error Passive (FC 187)	yellow alarm
446	AL CAN2 Bus Off (FC 188)	yellow alarm
447	AL CAN2 Error Passive (FC 189)	yellow alarm
448	AL EMU Parameter Not Supported (FC 190)	red alarm
449	SD T-Coolant (FC 201)	red alarm
450	SD Level Lube Oil (FC 204)	red alarm
451	SD T-Exhaust A (FC 206)	yellow alarm
452	SD T-Exhaust B (FC 207)	yellow alarm
453	SD P-Lube Oil (FC 211)	red alarm

454	SD P-Coolant (FC 212)	red alarm
455	SD P-CrankCase (FC 214)	red alarm
456	SD T-Lube Oil (FC 216)	red alarm
457	SD T-Intake Air (FC 219)	yellow alarm
458	SD P-Diff Lube Oil (FC 221)	red alarm
459	SD P-Lube Oil before Filter (FC 227)	yellow alarm
460	AL Stop Camshaft Sensor Defect (FC 229)	red alarm
461	SD Camshaft Speed (FC 231)	red alarm
462	SD Charger 1 Speed (FC 232)	yellow alarm
463	SD Charger 2 Speed (FC 233)	yellow alarm
464	SD ECU Power Supply Voltage (FC 245)	red alarm
465	SD Speed Demand (FC 266)	red alarm
466	AL Wiring TOP 1 (FC 381)	yellow alarm
467	AL Wiring TOP 2 (FC 382)	red alarm
468	AL Wiring TOP 3 (FC 383)	red alarm
469	AL Wiring TOP 4 (FC 384)	red alarm
470	SD T-Intake Air B (FC 418)	yellow alarm
471	SD T-Coolant b.Engine (FC 419)	red alarm
472	LO P-Coolant Diff (FC 423)	red alarm
473	HI P-Coolant (FC 429)	red alarm
474	LO P-Coolant before Engine (FC 430)	yellow alarm
475	SS P-Coolant before Engine (FC 431)	red alarm
476	HI T-Coolant before Engine (FC 434)	yellow alarm
477	SS T-Coolant before Engine (FC 435)	red alarm
478	HI P-Charge Mix Diff (FC 443)	yellow alarm
479	HIHI P-Charge Mix Diff (FC 447)	red alarm
480	HI T-Charge Mix (FC 451)	yellow

		alarm
481	HIHI T-Charge Mix (FC 452)	red alarm
482	LO T-Charge Mix (FC 453)	yellow alarm
483	SS Power Reduction Active (FC 454)	yellow alarm
484	LO T-Intake Air (FC 457)	yellow alarm
485	LOLOT-Intake Air (FC 458)	red alarm
486	SD P-Coolant b.Engine (FC 459)	red alarm
487	SD T-ECU (FC 470)	red alarm
488	AL Stop SD (FC 472)	red alarm
489	AL Wiring PWM_CM2 (FC 473)	red alarm
490	AL Comb. Alarm Yel (Plant) (FC 478)	yellow alarm
491	AL Comb. Alarm Red (Plant) (FC 479)	red alarm
492	SD P-Charge Mix A (FC 496)	red alarm
493	SD P-Charge Mix B (FC 497)	red alarm
494	SD P-Charge Mix Diff (FC 498)	red alarm
495	SD T-Charge Mix (FC 499)	red alarm
496	HIHI P-Charge Mix A (FC 511)	red alarm
497	HIHI P-Charge Mix B (FC 512)	red alarm
498	SD P-Coolant Diff (FC 513)	red alarm
499	AL Starter Not Engaged (FC 515)	yellow alarm
500	SD P-Charge Mix before Throttle (FC 517)	red alarm
501	SD P-Intake Air after Filter A (FC 520)	yellow alarm
502	SD P-Intake Air after Filter B (FC 522)	yellow alarm
503	AL Wiring PWM_CM1 (FC 531)	red alarm
504	AL Wiring PWM1 (FC 532)	red alarm
505	AL Wiring PWM2 (FC 533)	red alarm
506	AL Multiple FDH Slaves (FC 543)	yellow alarm

507	AL Configuration Changed (FC 544)	yellow alarm
508	AL GasControlCheck Fault (FC 552)	red alarm
509	AL Ignition Fault (FC 554)	red alarm
510	AL GasValve Fault (FC 556)	red alarm
511	AL EngineSpeedCollapse Fault (FC 557)	red alarm
512	AL mixture throttle A fault (FC 559)	red alarm
513	AL mixture throttle B fault (FC 560)	red alarm
514	AL L1 P-Intake Air after Filter A (FC 565)	yellow alarm
515	AL L2 P-Intake Air after Filter A (FC 566)	yellow alarm
516	AL L1 P-Intake Air after Filter B (FC 567)	yellow alarm
517	AL L2 P-Intake Air after Filter B (FC 568)	yellow alarm
518	AL SAM Missing-Data-Fault (FC 569)	red alarm
519	L1 AICAN Max. Retarded Timing (FC 570)	yellow alarm
520	L2 AICAN Max. Retarded Timing (FC 571)	yellow alarm
521	L3 AICAN Max. Retarded Timing (FC 572)	red alarm
522	AL Circuit Breaker Closed (FC 583)	red alarm
523	AL Hut Changespeed max. (FC 604)	yellow alarm
524	LO Actual Value Hu (FC 617)	yellow alarm
525	LOLO Actual Value Hu (FC 618)	yellow alarm
526	HI Actual Value Hu (FC 619)	yellow alarm
527	HIHI Actual Value Hu (FC 620)	yellow alarm
528	LO Nox Value (FC 621)	yellow alarm
529	LOLO Nox Value (FC 622)	yellow alarm
530	HI Nox Value (FC 623)	yellow alarm
531	HIHI Nox Value (FC 624)	yellow alarm
532	AL Knock Intensity (FC 646)	red alarm
533	AL Req Angle Throttle A (FC 649)	red

		alarm
534	AL Req Angle Throttle B (FC 650)	red alarm
535	AL Preheating Error (FC 651)	yellow alarm
536	AL GET Comm Lost (FC 652)	red alarm
537	AL IC92x Comm Lost (FC 653)	red alarm
538	AL FSeries Comm Lost (FC 654)	red alarm
539	AL TecJet Comm Lost (FC 655)	red alarm
540	AL ProActA Comm Lost (FC 656)	red alarm
541	AL ProActB Comm Lost (FC 657)	red alarm
542	AL NOxA Comm Lost (FC 658)	red alarm
543	AL NOxB Comm Lost (FC 659)	red alarm
544	AL PhytronA Comm Lost (FC 660)	red alarm
545	AL PhytronB Comm Lost (FC 661)	red alarm
546	AL Oil Refill Error (FC 664)	red alarm
547	AL GET Yellow (FC 665)	yellow alarm
548	AL IC92x Yellow (FC 666)	yellow alarm
549	AL FSeries Yellow (FC 667)	yellow alarm
550	AL TecJet Yellow (FC 668)	yellow alarm
551	AL ProActA Yellow (FC 669)	yellow alarm
552	AL ProActB Yellow (FC 670)	yellow alarm
553	AL NOxA Yellow (FC 671)	yellow alarm
554	AL NOxB Yellow (FC 672)	yellow alarm
555	AL PhyA Yellow (FC 673)	yellow alarm
556	AL PhyB Yellow (FC 674)	yellow alarm
557	AL GET Red (FC 675)	red alarm
558	AL IC92x Red (FC 676)	red alarm
559	AL FSeries Red (FC 677)	red alarm

560	AL TecJet Red (FC 678)	red alarm
561	AL ProActA Red (FC 679)	red alarm
562	AL ProActB Red (FC 680)	red alarm
563	AL NOxA Red (FC 681)	red alarm
564	AL NOxB Red (FC 682)	red alarm
565	AL PhyA Red (FC 683)	red alarm
566	AL PhyB Red (FC 684)	red alarm
567	AL Lube Oil Min (FC 685)	red alarm
568	AL Lube Oil Max (FC 686)	red alarm
569	LO Oil Refill (FC 688)	yellow alarm
570	HI Oil Refill (FC 689)	yellow alarm
571	HI Lube Oil Level refill (FC 691)	yellow alarm
572	SD T-Gas (FC 694)	yellow alarm
573	AL T-Gas L1 (FC 719)	yellow alarm
574	AL T-Gas L2 (FC 720)	red alarm
575	SD P-Ambient Air (FC 445)	yellow alarm
576	AL Crash Rec. Init. Error (FC 476)	red alarm
577	AL Verkabelung PWM_CM1 (FC 536)	red alarm
578	AL Verkabelung PWM_CM7 (FC 609)	red alarm
579	SD P-Ambient Air (HDT2800) (FC 633)	yellow alarm
580	SD T0-Ambient Air (HDT2800) (FC 634)	yellow alarm
581	SD Air Humidity (HDT2800) (FC 635)	yellow alarm
582	SD electr. engine power AI2 (FC 642)	yellow alarm
583	AL ActFuelValvePos L1 (FC 842)	yellow alarm
584	AL Rel. Humidity L1 (FC 848)	yellow alarm
585	AL turning activated (FC 891)	yellow alarm
586	AL MIC5 Yellow (FC 932)	yellow

		alarm
587	AL MIC5 Red (FC 933)	red alarm
588	AL MIC5 Comm Lost (FC 934)	red alarm
589	AL ESI activated (FC 948)	red alarm
590	AL MIC5 Signature difference (FC 972)	red alarm
591	AL CAN3 Bus Off (FC 974)	yellow alarm
592	AL CAN3 Error Passive (FC 975)	yellow alarm
593	AL CAN4 Bus Off (FC 976)	yellow alarm
594	AL CAN4 Error Passive (FC 977)	yellow alarm
595	AL Develop PR Set (FC 596)	yellow alarm
596	SD Air Humidity (FC 603)	yellow alarm
597	AL MIC5 parameter download active (FC 1012)	yellow alarm
598	HI Delta NOx (A-B) (FC 1013)	yellow alarm
599	HIHI Delta NOx (A-B) (FC 1014)	red alarm
600	HI T-Exhaust A1 (FC 112301)	yellow alarm
601	HI T-Exhaust A2 (FC 112302)	yellow alarm
602	HI T-Exhaust A3 (FC 112303)	yellow alarm
603	HI T-Exhaust A4 (FC 112304)	yellow alarm
604	HI T-Exhaust A5 (FC 112305)	yellow alarm
605	HI T-Exhaust A6 (FC 112306)	yellow alarm
606	HI T-Exhaust A7 (FC 112307)	yellow alarm
607	HI T-Exhaust A8 (FC 112308)	yellow alarm
608	HI T-Exhaust A9 (FC 112309)	yellow alarm
609	HI T-Exhaust A10 (FC 112310)	yellow alarm
610	HIHI T-Exhaust A1 (FC 112501)	red alarm
611	HIHI T-Exhaust A2 (FC 112502)	red alarm
612	HIHI T-Exhaust A3 (FC 112503)	red alarm

613	HIHI T-Exhaust A4 (FC 112504)	red alarm
614	HIHI T-Exhaust A5 (FC 112505)	red alarm
615	HIHI T-Exhaust A6 (FC 112506)	red alarm
616	HIHI T-Exhaust A7 (FC 112507)	red alarm
617	HIHI T-Exhaust A8 (FC 112508)	red alarm
618	HIHI T-Exhaust A9 (FC 112509)	red alarm
619	HIHI T-Exhaust A10 (FC 112510)	red alarm
620	HIHI T-Exhaust A1 (abs) (FC 112701)	red alarm
621	HIHI T-Exhaust A2 (abs) (FC 112702)	red alarm
622	HIHI T-Exhaust A3 (abs) (FC 112703)	red alarm
623	HIHI T-Exhaust A4 (abs) (FC 112704)	red alarm
624	HIHI T-Exhaust A5 (abs) (FC 112705)	red alarm
625	HIHI T-Exhaust A6 (abs) (FC 112706)	red alarm
626	HIHI T-Exhaust A7 (abs) (FC 112707)	red alarm
627	HIHI T-Exhaust A8 (abs) (FC 112708)	red alarm
628	HIHI T-Exhaust A9 (abs) (FC 112709)	red alarm
629	HIHI T-Exhaust A10 (abs) (FC 112710)	red alarm
630	HI T-Exhaust B1 (FC 112311)	yellow alarm
631	HI T-Exhaust B2 (FC 112312)	yellow alarm
632	HI T-Exhaust B3 (FC 112313)	yellow alarm
633	HI T-Exhaust B4 (FC 112314)	yellow alarm
634	HI T-Exhaust B5 (FC 112315)	yellow alarm
635	HI T-Exhaust B6 (FC 112316)	yellow alarm
636	HI T-Exhaust B7 (FC 112317)	yellow alarm
637	HI T-Exhaust B8 (FC 112318)	yellow alarm
638	HI T-Exhaust B9 (FC 112319)	yellow alarm
639	HI T-Exhaust B10 (FC 112320)	yellow

		alarm
640	HIHI T-Exhaust B1 (FC 112511)	red alarm
641	HIHI T-Exhaust B2 (FC 112512)	red alarm
642	HIHI T-Exhaust B3 (FC 112513)	red alarm
643	HIHI T-Exhaust B4 (FC 112514)	red alarm
644	HIHI T-Exhaust B5 (FC 112515)	red alarm
645	HIHI T-Exhaust B6 (FC 112516)	red alarm
646	HIHI T-Exhaust B7 (FC 112517)	red alarm
647	HIHI T-Exhaust B8 (FC 112518)	red alarm
648	HIHI T-Exhaust B9 (FC 112519)	red alarm
649	HIHI T-Exhaust B10 (FC 112520)	red alarm
650	HIHI T-Exhaust B1 (abs) (FC 112711)	red alarm
651	HIHI T-Exhaust B2 (abs) (FC 112712)	red alarm
652	HIHI T-Exhaust B3 (abs) (FC 112713)	red alarm
653	HIHI T-Exhaust B4 (abs) (FC 112714)	red alarm
654	HIHI T-Exhaust B5 (abs) (FC 112715)	red alarm
655	HIHI T-Exhaust B6 (abs) (FC 112716)	red alarm
656	HIHI T-Exhaust B7 (abs) (FC 112717)	red alarm
657	HIHI T-Exhaust B8 (abs) (FC 112718)	red alarm
658	HIHI T-Exhaust B9 (abs) (FC 112719)	red alarm
659	HIHI T-Exhaust B10 (abs) (FC 112720)	red alarm
660	LOT-Exhaust A1 (FC 112401)	yellow alarm
661	LOT-Exhaust A2 (FC 112402)	yellow alarm
662	LOT-Exhaust A3 (FC 112403)	yellow alarm
663	LOT-Exhaust A4 (FC 112404)	yellow alarm
664	LOT-Exhaust A5 (FC 112405)	yellow alarm
665	LOT-Exhaust A6 (FC 112406)	yellow alarm

666	LO T-Exhaust A7 (FC 112407)	yellow alarm
667	LO T-Exhaust A8 (FC 112408)	yellow alarm
668	LO T-Exhaust A9 (FC 112409)	yellow alarm
669	LO T-Exhaust A10 (FC 112410)	yellow alarm
670	LOLO T-Exhaust A1 (FC 112601)	red alarm
671	LOLO T-Exhaust A2 (FC 112602)	red alarm
672	LOLO T-Exhaust A3 (FC 112603)	red alarm
673	LOLO T-Exhaust A4 (FC 112604)	red alarm
674	LOLO T-Exhaust A5 (FC 112605)	red alarm
675	LOLO T-Exhaust A6 (FC 112606)	red alarm
676	LOLO T-Exhaust A7 (FC 112607)	red alarm
677	LOLO T-Exhaust A8 (FC 112608)	red alarm
678	LOLO T-Exhaust A9 (FC 112609)	red alarm
679	LOLO T-Exhaust A10 (FC 112610)	red alarm
680	LO T-Exhaust B1 (FC 112411)	yellow alarm
681	LO T-Exhaust B2 (FC 112412)	yellow alarm
682	LO T-Exhaust B3 (FC 112413)	yellow alarm
683	LO T-Exhaust B4 (FC 112414)	yellow alarm
684	LO T-Exhaust B5 (FC 112415)	yellow alarm
685	LO T-Exhaust B6 (FC 112416)	yellow alarm
686	LO T-Exhaust B7 (FC 112417)	yellow alarm
687	LO T-Exhaust B8 (FC 112418)	yellow alarm
688	LO T-Exhaust B9 (FC 112419)	yellow alarm
689	LO T-Exhaust B10 (FC 112420)	yellow alarm
690	LOLO T-Exhaust B1 (FC 112611)	red alarm
691	LOLO T-Exhaust B2 (FC 112612)	red alarm
692	LOLO T-Exhaust B3 (FC 112613)	red

		alarm
693	LOLO T-Exhaust B4 (FC 112614)	red alarm
694	LOLO T-Exhaust B5 (FC 112615)	red alarm
695	LOLO T-Exhaust B6 (FC 112616)	red alarm
696	LOLO T-Exhaust B7 (FC 112617)	red alarm
697	LOLO T-Exhaust B8 (FC 112618)	red alarm
698	LOLO T-Exhaust B9 (FC 112619)	red alarm
699	LOLO T-Exhaust B10 (FC 112620)	red alarm
700	HI T-Exhaust Mean (FC 112222)	yellow alarm
701	HIHI T-Exhaust Mean (FC 112223)	red alarm
702	MD / SD T-Exhaust (FC 112923)	red alarm
703	Comm. Lost ECU (FC 113200)	red alarm
704	AL Gas Valve 1 feedback (FC 113601)	red alarm
705	AL GVal Status (internal) (FC 113602)	red alarm
706	AL GVal Feedback (internal) (FC 113603)	red alarm
707	SS Local Initiated Emerg. Stop (FC 113902)	red alarm
750	Zero Pressure Detected - TecJet (FC 1.4540.009)	yellow alarm
751	Zero Flow Detected - TecJet (FC 1.4540.010)	yellow alarm
752	Flow Not Reached - TecJet (FC 1.4540.011)	yellow alarm
753	Valve Position Error - TecJet (FC 1.4540.012)	red alarm
754	High Electric Temperature - TecJet (FC 1.4540.013)	red alarm
755	Electric Temperature Fail High - TecJet (FC 1.4540.014)	red alarm
756	FGT Fail High - TecJet (FC 1.4540.015)	red alarm
757	Delta P Fail High - TecJet (FC 1.4540.016)	red alarm
758	FGP Fail High - TecJet (FC 1.4540.017)	red alarm
759	Coil Current Fail High - TecJet (FC 1.4540.018)	red alarm
760	Position Fail High - TecJet (FC 1.4540.019)	red alarm

761	Electric Temperature Fail Low - TecJet (FC 1.4540.020)	red alarm
762	FGT Fail Low - TecJet (FC 1.4540.021)	red alarm
763	Delta P Fail Low - TecJet (FC 1.4540.022)	red alarm
764	FGP Fail Low - TecJet (FC 1.4540.023)	red alarm
765	Coil Current Fail Low - TecJet (FC 1.4540.024)	red alarm
766	Position Fail Low - TecJet (FC 1.4540.025)	red alarm
767	Analog Input Low Error - TecJet (FC 1.4540.026)	red alarm
768	Analog Input High Error - TecJet (FC 1.4540.027)	red alarm
769	PWM Duty Cycle Low Error - TecJet (FC 1.4540.028)	red alarm
770	PWM Duty Cycle High Error - TecJet (FC 1.4540.056)	red alarm
771	Battery Volt Low Error - TecJet (FC 1.4540.029)	red alarm
772	FGT Low Limit Error - TecJet (FC 1.4540.030)	red alarm
773	Delta P Low Limit Error - TecJet (FC 1.4540.031)	red alarm
774	FGP Low Limit Error - TecJet (FC 1.4540.032)	red alarm
775	Battery Volt High Error - TecJet (FC 1.4540.033)	red alarm
776	FGT High Limit Error - TecJet (FC 1.4540.034)	red alarm
777	Delta P High Limit Error - TecJet (FC 1.4540.035)	red alarm
778	FGP High Limit Error - TecJet (FC 1.4540.036)	red alarm
779	Watchdog Reset - TecJet (FC 1.4540.037)	red alarm
780	CAN Flow Demand Failed - TecJet (FC 1.4540.038)	red alarm
781	TecJet Shutdown (FC 1.4540.040)	red alarm
782	TecJet Internal Fault (FC 1.4540.041)	red alarm
783	Keyswitch State - TecJet (FC 1.4540.042)	red alarm
784	Parameter Error - TecJet (FC 1.4540.043)	red alarm
785	Parameter Version Error - TecJet (FC 1.4540.044)	red alarm
786	Main EEP Read Fail - TecJet (FC 1.4540.045)	red alarm
787	Main EEP Write Fail - TecJet (FC	red

	1.4540.046)	alarm
788	Reading Parameters - TecJet (FC 1.4540.047)	red alarm
789	SPI ADC Error - TecJet (FC 1.4540.048)	red alarm
790	Sense 5V Error - TecJet (FC 1.4540.049)	red alarm
791	Sense Neg 9V Error - TecJet (FC 1.4540.050)	red alarm
792	Sense 12V Error - TecJet (FC 1.4540.051)	red alarm
793	ADC Test Error - TecJet MIS (FC 1.4540.052)	red alarm
794	CAN Timing Changed - TecJet (FC 1.4540.053)	yellow alarm
795	Exception Error - TecJet (FC 1.4540.054)	red alarm
796	Factory Cal Error - TecJet (FC 1.4540.055)	red alarm
800	Primary Open Cylinder 1 - MIC5 (FC 1.4520.570)	yellow alarm
801	Primary Open Cylinder 2 - MIC5 (FC 1.4520.571)	yellow alarm
802	Primary Open Cylinder 3 - MIC5 (FC 1.4520.572)	yellow alarm
803	Primary Open Cylinder 4 - MIC5 (FC 1.4520.573)	yellow alarm
804	Primary Open Cylinder 5 - MIC5 (FC 1.4520.574)	yellow alarm
805	Primary Open Cylinder 6 - MIC5 (FC 1.4520.575)	yellow alarm
806	Primary Open Cylinder 7 - MIC5 (FC 1.4520.576)	yellow alarm
807	Primary Open Cylinder 8 - MIC5 (FC 1.4520.577)	yellow alarm
808	Primary Open Cylinder 9 - MIC5 (FC 1.4520.578)	yellow alarm
809	Primary Open Cylinder 10 - MIC5 (FC 1.4520.579)	yellow alarm
810	Primary Open Cylinder 11 - MIC5 (FC 1.4520.580)	yellow alarm
811	Primary Open Cylinder 12 - MIC5 (FC 1.4520.581)	yellow alarm
812	Primary Open Cylinder 13 - MIC5 (FC 1.4520.582)	yellow alarm
813	Primary Open Cylinder 14 - MIC5 (FC 1.4520.583)	yellow alarm
814	Primary Open Cylinder 15 - MIC5 (FC 1.4520.584)	yellow alarm
815	Primary Open Cylinder 16 - MIC5 (FC 1.4520.585)	yellow alarm
816	Primary Open Cylinder 17 - MIC5 (FC 1.4520.586)	yellow alarm

817	Primary Open Cylinder 18 - MIC5 (FC 1.4520.587)	yellow alarm
818	Primary Open Cylinder 19 - MIC5 (FC 1.4520.588)	yellow alarm
819	Primary Open Cylinder 20 - MIC5 (FC 1.4520.589)	yellow alarm
820	Primary Short Circuit Cylinder 1 - MIC5 (FC 1.4520.590)	yellow alarm
821	Primary Short Circuit Cylinder 2 - MIC5 (FC 1.4520.591)	yellow alarm
822	Primary Short Circuit Cylinder 3 - MIC5 (FC 1.4520.592)	yellow alarm
823	Primary Short Circuit Cylinder 4 - MIC5 (FC 1.4520.593)	yellow alarm
824	Primary Short Circuit Cylinder 5 - MIC5 (FC 1.4520.594)	yellow alarm
825	Primary Short Circuit Cylinder 6 - MIC5 (FC 1.4520.595)	yellow alarm
826	Primary Short Circuit Cylinder 7 - MIC5 (FC 1.4520.596)	yellow alarm
827	Primary Short Circuit Cylinder 8 - MIC5 (FC 1.4520.597)	yellow alarm
828	Primary Short Circuit Cylinder 9 - MIC5 (FC 1.4520.598)	yellow alarm
829	Primary Short Circuit Cylinder 10 - MIC5 (FC 1.4520.599)	yellow alarm
830	Primary Short Circuit Cylinder 11 - MIC5 (FC 1.4520.600)	yellow alarm
831	Primary Short Circuit Cylinder 12 - MIC5 (FC 1.4520.601)	yellow alarm
832	Primary Short Circuit Cylinder 13 - MIC5 (FC 1.4520.602)	yellow alarm
833	Primary Short Circuit Cylinder 14 - MIC5 (FC 1.4520.603)	yellow alarm
834	Primary Short Circuit Cylinder 15 - MIC5 (FC 1.4520.604)	yellow alarm
835	Primary Short Circuit Cylinder 16 - MIC5 (FC 1.4520.605)	yellow alarm
836	Primary Short Circuit Cylinder 17 - MIC5 (FC 1.4520.606)	yellow alarm
837	Primary Short Circuit Cylinder 18 - MIC5 (FC 1.4520.607)	yellow alarm
838	Primary Short Circuit Cylinder 19 - MIC5 (FC 1.4520.608)	yellow alarm
839	Primary Short Circuit Cylinder 20 - MIC5 (FC 1.4520.609)	yellow alarm
850	Error Missing Ring Gear Signal - IC92x (FC 1.4520.232)	red alarm
851	Error Missing Reset Signal - IC92x (FC 1.4520.233)	red alarm
852	Error Missing Camshaft Signal - IC92x (FC 1.4520.234)	red alarm
853	Error Number of gear teeth - IC92x	red

	(FC 1.4520.235)	alarm
854	Unknown Engine Application Code - IC92x (FC 1.4520.236)	red alarm
855	Overspeed Shutdown - IC92x (FC 1.4520.237)	red alarm
856	E2PROM Checksum Error - IC92x (FC 1.4520.238)	red alarm
857	Global Timing out of Range - IC92x (FC 1.4520.239)	yellow alarm
858	Unknown Global Timing or Energy level - IC92x (FC 1.4520.240)	red alarm
859	Individual Timing out of Range - IC92x (FC 1.4520.241)	yellow alarm
860	Selftest Shutdown - IC92x (FC 1.4520.242)	yellow alarm
861	Open Primary Rate Exceeded - IC92x (FC 1.4520.243)	red alarm
862	Open Primary Channel 1 - IC92x (FC 1.4520.245)	yellow alarm
863	Open Primary Channel 2 - IC92x (FC 1.4520.246)	yellow alarm
864	Open Primary Channel 3 - IC92x (FC 1.4520.247)	yellow alarm
865	Open Primary Channel 4 - IC92x (FC 1.4520.248)	yellow alarm
866	Open Primary Channel 5 - IC92x (FC 1.4520.249)	yellow alarm
867	Open Primary Channel 6 - IC92x (FC 1.4520.250)	yellow alarm
868	Open Primary Channel 7 - IC92x (FC 1.4520.251)	yellow alarm
869	Open Primary Channel 8 - IC92x (FC 1.4520.252)	yellow alarm
870	Open Primary Channel 9 - IC92x (FC 1.4520.253)	yellow alarm
871	Open Primary Channel 10 - IC92x (FC 1.4520.254)	yellow alarm
872	Open Primary Channel 11 - IC92x (FC 1.4520.255)	yellow alarm
873	Open Primary Channel 12 - IC92x (FC 1.4520.256)	yellow alarm
874	Open Primary Channel 13 - IC92x (FC 1.4520.257)	yellow alarm
875	Open Primary Channel 14 - IC92x (FC 1.4520.258)	yellow alarm
876	Open Primary Channel 15 - IC92x (FC 1.4520.259)	yellow alarm
877	Open Primary Channel 16 - IC92x (FC 1.4520.260)	yellow alarm
878	Open Primary Channel 17 - IC92x (FC 1.4520.262)	yellow alarm
879	Open Primary Channel 18 - IC92x (FC 1.4520.263)	yellow alarm

880	Open Primary Channel 19 - IC92x (FC 1.4520.264)	yellow alarm
881	Open Primary Channel 20 - IC92x (FC 1.4520.265)	yellow alarm
882	Open Primary Channel 21 - IC92x (FC 1.4520.266)	yellow alarm
883	Open Primary Channel 22 - IC92x (FC 1.4520.267)	yellow alarm
884	Open Primary Channel 23 - IC92x (FC 1.4520.268)	yellow alarm
885	Open Primary Channel 24 - IC92x (FC 1.4520.269)	yellow alarm
886	Warning Missing Ring Gear Signal - IC92x (FC 1.4520.270)	yellow alarm
887	Warning Missing Reset Signal - IC92x (FC 1.4520.271)	yellow alarm
888	Warning Missing Camshaft Signal - IC92x (FC 1.4520.272)	yellow alarm
889	SCR Fault Odd - IC92x (FC 1.4520.273)	red alarm
890	SCR Fault Even - IC92x (FC 1.4520.274)	red alarm
891	Odd Energy Level out of Range - IC92x (FC 1.4520.275)	yellow alarm
892	Even Energy Level out of Range - IC92x (FC 1.4520.276)	yellow alarm
900	Secondary Open Cylinder 1 - MIC5 (FC 1.4520.610)	yellow alarm
901	Secondary Open Cylinder 2 - MIC5 (FC 1.4520.611)	yellow alarm
902	Secondary Open Cylinder 3 - MIC5 (FC 1.4520.612)	yellow alarm
903	Secondary Open Cylinder 4 - MIC5 (FC 1.4520.613)	yellow alarm
904	Secondary Open Cylinder 5 - MIC5 (FC 1.4520.614)	yellow alarm
905	Secondary Open Cylinder 6 - MIC5 (FC 1.4520.615)	yellow alarm
906	Secondary Open Cylinder 7 - MIC5 (FC 1.4520.616)	yellow alarm
907	Secondary Open Cylinder 8 - MIC5 (FC 1.4520.617)	yellow alarm
908	Secondary Open Cylinder 9 - MIC5 (FC 1.4520.618)	yellow alarm
909	Secondary Open Cylinder 10 - MIC5 (FC 1.4520.619)	yellow alarm
910	Secondary Open Cylinder 11 - MIC5 (FC 1.4520.620)	yellow alarm
911	Secondary Open Cylinder 12 - MIC5 (FC 1.4520.621)	yellow alarm
912	Secondary Open Cylinder 13 - MIC5 (FC 1.4520.622)	yellow alarm
913	Secondary Open Cylinder 14 - MIC5	yellow

	(FC 1.4520.623)	alarm
914	Secondary Open Cylinder 15 - MIC5 (FC 1.4520.624)	yellow alarm
915	Secondary Open Cylinder 16 - MIC5 (FC 1.4520.625)	yellow alarm
916	Secondary Open Cylinder 17 - MIC5 (FC 1.4520.626)	yellow alarm
917	Secondary Open Cylinder 18 - MIC5 (FC 1.4520.627)	yellow alarm
918	Secondary Open Cylinder 19 - MIC5 (FC 1.4520.628)	yellow alarm
919	Secondary Open Cylinder 20 - MIC5 (FC 1.4520.629)	yellow alarm
920	Secondary Short Circuit Cylinder 1 - MIC5 (FC 1.4520.630)	yellow alarm
921	Secondary Short Circuit Cylinder 2 - MIC5 (FC 1.4520.631)	yellow alarm
922	Secondary Short Circuit Cylinder 3 - MIC5 (FC 1.4520.632)	yellow alarm
923	Secondary Short Circuit Cylinder 4 - MIC5 (FC 1.4520.633)	yellow alarm
924	Secondary Short Circuit Cylinder 5 - MIC5 (FC 1.4520.634)	yellow alarm
925	Secondary Short Circuit Cylinder 6 - MIC5 (FC 1.4520.635)	yellow alarm
926	Secondary Short Circuit Cylinder 7 - MIC5 (FC 1.4520.636)	yellow alarm
927	Secondary Short Circuit Cylinder 8 - MIC5 (FC 1.4520.637)	yellow alarm
928	Secondary Short Circuit Cylinder 9 - MIC5 (FC 1.4520.638)	yellow alarm
929	Secondary Short Circuit Cylinder 10 - MIC5 (FC 1.4520.639)	yellow alarm
930	Secondary Short Circuit Cylinder 11 - MIC5 (FC 1.4520.640)	yellow alarm
931	Secondary Short Circuit Cylinder 12 - MIC5 (FC 1.4520.641)	yellow alarm
932	Secondary Short Circuit Cylinder 13 - MIC5 (FC 1.4520.642)	yellow alarm
933	Secondary Short Circuit Cylinder 14 - MIC5 (FC 1.4520.643)	yellow alarm
934	Secondary Short Circuit Cylinder 15 - MIC5 (FC 1.4520.644)	yellow alarm
935	Secondary Short Circuit Cylinder 16 - MIC5 (FC 1.4520.645)	yellow alarm
936	Secondary Short Circuit Cylinder 17 - MIC5 (FC 1.4520.646)	yellow alarm
937	Secondary Short Circuit Cylinder 18 - MIC5 (FC 1.4520.647)	yellow alarm
938	Secondary Short Circuit Cylinder 19 - MIC5 (FC 1.4520.648)	yellow alarm
939	Secondary Short Circuit Cylinder 20 - MIC5 (FC 1.4520.649)	yellow alarm

950	Knock Sensor Error A1 - GET (FC 1.4510.192)	red alarm
951	Knock Sensor Error B1 - GET (FC 1.4510.202)	red alarm
952	Knock Sensor Error A2 - GET (FC 1.4510.193)	red alarm
953	Knock Sensor Error B2 - GET (FC 1.4510.203)	red alarm
954	Knock Sensor Error A3 - GET (FC 1.4510.194)	red alarm
955	Knock Sensor Error B3 - GET (FC 1.4510.204)	red alarm
956	Knock Sensor Error A4 - GET (FC 1.4510.195)	red alarm
957	Knock Sensor Error B4 - GET (FC 1.4510.205)	red alarm
958	Knock Sensor Error A5 - GET (FC 1.4510.196)	red alarm
959	Knock Sensor Error B5 - GET (FC 1.4510.206)	red alarm
960	Knock Sensor Error A6 - GET (FC 1.4510.197)	red alarm
961	Knock Sensor Error B6 - GET (FC 1.4510.207)	red alarm
962	Knock Sensor Error A7 - GET (FC 1.4510.198)	red alarm
963	Knock Sensor Error B7 - GET (FC 1.4510.208)	red alarm
964	Knock Sensor Error A8 - GET (FC 1.4510.199)	red alarm
965	Knock Sensor Error B8 - GET (FC 1.4510.209)	red alarm
966	Knock Sensor Error A9 - GET (FC 1.4510.200)	red alarm
967	Knock Sensor Error B9 - GET (FC 1.4510.210)	red alarm
968	Knock Sensor Error A10 - GET (FC 1.4510.201)	red alarm
969	Knock Sensor Error B10 - GET (FC 1.4510.211)	red alarm
971	Error Status - GET (FC 1.4510.186)	red alarm
972	Combined Error - GET (FC 1.4510.187)	red alarm
973	Internal Error - GET (FC 1.4510.188)	red alarm
974	Error Camshaft - GET (FC 1.4510.189)	red alarm
1000	A - Internal Fault - ProAct (FC 1.4550.031)	red alarm
1001	A - Stop commanded (Run/Stop) - ProAct (FC 1.4550.032)	yellow alarm
1002	A - Input (Supply) Voltage Fault -	yellow

	ProAct (FC 1.4550.033)	alarm
1003	A - Position Error - ProAct (FC 1.4550.034)	red alarm
1004	A - Temperature Sensor Fault - ProAct (FC 1.4550.035)	red alarm
1005	A - Temperature derating active - ProAct (FC 1.4550.036)	yellow alarm
1006	A - Temperature above 120 Å°C - ProAct (FC 1.4550.037)	red alarm
1007	A - Loss of Position Demand - ProAct (FC 1.4550.038)	red alarm
1008	A - Demand Tracking Fault - ProAct (FC 1.4550.039)	yellow alarm
1009	A - Analog Position Demand Failed - ProAct (FC 1.4550.040)	yellow alarm
1010	A - PWM Position Demand Failed - ProAct (FC 1.4550.041)	yellow alarm
1011	A - CAN Position Demand Failed - ProAct (FC 1.4550.042)	red alarm
1012	A - CAN Fault (CAN Bus Off, CAN Adress Claim Error) - ProAct (FC 1.4550.043)	red alarm
1013	A - CAN Stop Command - ProAct (FC 1.4550.044)	yellow alarm
1014	B - Internal Fault - ProAct (FC 1.4550.131)	red alarm
1015	B - Stop commanded (Run/Stop) - ProAct (FC 1.4550.132)	yellow alarm
1016	B - Input (Supply) Voltage Fault - ProAct (FC 1.4550.133)	yellow alarm
1017	B - Position Error - ProAct (FC 1.4550.134)	red alarm
1018	B - Temperature Sensor Fault - ProAct (FC 1.4550.135)	red alarm
1019	B - Temperature derating active - ProAct (FC 1.4550.136)	yellow alarm
1020	B - Temperature above 120 Å°C - ProAct (FC 1.4550.137)	red alarm
1021	B - Loss of Position Demand - ProAct (FC 1.4550.138)	red alarm
1022	B - Demand Tracking Fault - ProAct (FC 1.4550.139)	yellow alarm
1023	B - Analog Position Demand Failed - ProAct (FC 1.4550.140)	yellow alarm
1024	B - PWM Position Demand Failed - ProAct (FC 1.4550.141)	yellow alarm
1025	B - CAN Position Demand Failed - ProAct (FC 1.4550.142)	red alarm
1026	B - CAN Fault (CAN Bus Off, CAN Adress Claim Error) - ProAct (FC 1.4550.143)	red alarm
1027	B - CAN Stop Command - ProAct (FC 1.4550.144)	yellow alarm

1050	PWM Input High Duty Cycle Error - FSeries (FC 1.4530.010)	yellow alarm
1051	PWM Input Low Duty Cycle Error - FSeries (FC 1.4530.011)	yellow alarm
1052	Analog Input High Error - FSeries (FC 1.4530.012)	yellow alarm
1053	Analog Input Low Error - FSeries (FC 1.4530.013)	yellow alarm
1054	Input Supply Volt High Error - FSeries (FC 1.4530.014)	yellow alarm
1055	Input Supply Volt Low Error - FSeries (FC 1.4530.015)	yellow alarm
1056	Electronics Temperature High Error - FSeries (FC 1.4530.016)	red alarm
1057	Electronics Temperature Low Error - FSeries (FC 1.4530.017)	red alarm
1058	Position Error - FSeries (FC 1.4530.018)	red alarm
1059	Run Enable Not Active - FSeries (FC 1.4530.019)	yellow alarm
1060	Spring Check Failed - FSeries (FC 1.4530.020)	yellow alarm
1061	Internal Fault - FSeries (FC 1.4530.021)	yellow alarm
1062	CAN Fault - FSeries (FC 1.4530.022)	red alarm
1063	Shutdown - FSeries (FC 1.4530.007)	red alarm
1064	Alarm - FSeries (FC 1.4530.008)	yellow alarm
1065	Derating Active - FSeries (FC 1.4530.009)	yellow alarm
1100	A - Position Error - Phytron (FC 1.4570.026)	red alarm
1101	A - Alarm Low Voltage - Phytron (FC 1.4570.025)	yellow alarm
1102	A - Error Temperature - Phytron (FC 1.4570.024)	red alarm
1103	A - Alarm Temperature - Phytron (FC 1.4570.023)	yellow alarm
1104	A - Circuit - Phytron (FC 1.4570.022)	red alarm
1105	A - Watchdog - Phytron (FC 1.4570.021)	yellow alarm
1106	B - Position Error - Phytron (FC 1.4570.126)	red alarm
1107	B - Alarm Low Voltage - Phytron (FC 1.4570.125)	yellow alarm
1108	B - Error Temperature - Phytron (FC 1.4570.124)	red alarm
1109	B - Alarm Temperature - Phytron (FC 1.4570.123)	yellow alarm
1110	B - Circuit - Phytron (FC 1.4570.122)	red

		alarm
1111	B - Watchdog - Phytron (FC 1.4570.121)	yellow alarm
1112	HI Delta p5 for Nox (FC 1017)	yellow alarm
1113	LOP-Crank Case (FC 1030)	yellow alarm
1114	LOLOP-Crank Case (FC 1031)	red alarm
1115	HIHI Power Difference (FC 534)	red alarm
1116	LOLO Power Difference (FC 535)	red alarm
1117	AL EIL Protection (FC 615)	red alarm
1118	AL EIL Alarm (FC 616)	red alarm
1119	AL EIL Different Engine Number (FC 832)	red alarm
1150	A - Gas Sensor Power not In Range (FC 1.4560.004)	yellow alarm
1151	A - Gas Sensor not at Temperature (FC 1.4560.005)	yellow alarm
1152	A - Nox Reading not Stable (FC 1.4560.006)	yellow alarm
1153	A - Wide Range O2 Reading not Stable (FC 1.4560.007)	yellow alarm
1154	B - Gas Sensor Power not In Range (FC 1.4560.104)	yellow alarm
1155	B - Gas Sensor not at Temperature (FC 1.4560.105)	yellow alarm
1156	B - Nox Reading not Stable (FC 1.4560.106)	yellow alarm
1157	B - Wide Range O2 Reading not Stable (FC 1.4560.107)	yellow alarm
1164	Trigger 3: synchronisation fault - MIC5 (FC 1.4520.670)	yellow alarm
1165	Trigger 3: operational error - MIC5 (FC 1.4520.671)	red alarm
1166	Trigger 3: no signal detected - MIC5 (FC 1.4520.672)	yellow alarm
1167	Trigger 3: polarity detection failed - MIC5 (FC 1.4520.673)	yellow alarm
1168	Trigger 3: wrong polarity - MIC5 (FC 1.4520.674)	yellow alarm
1169	Trigger 3: no index mark detected - MIC5 (FC 1.4520.675)	yellow alarm
1170	Trigger 3: wrong number of trigger events - MIC5 (FC 1.4520.676)	yellow alarm
1171	Trigger 3: signal missing - MIC5 (FC 1.4520.677)	yellow alarm
1172	Trigger 3: signal faulty - MIC5 (FC 1.4520.678)	yellow alarm

1173	Trigger 3: index mark not detected - MIC5 (FC 1.4520.679)	yellow alarm
1174	Trigger 3: index to early / faulty - MIC5 (FC 1.4520.680)	yellow alarm
1175	Trigger 3: index to late / missing - MIC5 (FC 1.4520.681)	yellow alarm
1176	Operational error - MIC5 (FC 1.4520.508)	red alarm
1177	System error - MIC5 (FC 1.4520.509)	red alarm
1178	Temperature limit reached - MIC5 (FC 1.4520.520)	yellow alarm
1179	Power output limit reached - MIC5 (FC 1.4520.521)	yellow alarm
1180	Invalid coil data - MIC5 (FC 1.4520.522)	yellow alarm
1181	Invalid configuration - MIC5 (FC 1.4520.523)	yellow alarm
1182	Invalid trigger configuration - MIC5 (FC 1.4520.524)	yellow alarm
1183	Configuration data checksum error - MIC5 (FC 1.4520.525)	yellow alarm
1184	Analogue current signal failure - MIC5 (FC 1.4520.526)	red alarm
1185	Analogue voltage signal failure - MIC5 (FC 1.4520.527)	red alarm
1186	Auxiliary inputs supply voltage failure - MIC5 (FC 1.4520.528)	red alarm
1187	Trigger supply voltage failure - MIC5 (FC 1.4520.529)	red alarm
1188	Global timing limited - MIC5 (FC 1.4520.530)	yellow alarm
1189	General fault - MIC5 (FC 1.4520.540)	red alarm
1190	Overspeed - MIC5 (FC 1.4520.541)	red alarm
1191	Speed signal detected during selftest - MIC5 (FC 1.4520.542)	red alarm
1192	Shutdown due to alarm - MIC5 (FC 1.4520.543)	red alarm
1193	Identification of output board failed - MIC5 (FC 1.4520.544)	red alarm
1194	Failure high-voltage power supply - MIC5 (FC 1.4520.545)	red alarm
1195	Failure temperature sensor - MIC5 (FC 1.4520.546)	red alarm
1196	Failure current sensor - MIC5 (FC 1.4520.547)	red alarm
1197	Temperature limit reached - MIC5 (FC 1.4520.548)	red alarm
1198	Power output limit reached - MIC5 (FC 1.4520.549)	red alarm
1199	Trigger 1: synchronisation fault - MIC5	yellow

	(FC 1.4520.550)	alarm
1200	Trigger 1: operational error - MIC5 (FC 1.4520.551)	red alarm
1201	Trigger 1: no signal detected - MIC5 (FC 1.4520.552)	yellow alarm
1202	Trigger 1: polarity detection failed - MIC5 (FC 1.4520.553)	yellow alarm
1203	Trigger 1: wrong polarity - MIC5 (FC 1.4520.554)	yellow alarm
1204	Trigger 1: no index mark detected - MIC5 (FC 1.4520.555)	yellow alarm
1205	Trigger 1: wrong number of trigger events - MIC5 (FC 1.4520.556)	yellow alarm
1206	Trigger 1: signal missing - MIC5 (FC 1.4520.557)	yellow alarm
1207	Trigger 1: signal faulty - MIC5 (FC 1.4520.558)	yellow alarm
1208	Trigger 1: index mark not detected - MIC5 (FC 1.4520.559)	yellow alarm
1209	Trigger 1: index to early / faulty - MIC5 (FC 1.4520.560)	yellow alarm
1210	Trigger 1: index to late / missing - MIC5 (FC 1.4520.561)	yellow alarm
1211	Trigger 2: synchronisation fault - MIC5 (FC 1.4520.658)	yellow alarm
1212	Trigger 2: operational error - MIC5 (FC 1.4520.659)	red alarm
1213	Trigger 2: no signal detected - MIC5 (FC 1.4520.660)	yellow alarm
1214	Trigger 2: polarity detection failed - MIC5 (FC 1.4520.661)	yellow alarm
1215	Trigger 2: wrong polarity - MIC5 (FC 1.4520.662)	yellow alarm
1216	Trigger 2: no index mark detected - MIC5 (FC 1.4520.663)	yellow alarm
1217	Trigger 2: wrong number of trigger events - MIC5 (FC 1.4520.664)	yellow alarm
1218	Trigger 2: signal missing - MIC5 (FC 1.4520.665)	yellow alarm
1219	Trigger 2: signal faulty - MIC5 (FC 1.4520.666)	yellow alarm
1220	Trigger 2: index mark not detected - MIC5 (FC 1.4520.667)	yellow alarm
1221	Trigger 2: index to early / faulty - MIC5 (FC 1.4520.668)	yellow alarm
1222	Trigger 2: index to late / missing - MIC5 (FC 1.4520.669)	yellow alarm

4.44 S6 Singlespeed

Fault Code in HEX	Text
0x1000	Overspeed
0x1100	EngSpdSensor1
0x1200	EngSpdSensor2
0x2000	WtrTempSensor
0x2100	ChrgAirTmpSens
0x2200	ChrgAirPrsSens
0x2300	OilTempSensor
0x2400	OilPressSensor
0x2600	SensorSupply1
0x2700	SensorSupply2
0x2800	ExtrAnalogInp
0x3200	BatteryVoltage
0x3300	CAN msg not ok
0x3403	CAN version
0x4300	HWWatchdog
0x6200	FanActuator
0x6400	WasteGateAct
0x6600	StarterActuatr
0x6605	Starter Motor
0x6702	AlternatorChrg
0x6A00	ExhaustBrkAct
0xB000	OilPressProt
0xB100	CoolantLevProt
0xB200	OverheatCoolWt
0xB300	EmergencyStop
0xB501	CoolantLevel
0xC000	PDEInjectorCyl1
0xC100	PDEInjectorCyl2
0xC200	PDEInjectorCyl3
0xC300	PDEInjectorCyl4
0xC400	PDEInjectorCyl5
0xC500	PDEInjectorCyl6
0xC600	PDEInjectorCyl7
0xC700	PDEInjectorCyl8
0xE200	OverheatProt
0xE600	CoordEmergStop

4.45 S6 Allspeed

Fault Code in HEX	Text
0x1000	Overspeed
0x1100	EngSpdSensor1
0x1200	EngSpdSensor2
0x2000	WtrTempSensor
0x2100	ChrgAirTmpSens
0x2200	ChrgAirPrsSens
0x2300	OilTempSensor
0x2400	OilPressSensor
0x2600	SensorSupply1
0x2700	SensorSupply2
0x2800	ExtrAnalogInp
0x3200	BatteryVoltage
0x3300	CAN msg not ok
0x3403	CAN version
0x4300	HWWatchdog
0x6200	FanActuator
0x6400	WasteGateAct
0x6600	StarterActuatr
0x6605	Starter Motor
0x6702	AlternatorChrg
0x6A00	ExhaustBrkAct
0xB000	OilPressProt
0xB100	CoolantLevProt
0xB200	OverheatCoolWt
0xB300	EmergencyStop
0xB501	CoolantLevel
0xC000	PDEInjectorCyl1
0xC100	PDEInjectorCyl2
0xC200	PDEInjectorCyl3
0xC300	PDEInjectorCyl4
0xC400	PDEInjectorCyl5
0xC500	PDEInjectorCyl6
0xC600	PDEInjectorCyl7
0xC700	PDEInjectorCyl8
0xE200	OverheatProt
0xE600	CoordEmergStop

4.46 S8 Singlespeed

Fault Code in HEX	Text
0x1000	Overspeed
0x1100	EngSpdSensor1
0x1200	EngSpdSensor2
0x2000	WtrTempSensor
0x2100	ChrgAirTmpSens
0x2200	ChrgAirPrsSens
0x2300	OilTempSensor
0x2400	OilPressSensor
0x2600	SensorSupply1
0x2700	SensorSupply2
0x2800	ExtrAnalogInp
0x3200	BatteryVoltage
0x3300	CAN msg not ok
0x3403	CAN version
0x4300	HWWatchdog
0x6200	FanActuator
0x6400	WasteGateAct
0x6600	StarterActuatr
0x6605	Starter Motor
0x6702	AlternatorChrg
0x6A00	ExhaustBrkAct
0xB000	OilPressProt
0xB100	CoolantLevProt
0xB200	OverheatCoolWt
0xB300	EmergencyStop
0xB501	CoolantLevel
0xC000	PDEInjctorCyl1
0xC100	PDEInjctorCyl2
0xC200	PDEInjctorCyl3
0xC300	PDEInjctorCyl4
0xC400	PDEInjctorCyl5
0xC500	PDEInjctorCyl6
0xC600	PDEInjctorCyl7
0xC700	PDEInjctorCyl8
0xE200	OverheatProt
0xE600	CoordEmergStop
Fault Code (SPN)	Text
27	EGRValvePos
51	ThrottlePos
70	Parking Brake
100	EngOil Press
102	Boost Press
105	Intake Temp

110	EngCool Temp
111	Coolant Level
132	MassFlowSensor
168	BatteryVoltage
175	EngOil Temp
190	EngineSpeed
521	Brake Pedal
558	AP Idle
559	AP Kickdown
598	ConvCD
599	Cruise Control
636	Crank Sensor
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
677	EngStartRelay
696	Power Take Off
898	RequestedSpeed
986	Fan Actuator
1111	ESD Override
1188	WastegateOut
1624	Speed Signal
1632	EngTorqueLimit
2797	Fault in TPU
3353	Generator 1
3354	Generator 2
3509	SensorSupply1
3510	SensorSupply2
3585	CoordinatorESD
4000	Exhaust Brake

4.47 S8 Allspeed

Fault Code in HEX	Text
0x1000	Overspeed
0x1100	EngSpdSensor1
0x1200	EngSpdSensor2
0x2000	WtrTempSensor
0x2100	ChrgAirTmpSens
0x2200	ChrgAirPrsSens
0x2300	OilTempSensor
0x2400	OilPressSensor
0x2600	SensorSupply1
0x2700	SensorSupply2
0x2800	ExtrAnalogInp
0x3200	BatteryVoltage
0x3300	CAN msg not ok
0x3403	CAN version
0x4300	HWWatchdog
0x6200	FanActuator
0x6400	WasteGateAct
0x6600	StarterActuatr
0x6605	Starter Motor
0x6702	AlternatorChrg
0x6A00	ExhaustBrkAct
0xB000	OilPressProt
0xB100	CoolantLevProt
0xB200	OverheatCoolWt
0xB300	EmergencyStop
0xB501	CoolantLevel
0xC000	PDEInjctorCyl1
0xC100	PDEInjctorCyl2
0xC200	PDEInjctorCyl3
0xC300	PDEInjctorCyl4
0xC400	PDEInjctorCyl5
0xC500	PDEInjctorCyl6
0xC600	PDEInjctorCyl7
0xC700	PDEInjctorCyl8
0xE200	OverheatProt
0xE600	CoordEmergStop
Fault Code (SPN)	Text
27	EGRValvePos
51	ThrottlePos
70	Parking Brake
100	EngOil Press
102	Boost Press
105	Intake Temp

110	EngCool Temp
111	Coolant Level
132	MassFlowSensor
168	BatteryVoltage
175	EngOil Temp
190	EngineSpeed
521	Brake Pedal
558	AP Idle
559	AP Kickdown
598	ConvCD
599	Cruise Control
636	Crank Sensor
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
677	EngStartRelay
696	Power Take Off
898	RequestedSpeed
986	Fan Actuator
1111	ESD Override
1188	WastegateOut
1624	Speed Signal
1632	EngTorqueLimit
2797	Fault in TPU
3353	Generator 1
3354	Generator 2
3509	SensorSupply1
3510	SensorSupply2
3585	CoordinatorESD
4000	Exhaust Brake

4.48 EEM2 or EEM3

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
157	FuelRail Press
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed

970	AuxEngSdSwitch
971	EngDerateSwch
1109	EngSdApproach
1110	Engine Sd
1136	ECU Temp
1485	ECU MainRelay
9006	VehicleCANoff
9008	IDmoduleCANoff
9010	AmbientPress
9021	5Vdc Supply 1
9022	5Vdc Supply 2
9023	5Vdc Supply 3
9024	WaterInFuelSup
9025	SelfTestWtchdrg
9026	SelfTestVoltHi
9027	SelfTestVoltLo
9030	MainRelay1Shrt
9031	MainRelay2Shrt
9032	MainRelay3Shrt
9033	MainRelay
9034	MainRelayDfct
9035	NormalRecovery
9036	Full restart
9070	CrankSpeedSens
9071	CrankSpeedSens
9072	CrankSpeedSens
9080	CamSpeedSensor
9081	CamSpeedSensor
9082	CamSpeedSensor
9083	CamSpeedSensor
9090	EngineSpeedErr
9107	InvalidECUAddr
9131	SolenoidValve1
9132	SolenoidValve2
9133	SolenoidValve3
9134	SolenoidValve4
9135	SolenoidValve5
9136	SolenoidValve6
9140	Throttle2Sens
9141	Throttle3Sens
9150	Rail Pressure
9151	PressReliefVlv
9152	FuelFiltrPress
9153	FuelFiltrPress
9174	MPROP

9230	EngSpecMismtch
9231	EngSNMismatch
9233	IDM-NotPresent
9234	IDM-NotComptbl
9235	ID Module
9236	IDM-MemDefect
9237	IDM-Watchdog
9238	IDM-Brownout
9239	EngSpecMissing
9240	EngSNMissing
9241	IDM-NotPresent
9242	GeneratedByPTE
9243	MaxECUByPTE
9305	BadDIConfig
9306	PTO InputError
9310	ExternalFlt1
9311	ExternalFlt2
9312	TorqCtrlInput

4.49 EDC

Fault Code (SPN)	Text
27	EGRValvePos
51	ThrottlePos
84	VSSCD1
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
132	AFSCD
153	CrankcasePress
157	RailMeUn
158	BattPotential
164	RailPressure
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
228	MOfsCaSCrS
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
597	BrakeSwitch
598	ConvCD
604	GearCDPNLmpOut
620	5V SupplyFail
624	DiagnosticLamp
625	FMTCTNonMonoMap
626	PrehActuator
627	HWEMonUMinSupp
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail

633	PCVCD
634	TVACD
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
657	InjectorCyl#7
658	InjectorCyl#8
675	GlwCDLmp
676	GlwCD
677	EngStartRelay
723	EngMCA1
767	GearbxRgear
835	OPSCDLmp
859	FIFCDHtg
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwth
976	FrmMngTOPTO
977	FanCD
979	MSSCD
1079	SSpMon
1109	EngSdApproach
1110	Engine Sd
1137	ExhaustTemp 1
1138	ExhaustTemp 2
1213	MILcontrol
1347	MeUnCD
1351	ACCDCmpr
1484	Severe Fault
1485	ECU MainRelay
1680	AOHtCDHt1

4.50 EDC3 (EMS1) or (EMS2) singlespeed only

Fault Code (SPN)	Text
20	EngCool Press
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
164	RailPressure
172	AirInlet Temp
173	Exhaust Temp
175	EngOil Temp
190	EngineSpeed
231	J1939 Datalink
608	J1587 Datalink
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Pickup Cam
637	Pickup Crank
639	J1939 CAN Bus
647	CoolingFan
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
679	InjPressRegul
729	PreheatSensor

975	Fan Speed
1080	5V Sensor 2
1184	Exhaust Temp
1188	WastegateOut
1239	RailPresSystem
1485	ECU MainRelay
1675	EngStartRelay
2791	EGR Status
520192	PistonCoolSw
520193	SeaWaterPress
520194	Starter input
520195	Stop input
Fault Code in HEX	Text
0x00014	EngCool Press
0x0001A	Fan Speed
0x0005E	Fuel Press
0x00061	Water in fuel
0x00062	Oil Level
0x00063	Oil Diff Press
0x00064	EngOil Press
0x00066	Boost Press
0x00069	Intake Temp
0x0006A	AirInletPress
0x0006C	Barom Press
0x0006E	EngCool Temp
0x0006F	Coolant Level
0x00099	CrankcasePress
0x0009E	BattPotential
0x000AD	Exhaust Temp
0x000AE	Fuel Temp
0x000AF	EngineOil Temp
0x200E7	SAE J1939 fail
0x200E8	5V DC Fail
0x200F0	Prg MemoryFail
0x200F5	EMS HW Failure
0x200FA	SAE J1587 fail
0x200FD	CalibrMem fail
0x200FE	Controller#1
0x30001	Injector 1
0x30002	Injector 2
0x30003	Injector 3
0x30004	Injector 4
0x30005	Injector 5

0x30006	Injector 6
0x30015	Pickup Cam
0x30016	Pickup Crank
0x30020	WastegateOut
0x30021	CoolingFan
0x40003	Starter Output
0x40006	ExtSTOP Active
0x40008	Piston CoolPr
0x40062	J1587 Sync
0x40084	J1587 Throttl
0x4010B	SeaWater Press
0x600C9	J1939 Datalink
0x600D8	J1939 Bus
0x73C01	Primary Batt
0x73C02	Secondary Batt
0x73C03	15 supply
0x73C04	30 supply
0x73C05	EMS supply
0x73C06	Extra supply

4.51 EDC3 (EMS1) or (EMS2) allspeed only

Fault Code (SPN)	Text
20	EngCool Press
51	ThrottlePos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
164	RailPressure
172	AirInlet Temp
173	Exhaust Temp
175	EngOil Temp
190	EngineSpeed
231	J1939 Datalink
608	J1587 Datalink
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Pickup Cam
637	Pickup Crank
639	J1939 CAN Bus
647	CoolingFan
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
679	InjPressRegul
729	PreheatSensor

975	Fan Speed
1080	5V Sensor 2
1184	Exhaust Temp
1188	WastegateOut
1239	RailPresSystem
1485	ECU MainRelay
1675	EngStartRelay
2791	EGR Status
520192	PistonCoolSw
520193	SeaWaterPress
520194	Starter input
520195	Stop input
Fault Code in HEX	Text
0x00014	EngCool Press
0x0001A	Fan Speed
0x0005E	Fuel Press
0x00061	Water in fuel
0x00062	Oil Level
0x00063	Oil Diff Press
0x00064	EngOil Press
0x00066	Boost Press
0x00069	Intake Temp
0x0006A	AirInletPress
0x0006C	Barom Press
0x0006E	EngCool Temp
0x0006F	Coolant Level
0x00099	CrankcasePress
0x0009E	BattPotential
0x000AD	Exhaust Temp
0x000AE	Fuel Temp
0x000AF	EngineOil Temp
0x200E7	SAE J1939 fail
0x200E8	5V DC Fail
0x200F0	Prg MemoryFail
0x200F5	EMS HW Failure
0x200FA	SAE J1587 fail
0x200FD	CalibrMem fail
0x200FE	Controller#1
0x30001	Injector 1
0x30002	Injector 2
0x30003	Injector 3
0x30004	Injector 4
0x30005	Injector 5

0x30006	Injector 6
0x30015	Pickup Cam
0x30016	Pickup Crank
0x30020	WastegateOut
0x30021	CoolingFan
0x40003	Starter Output
0x40006	ExtSTOP Active
0x40008	Piston CoolPr
0x40062	J1587 Sync
0x40084	J1587 Throttl
0x4010B	SeaWater Press
0x600C9	J1939 Datalink
0x600D8	J1939 Bus
0x73C01	Primary Batt
0x73C02	Secondary Batt
0x73C03	15 supply
0x73C04	30 supply
0x73C05	EMS supply
0x73C06	Extra supply

4.52 EDC7 (with KWP2000)

Fault Code (SPN)	Text
20	EngCool Press
51	ThrottlePos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
164	RailPressure
172	AirInlet Temp
173	Exhaust Temp
175	EngOil Temp
190	EngineSpeed
231	J1939 Datalink
608	J1587 Datalink
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	Controller#1
630	CalibrMemFail
636	Pickup Cam
637	Pickup Crank
639	J1939 CAN Bus

647	CoolingFan
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
679	InjPressRegul
729	PreheatSensor
975	Fan Speed
1080	5V Sensor 2
1184	Exhaust Temp
1188	WastegateOut
1239	RailPresSystem
1485	ECU MainRelay
1675	EngStartRelay
2791	EGR Status
520192	PistonCoolSw
520193	SeaWaterPress
520194	Starter input
520195	Stop input
Fault Code in HEX	Text
0x0105	AirPressSensor
0x0110	AirTempSensor
0x0115	CoolTempSensor
0x0120	AccPedalSensor
0x0180	FuelTempSensor
0x0195	OilTempSensor
0x0219	EngOverspeed
0x0520	OilPressSensor

0x0560	BatteryVoltage
0x0073	Coolant Temp
0x00B4	Fuel Temp
0x00EF	AirInletTemp
0x00EB	AirInletPress
0x0069	BarometrPress
0x00C3	EngOilTemp
0x0208	EngOilPress
0x0230	BatteryVoltage
0x00BE	FuelRailPress
0x0709	WaterInFuel
0x014F	PickupFlyWheel
0x0154	PICKUP CAM
0x00C9	INJECTOR 1
0x00CA	INJECTOR 2
0x00CB	INJECTOR 3
0x00CC	INJECTOR 4
0x00CD	INJECTOR 5
0x00CE	INJECTOR 6
0x0694	SuperChargCtrl
Fault Code in HEX (KWP2000)	Text
0x00014	EngCool Press
0x0001A	Fan Speed
0x0005E	Fuel Press
0x00061	Water in fuel
0x00062	Oil Level
0x00063	Oil Diff Press
0x00064	EngOil Press
0x00066	Boost Press
0x00069	Intake Temp
0x0006A	AirInletPress
0x0006C	Barom Press
0x0006E	EngCool Temp

0x0006F	Coolant Level
0x00099	CrankcasePres s
0x0009E	BattPotential
0x000A D	Exhaust Temp
0x000A E	Fuel Temp
0x000A F	EngineOil Temp
0x200E7	SAE J1939 fail
0x200E8	5V DC Fail
0x200F0	Prg MemoryFail
0x200F5	EMS HW Failure
0x200F A	SAE J1587 fail
0x200F D	CalibrMem fail
0x200F E	Controller#1
0x30001	Injector 1
0x30002	Injector 2
0x30003	Injector 3
0x30004	Injector 4
0x30005	Injector 5
0x30006	Injector 6
0x30015	Pickup Cam
0x30016	Pickup Crank
0x30020	WastegateOut
0x30021	CoolingFan
0x40003	Starter Output
0x40006	ExtSTOP Active
0x40008	Piston CoolPr
0x40062	J1587 Sync
0x40084	J1587 Throttl
0x4010B	SeaWater Press
0x600C 9	J1939 Datalink

0x600D 8	J1939 Bus
0x73C0 1	Primary Batt
0x73C0 2	Secondary Batt
0x73C0 3	15 supply
0x73C0 4	30 supply
0x73C0 5	EMS supply
0x73C0 6	Extra supply

4.53 ESM

Fault Code	Text
211	OilPressSenFlt
212	IMAP-LB SenFlt
213	OilTempSenFlt
214	IMAP-RB SenFlt
221	IMAT SenFlt
222	MainFuelValve
223	OilPressLow
224	Knock
225	KnockSenFlt
231	Cyl1-IgnitFlt
232	Cyl2-IgnitFlt
233	Cyl3-IgnitFlt
234	Cyl4-IgnitFlt
235	Cyl5-IgnitFlt
241	Cyl6-IgnitFlt
242	Cyl7-IgnitFlt
243	Cyl8-IgnitFlt
244	Cyl9-IgnitFlt
245	Cyl10-IgnitFlt
251	Cyl11-IgnitFlt
252	Cyl12-IgnitFlt
253	Cyl13-IgnitFlt
254	Cyl14-IgnitFlt
255	Cyl15-IgnitFlt
311	Cyl16-IgnitFlt
312	EngOverload
313	IgnitionFault
314	RemoteRPMFlt
315	HighIMAT
322	CalibrateAct
323	StuckThrotLink
332	IgnitCommFlt
333	CoolTempHigh
335	OilTempHigh
353	IgnitPwrHigh
341	StepperLeftFlt
342	SteperRightFlt
343	LBOxygSensFlt
344	ExhTempHighLB
345	RBOxygSensFlt
351	ExhTempHighRB
413	LeanLimitLeft
415	RichLimitLeft

422	CoolTempSenFlt
423	LeanLimitRight
425	RichLimitRight
432	StepperCommFlt
441	ThrottleActFlt
451	RemoteRPMOver
454	BattVoltOut
455	ECUTempHigh
523	AlternatorFlt
541	UserDI Changed
542	StartWithRPM>0
552	EngBeingDriven
555	InternalFault
65748	CrankMagPickup
65750	CamMagPickup
65757	EngOverspeed
65758	CustomerSd
65759	OilPressLow
65760	Knock
65767	OverCrank
65768	EngineStall
65787	CustOverspeed
65848	EngOverload
65849	Lockout/Ignit
65851	HighIMAT
65869	CoolTempHigh
65871	KnockAbsThres
66087	Update Err/Flt
66089	SecurityViolat
66091	InternalFault

4.54 TNV

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch

971	EngDerateSwch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.55 Standard J1939 engine

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch

971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

4.56 Standard J1939 monitor

Fault Code (SPN)	Text
51	ThrottlePos
91	AccelPedalPos
94	FuelDelPress
97	WaterInFuelInd
98	EngineOilLevel
100	EngOil Press
101	CrankcasePress
102	Boost Press
105	Intake Temp
106	AirInletPress
107	AirFiltDifPres
108	BarometricPres
109	Coolant Press
110	EngCool Temp
111	Coolant Level
153	CrankcasePress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
189	RatedEngSpeed
190	EngineSpeed
231	J1939 Datalink
237	VIN
515	EngDesOpSpeed
620	5V SupplyFail
626	PrehActuator
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
651	InjectorCyl#1
652	InjectorCyl#2
653	InjectorCyl#3
654	InjectorCyl#4
655	InjectorCyl#5
656	InjectorCyl#6
677	EngStartRelay
898	RequestedSpeed
970	AuxEngSdSwitch

971	EngDerateSwth
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

5 Notes

5.1 Software compatibility

Version 6.5.0 can be imported into GenConfig, DriveConfig, LiteEdit, LiteEdit 2015, DriveEdit, NanoEdit, ECUDiag as a standard firmware package. It must be used with the following versions of ComAp PC software:

- ▶ GenConfig ver. 3.6.1 or newer
- ▶ DriveConfig ver. 3.6.0 or newer
- ▶ LiteEdit ver. 5.4.0 or newer
- ▶ LiteEdit 2015 ver. 10.2.1 or newer
- ▶ DriveEdit ver. 1.1.1 or newer
- ▶ NanoEdit ver. 2.0.2 or newer
- ▶ ECUDiag ver. 1.1 or newer

5.2 Document history

Revision number	Related sw. version	Date	Author
1	6.5.0	25.04.2016	Roman Taragel