ComAp Electronic Engines Support

August 2015

ECU List version 6.0

Reference Guide

ComAp a.s.

Kundratka 2359/17, 180 00 Prague 8, Czech Republic
Tel: +420 246 012 111, Fax: +420 266 316 647
E-mail : info@comap.cz, www.comap.cz

Support : support@comap.cz

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Clarification of notation

HINT
This type of paragraph points out details to help user installation/configuration.

NOTE:
This type of paragraph calls readers' attention to a notice or related theme.

CAUTION!
This type of paragraph highlights a procedure, adjustment, etc. which may cause damage or improper functioning of the equipment if not carried out correctly and may not be clear at first sight.

WARNING!
This type of paragraph indicates things, procedures, adjustments, etc. which demand a high level of attention, otherwise personal injury or death may occur.

EXAMPLE:

This type of paragraph indicates examples of usage for illustrational purposes.

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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 InteliLite and InteliGen. 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 InteliSys 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 InteliDrive DCU controller. Later on it was adopted by the InteliLite 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.

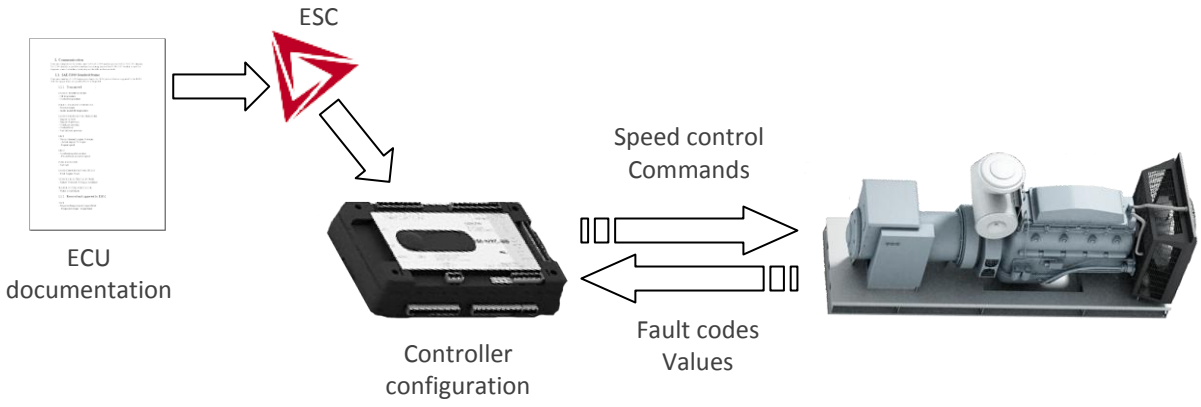
The above described procedure of implementation of an ECU support ensures easy to use and fast configuration however it doesn't reduce the controller's flexibility. The user should be aware that ComAp provides default configuration and the controller must be adapted and configured to particular application. Providing the most common adjustment doesn't eliminate the need to thoroughly test the functionality of the installed controller in conjuction with the genset 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.cz) for software and documentation updates ahead of carrying on with projects comprising electronic engines.

What must be done to support a new ECU?

Lets 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 be 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))



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

What is an ESL file?

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

What is the default ESL setting?

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

	Controller's Family			
Allspeed.esl	InteliDrive DCU	InteliDrive Lite	InteliDrive Mobile	
Gensets.esl	InteliGen^{NT}	InteliSys^{NT}		
InteliLite 2015.esl	InteliLite			
InteliLite.esl	InteliLite^{NT} *	InteliCompact^{NT}		
InteliNano.esl	InteliNano^{NT}			
DriveNano.esl	InteliDrive Nano			

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

NOTE:
It is possible to use e.g. ECU list – Allspeed for InteliGen^{NT} or InteliSys^{NT} controller family. In that case the default settings and/or some values (fault codes) might be unavailable or different.

How to import ESC - ESL package?

The “ECU list-x.y” package can be downloaded from ComAp website (www.comap.cz) and imported into PC software in the same way as a standard firmware package.
It can also be part of an installation package; in this case it is not necessary to import it separately.

Why ESC and ESL have different versions?

Each ESC has a version which changes with each modification. For example if a new value or diagnostic message is added. An ESL version changes if any of ESC version is changed. It is not possible to issue a new ESC without a new ESL. In practice a whole “ESL-ESC” ("ECU list") 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 IWE/IDC/IGC extension as any other firmware packages.

InteliNano^{NT} configuration,

- 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

NOTE:
InteliNano^{NT} controller does not provide configurable inputs/outputs for engine values or commands. The values are fixed and can not be changed by the service!

Default values for J1939 ECU				
	Analog from the ECU	**Binary from the ECU**	**Analog to the ECU ***	**Binary to the ECU ***
1	Engine speed		Requested Speed	Start command
2	Coolant Temperature		Accelerator Pedal Position	Stop command
3	Oil Pressure			Idle/Nominal Switch
4	Fuel Level			
5	Total Engine Hours			

* depends on the ECU capability

InteliNano^{NT} speed control,

InteliNano^{NT} is an easy to use AMF or MRS controller with no capability to speed variation. This function is not needed for that kind of application. The requested speed or accelerator pedal position is steady based on the Nominal Frequency setpoint.

Nominal Frequency	Requested Speed	Accelerator Pedal Position
50Hz	1500RPM	50%
60Hz	1800RPM	50%

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

InteliDrive Nano configuration,

- Open NanoDrive 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 values or commands. The values are fixed and can not be changed by the service!

Default values for J1939 ECU				
	Analog from the ECU	**Binary from the ECU**	**Analog to the ECU ***	**Binary to the ECU ***
1	Engine speed		Requested Speed	Start command
2	Coolant Temperature		Accelerator Pedal Position	Stop command
3	Oil Pressure			Idle/Nominal Switch
4	Fuel Level			
5	Total Engine Hours			

* depends on the ECU capability

InteliDrive Nano speed control,

InteliDrive Nano is an easy to use engine controller with capability to speed variation. The requested speed or accelerator pedal position is based on the configuration and application. Please refer to controller manual for more information about.

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

InteliLite^{NT}, InteliCompact^{NT}, InteliDrive Lite configuration,

NOTE:
Controllers **InteliLite^{NT} MRS3, InteliLite^{NT} MRS10, InteliLite^{NT} MRS11 and 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}, InteliCompact^{NT}, InteliDrive Lite controllers do not provide configurable inputs/outputs for engine values or commands. The values are fixed and can not be changed by the service!

Default values for J1939 ECU				
	Analog from the ECU	**Binary from the ECU**	**Analog to the ECU ***	**Binary to the ECU ***
1	Engine speed	Yellow Lamp	Requested Speed	Start command
2	Fuel Rate	Red Lamp	Accelerator Pedal Position	Stop command
3	Coolant Temperature	Wait to Start Lamp		Frequency Selector
4	Intake Temperature			Idle/Nominal Switch
5	Oil Pressure			Tier4 control
6	Percent Load			
7	Boost Pressure			
8	Total Engine Hours			
9	Total Fuel Used			
10	Reserved for future use			

* depends on the ECU capability

InteliLite^{NT}, InteliCompact^{NT} speed adjust and control,

InteliLite^{NT} is an easy to use AMF or MRS gen-set controller with a limited capability to speed variation. The requested speed or accelerator pedal position is calculated from ECU FreqSelect and ECU SpeedAdj setpoints.
InteliCompact^{NT} is an easy to use parallel (SPtM or MINT) controller with a capability to speed variation. The requested speed or accelerator pedal position is calculated from ECU FreqSelect and ECU SpeedAdj setpoints or base on load share or base load demand.

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

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

InteliLite^{NT}, InteliCompact^{NT}, InteliDrive Lite speed adjust and control,

InteliDrive Lite is an easy to use engine controller with capability to speed variation. The requested speed or accelerator pedal position is calculated base on the configuration. For more information please refer to controller manual.

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

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

InteliDrive DCU, InteliDrive Mobile configuration,

- 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 values or commands. The lists of supported values are available in I/O card of DriveConfig.
For list of supported values or commands refer to particulate ECU type in this manual.

NOTE:
Some values like Start request, Stop request have red background which means that these ECU values must have assigned a source value from the controller e.g. Starter, Stop pulse. This is checked by DriveConfig Consistency Check function.

InteliDrive DCU, InteliDrive Mobile speed control,

InteliDrive DCU, InteliDrive Mobile are engine controllers with a complex speed control capability. Please refer to InteliDrive DCU or InteliDrive Mobile Reference Guide for further information about engine speed control over CAN bus.

Speed Request	Requested Speed	Accelerator Pedal Position
0%	1350RPM	0%
50%	1500RPM	50%
100%	1650RPM	100%

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

InteliGen^{NT}, InteliSys^{NT} configuration,

- 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 values or commands. The lists of supported values are available in I/O card of GenConfig.
For list of supported values or commands refer to particulate ECU type in this manual.

NOTE:
Some values like Start request, Stop request have red background which means that these ECU values must have assigned a source value from the controller e.g. Starter, Stop pulse. This is checked by GenConfig Consistency Check function.

InteliGen^{NT}, InteliSys^{NT} speed control,

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

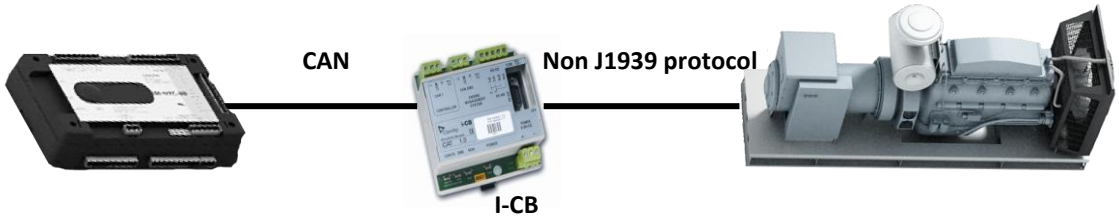
Nominal RPM = 1500		
Speed Gov Out	**Requested Speed**	**Accelerator Pedal Position**
0.000V	1350RPM	0%
5.000V	1500RPM	50%
10.000V	1650RPM	100%
Nominal RPM = 1800		
Speed Gov Out	**Requested Speed**	**Accelerator Pedal Position**
0.000V	1620RPM	0%
5.000V	1800RPM	50%
10.000V	1980RPM	100%

NOTE:
This function (speed adjust via CAN bus) has to be supported by the engine ECU. Without its support ComAp controllers can not adjust the engine speed.

Specific 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 using RS232/485 (e.g. some Cummins engines) – with controller, it is possible to connect such ECU directly (without I-CB unit),
- ECU with completely incompatible communication protocol and way of connection (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 values of I-CB refer to I-CB Reference Guide.

Tier 4 support (DPF only),

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.
Tier4 emission standards are to be phased-in over the period of 2008 to 2015. The Tier 4 standards require that emissions of PM and NOx be further reduced by about 90%. Such emission reductions can be achieved through the use of control technologies—including advanced exhaust gas aftertreatment.
ComAp is continuously following this new emission trends in the industry. The investigation brings to ComAp controllers the ability to read the values related to the Tier4 emission standards (like Soot Load, Ash Load of DPF, etc.) as well as to control the engine aftertreatment directly by the controller or by service. The InteliVision 5 and InteliVision 8 offer in context with Tier4 user configurable icons to display the health of the engine. It is even more intuitive for the service or maintenance of the engine. InteliLite^{NT} does not support user configurable icons display.

ComAp controller	Tier 4 support		
	Monitoring	Control	Icons
InteliNano^{NT}	NO	NO	NO
InteliLite^{NT}	YES	YES	YES
InteliCompact^{NT}	NO	NO	NO
InteliGen^{NT}	YES	YES	YES *
InteliSys^{NT}	YES	YES	YES *
InteliDrive Lite	NO	NO	NO
InteliDrive DCU	YES	YES	NO
InteliDrive Mobile	YES	YES	NO
InteliDrive Nano	YES	NO	YES

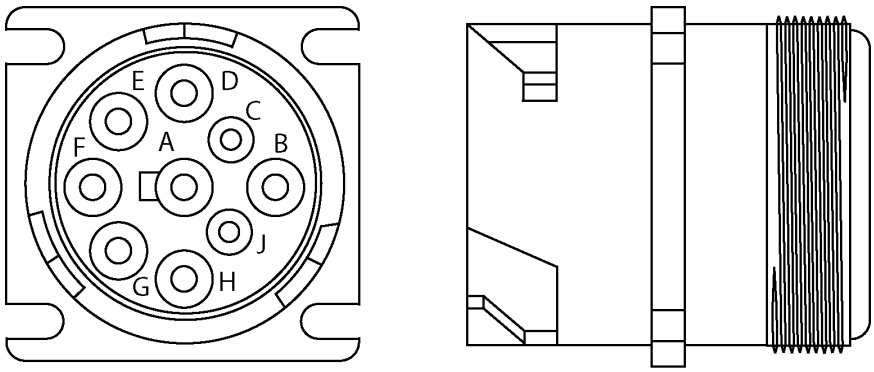
NOTE:
Tier4 emission standard has to be supported by the engine ECU. Without its support ComAp controllers can not read related data, show the icon on the InteliVision 5 or InteliVision 8 or control the aftertreatment.
* Only if InteliVision 5 or InteliVision 8 is used.

Name	SPN	Icon	
		InteliVision 5	InteliVision 8
Diesel Particulate Filter Lamp Command	3697		
Exhaust System High Temperature Lamp Command	3698		
Diesel Particulate Filter Status	3701		
Diesel Particulate Filter Active Regeneration Inhibit Status	3702		
Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch	3703		
Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Low Level Indicator	5245		
Red Stop Lamp	0623		
Amber Warning Lamp	0624		

NOTE:
For further information about icon configuration please refer to GenConfig manual.

SAE – J1939 diagnostic connector,

Descriptions of Off-Board diagnostic connectors suppose to be used on engine to get the access to the engine communication links.



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

Fault codes – FMI table,

To inform a service about engine failure sends the ECU a fault code to the controller viac CAN bus (SAE J1939-73). The Fault codes are shown either in text form or as a code. The code (the text for as well) 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 oerating 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 oerating 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

How to create a constant for ECU control (PLC example),

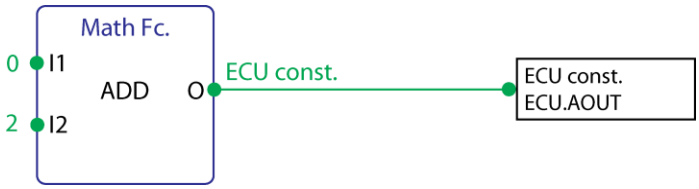
There are at least two ways in GenConfig software:

1. By math function ADD in PLC where first input is a required analog value (constant) and the second input is zero value. 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.

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 zero value. 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.



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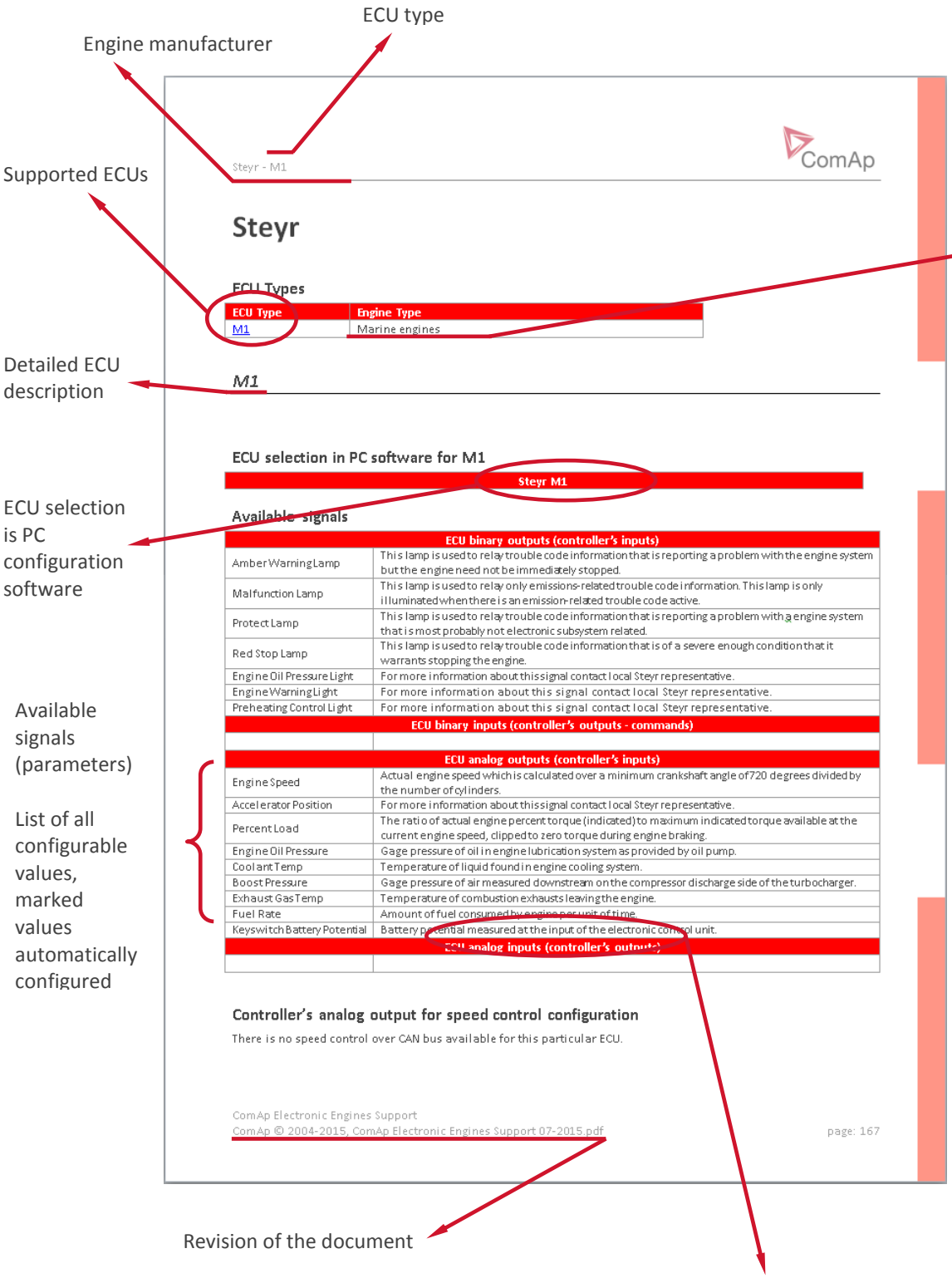
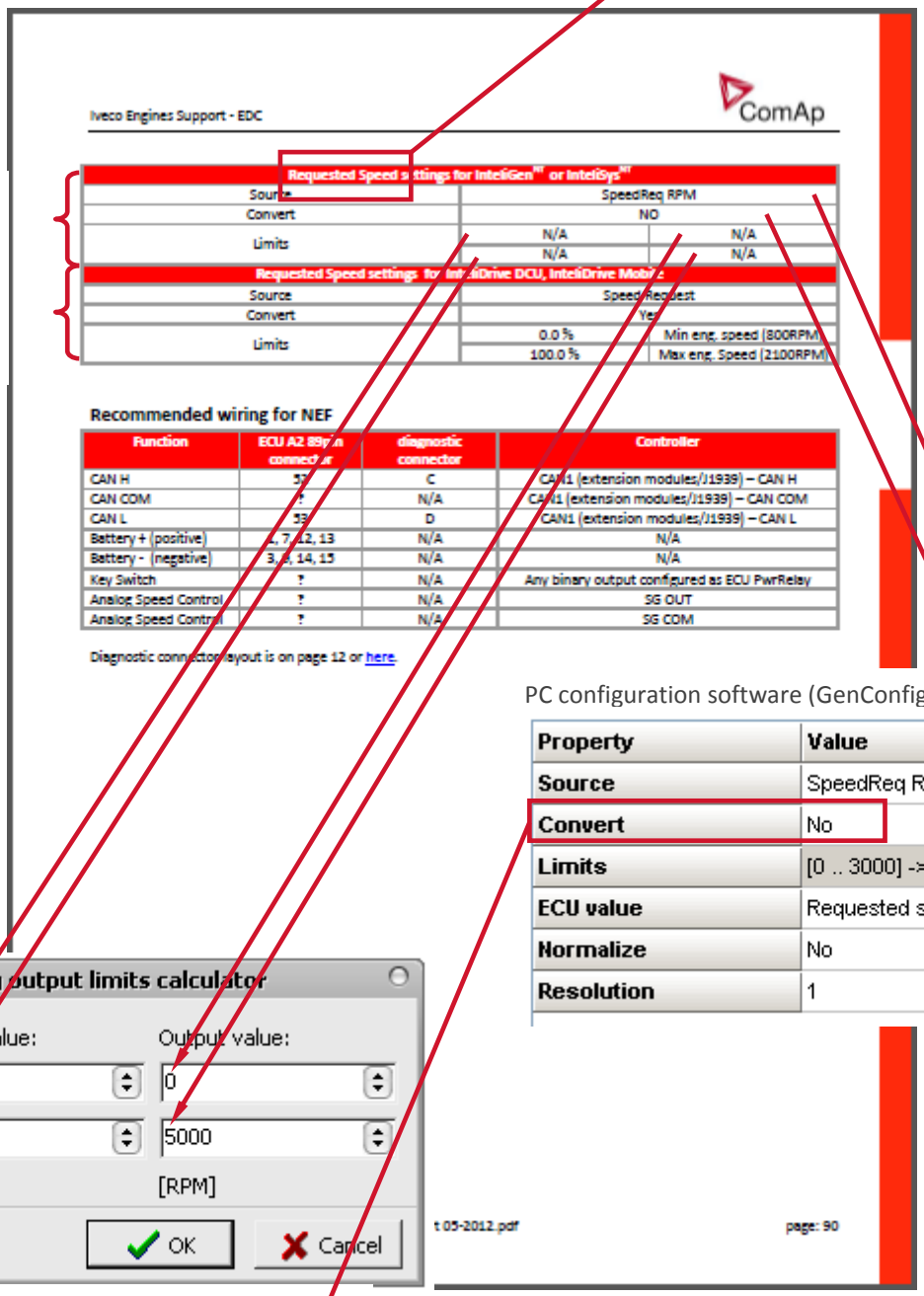


ECU binary outputs
commands come from the ECU to the controller (*Red Stop Lamp*)
ECU binary inputs
commands come from the controller to the ECU (*Stop Request*)

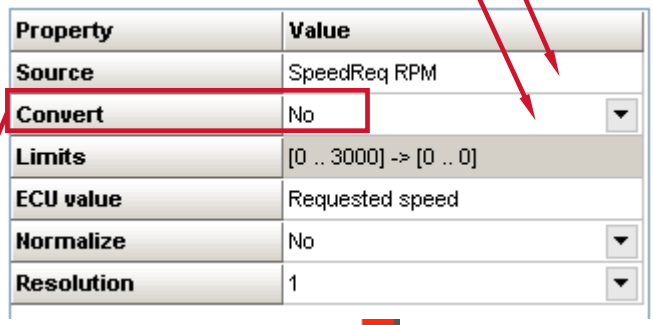
ECU analog outputs
values measured or calculated by the ECU (*Engine Speed*)
ECU analog inputs
Requests from the controller for the ECU (*Requested Speed, Frequency Selection, …*)

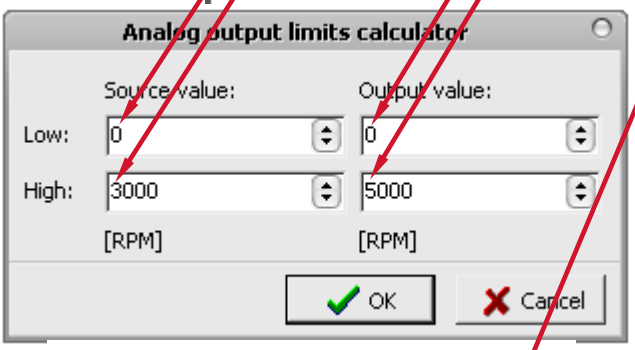
Kind of speed request
(*Requested speed [RPM]*
Accelerator Pedal Position [%])

Proper adjusting speed control in GenConfig
Proper adjusting speed control in Drive Config



PC configuration software (GenConfig)





If Convert = YES
Analog output limit calculatr (GenConfig)

Comparison table

Engine manufacturer	ECU Type	InteliSys NT	InteliGen NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliLite NT		InteliCompact NT	InteliNano NT	InteliDrive Nano	ID	Selection in PC software
AGCO	EEM4											116	
	EMCP2 + CCM	YES		YES		NO	NO	NO	NO	NO	NO	N/A	I-CB unit
	EMCP2 + PL1000	YES		YES		NO	NO	NO	NO	NO	NO	N/A	I-CB unit
Caterpillar	ADEM + EMCP	YES		NO		NO	NO	NO	NO	NO	NO	17	Caterpillar ADEM&EMCP
	ADEM	YES		YES		YES	YES	YES	YES	YES	YES	10	Caterpillar J1939
Cummins	CM500	YES		YES		YES	NO	NO	NO	NO	YES	57	Cummins CM500
	CM558	YES		YES		YES	NO	NO	NO	NO	YES	33	Cummins CM558
	CM570	YES		YES		YES	YES	YES	YES	YES	YES	4	Cummins CM570
	CM800	YES		YES		YES	NO	NO	NO	NO	YES	67	Cummins CM800
	CM850	YES		YES		YES	YES	YES	YES	YES	YES	26	Cummins CM850
	CM850 / CM2150 / CM2250	YES		NO		NO	YES	YES	NO	YES	YES	43	Cummins CM850/CM2150/CM2250
	CM2250 industrial	NO		YES		YES	NO	NO	NO	NO	YES	59	Cummins CM2250
	GCS	YES		YES		YES	YES	NO	YES	YES	NO	5	Cummins MODBUS
Daimler Chrysler	ADM2	NO		YES		YES	YES	YES	YES	YES	YES	24	Daimler Chrysler ADM2
	ADM3	NO		YES		YES	NO	NO	NO	NO	YES	42	Daimler Chrysler ADM3
Detroit Diesel	DDEC IV	YES		YES		YES	YES	YES	YES	YES	YES	9	DDC DDEC IV/V
	DDEC V	YES		YES		YES	YES	YES	YES	YES	YES	9	DDC DDEC IV/V
Deutz	EMR2	YES		YES		YES	YES	YES	YES	YES	YES	8	Deutz EMR2
	EMR3	YES		YES		YES	YES	YES	YES	YES	YES	25	Deutz EMR3
	EMR4	YES		YES		YES	YES	YES	YES	YES	YES	70	Deutz EMR4
Ford	TEM Evolution	YES		YES		NO	NO	NO	NO	NO	NO	N/A	I-CB unit
	E - control	YES		NO		NO	NO	NO	NO	NO	NO	95	Ford e-control
GM	MEFI4B / MEFI5B	YES		YES		YES	NO	NO	NO	NO	YES	34	GM MEFI4B / MEFI5B
	MEFI6	YES		YES		YES	NO	NO	NO	NO	YES	71	GM MEFI6
	SECM	YES		YES		YES	YES	YES	YES	YES	YES	35	GM SECM
	E - control	YES		YES		YES	YES	YES	YES	YES	YES	44	GM e-control
	E - control LCI	YES		YES		YES	YES	YES	YES	NO	YES	58	GM e-control LCI
Iveco	EDC	YES		YES		YES	YES	YES	YES	YES	YES	14	Iveco NEF & Cursor
	ADEM III	YES		YES		YES	YES	YES	YES	YES	YES	28	Iveco Vector
	EDC Tier3	YES		YES		YES	YES	YES	YES	YES	YES	91	Iveco NEF & Cursor Tier3
Isuzu	ECM	YES		YES		YES	YES	YES	YES	YES	YES	36	Isuzu ECM

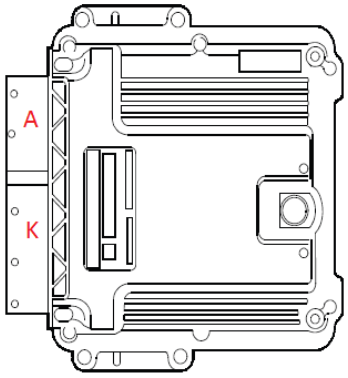
Engine manufacturer	ECU Type	InteliSys NT	InteliGen NT	InteliDrive DCU	InteliDrive Mobile	InteliDrive Lite	InteliLite NT		InteliCompact NT	InteliNano NT	InteliDrive Nano	ID	Selection in PC software
JCB	Delphi DCM	NO	YES	YES	YES	YES	YES	YES	YES	NO	YES	23	JCB Delphi DCM
Jenbacher	DIA.NE	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	22	Jenbacher Diane
John Deere	JDEC	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	7	John Deere
Kubota	ECM	YES	YES	YES	YES	YES	TES	YES	YES	TES	YES	122	Kubota
MAN	EDC / MFR	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	29	MAN MFR
	Data logger	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	56	MAN data logger
MTU	MDEC	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	N/A	I-CB unit
	ADEC & SAM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	20	MTU ADEC J1939
	ADEC & SAM	NO	YES	YES	NO	YES	NO	NO	NO	NO	YES	37	MTU ADEC J1939 P-engines
	ADEC & SMART connect	YES	YES	NO	NO	NO	YES	YES	YES	YES	NO	60	MTU SMART Connect
	DDEC10	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	117	MTU DDEC10
Perkins	A4E2	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	12	Perkins ECM
	ECM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	12	Perkins ECM
	A4E2 or ECM	NO	NO	NO	NO	NO	YES	YES	YES	YES	NO	54	Perkins 1300
Scania	S6	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	3/16	Scania S6 Singlespeed
	S6	NO	YES	YES	YES	YES	NO	NO	NO	YES	YES	6/11	Scania S6 Allspeed
	S8	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	68	Scania S8 Singlespeed
	S8	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES	69	Scania S8 Allspeed
Sisu	EEM2	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES	19	Sisu EEM3 Propulsion
	EEM3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	18	Sisu EEM3 Gen-set
Steyr	M1	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES	66	Steyr M1
VM	EDC	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	1	Volvo EMS 1 Singlespeed
	EDC3 / EMS1 / EMS2	YES	YES	YES	YES	YES	NO	NO	NO	NO	YES	2	Volvo EMS 1 Allspeed
	EDC4	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	8	Deutz EMR2
	EDC7 Allspeed KWP2000	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	114	Volvo EDC7 Allspeed KWP2000
Waukesha	ESM	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	15	Waukesha ESM
Yanmar	TNV	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES	89	Yanmar TNV

AGCO POWER

ECU Types

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

EEM4



ECU selection in PC software:

AGCO Power EEM4

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request *1*2*3*4*5*6	The command stops the running engine. The recommended source value for this command is stop pulse.
ECU analog outputs (controller's inputs)	
Ambient Air Temperature	Temperature of air surrounding vehicle
Cytalyst Tank Temperature	Temperature of the diesel exhaust fluid in the storage tank
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
DEF tank level lamp	For more information about, please contact local AGCO Power engine representative
SCR Act. dosing reagent quality	Quantity of diesel exhausts fluid in the aftertreatment system
SCR Dosing Reagent Abs. Press	The diesel exhaust fluid doser absolute pressure for aftertreatment system

SCR system state	0 - Dormant (sleep mode) 1 - Preparing dosing readiness (wake up; prepare to operate; wait for start) 2 - Normal dosing operation 3 - System error pending 4 - Reserved for future assignment by SAE 5 - Protect mode against heat (pressure buildup) 6 - Protect mode against cold (defreeze) 7 - Shutoff (wait for afterrun) 8 - Diagnosis (afterrun) 9 - Service test mode, dosing allowed 10 - Service test mode, dosing not allowed 11 – 13 - Reserved for future assignment by SAE 14 - Error 15 - Not available
Actual Torque	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.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Droop percentage request	Droop percentage request
Engine high idle switch	0 - Normal high idle 1 - Alternative high idle selection 1 2 - Alternative high idle selection 2 3 – Not available
Engine low idle switch	0 - Normal low idle 1 - Alternative low idle selection1 2 - Alternative low idle selection2 3 - Not available
Alternative high idle selection	0 - Normal high idle 1 - Alternative high idle selection1 2 - Alternative high idle selection2 3 - Not available
Alternative low idle selection	0 - Normal low idle 1 - Alternative low idle selection1 2 - Alternative low idle selection2 3 - Not available
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

Recommended wiring

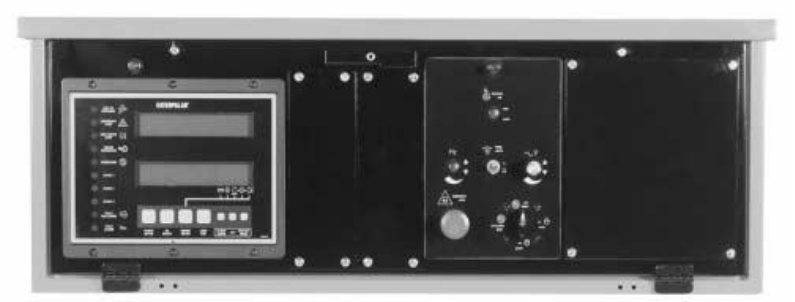
Function	ECU "K" connector	62 pin connector (837074045)	Controller
CAN H	54	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	76	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	01, 03, 05	N/A	
Battery - (negative)	02, 04, 06	N/A	
Key Switch	88	N/A	
Analog Speed Control	N/A	N/A	SG OUT
Analog Speed Control	N/A	N/A	SG COM

Caterpillar

ECU Types

ECU Type	Engine Type
EMCP2 + CCM	35xx
EMCP2+PL1000	35xx, C9
ADEM A3 & EMCP / ADEM A4 & EMCP	34xx, C series
ADEM A3 / ADEM A4	C sereies
ADEM II is not supported !	

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.

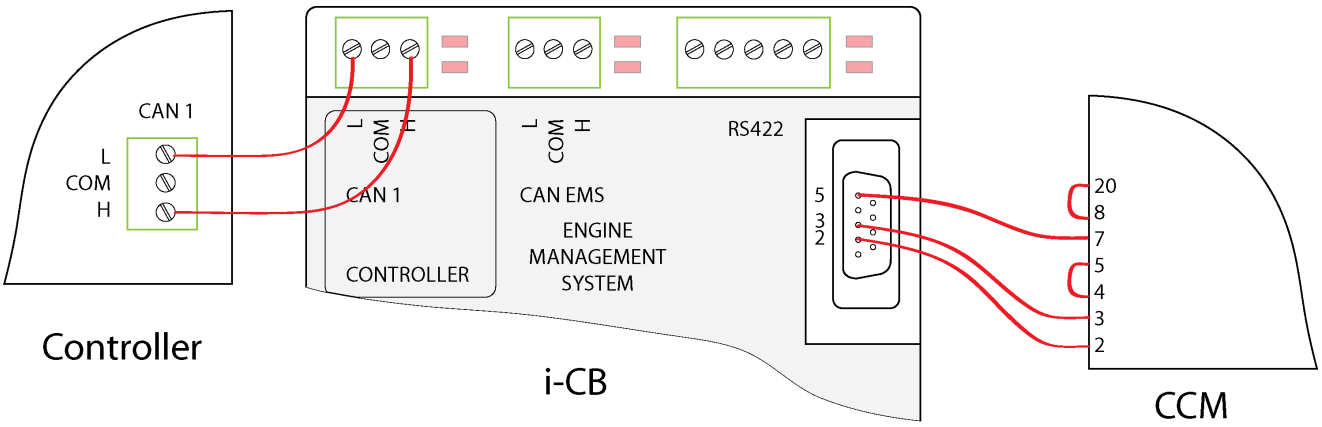
ECU selection in PC software:

Diesel	Gas
Legacy I-CB/CAT-Diesel / ICB module + I/O modules	Legacy I-CB/CAT-Gas / ICB module + I/O modules

Available commands

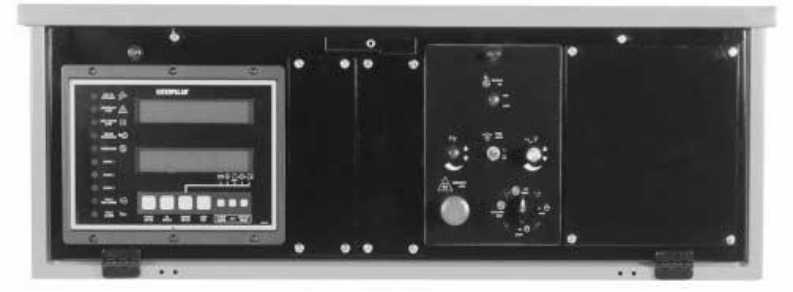
For more information about available values and signals, please refer to I-CB manual or ICBEdit PC software.

Recommended wiring



WARNING!
Please check that CAN bus terminating resistors or appropriate jumpers are connected.

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 ICBEdit software. For further information see I-CB manual.

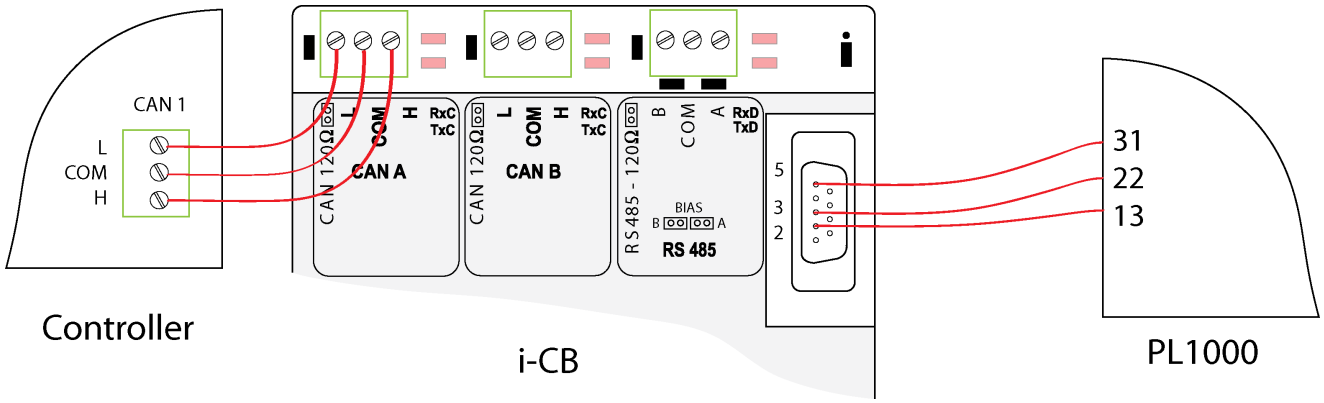
ECU selection in PC software:

Diesel	Gas
Legacy I-CB/CAT-Diesel / ICB module + I/O modules	Legacy I-CB/CAT-Gas / ICB module + I/O modules

Available commands

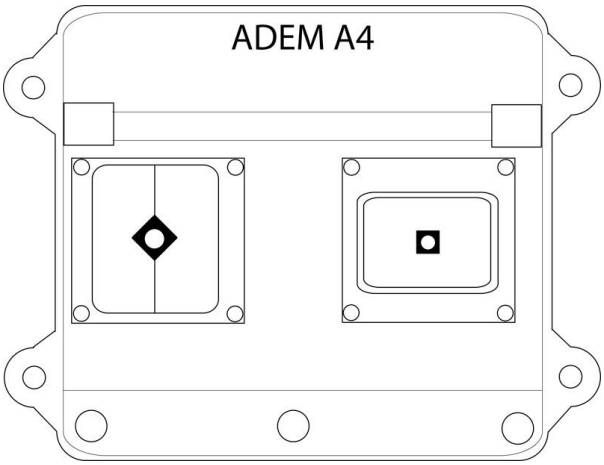
For more information about available values and signals, please refer to I-CB manual.

Recommended wiring of PL1000E or PL1000T



WARNING!
Please check that CAN bus terminating resistors or appropriate jumpers are connected.

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.

ECU selection in PC software:

Caterpillar ADEM&EMCP

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Amber Warning Lamp EMCP	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. This signal comes from EMCP panel.
Malfunction Lamp EMCP	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active. This signal comes from EMCP panel.
Protect Lamp EMCP	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related. This signal comes from EMCP panel.
Red Stop Lamp EMCP	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine. This signal comes from EMCP panel.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Gas Supply Pressure	Gage pressure of gas supply to fuel metering device.
Air Inlet Temperature	Temperature of air entering vehicle.
Barometric Pressure	Absolute air pressure of the atmosphere.
Alternator Bearing 1 Temperature	Temperature of the left/rear bearing inside the alternator.
Alternator Bearing 2 Temperature	Temperature of the right/front bearing inside the alternator.
Alternator Winding 1	Temperature of the windings inside the alternator.

Temperature	
Alternator Winding 2 Temperature	Temperature of the windings inside the alternator.
Alternator Winding 3 Temperature	Temperature of the windings inside the alternator.
Fuel Filter Diff.Press	Change in fuel delivery pressure, measured across the filter, due to accumulation of solid or semisolid matter on the filter element.
Oil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
Auxiliary Coolant Pressure	Gage pressure of coolant found in the intercooler located after the turbocharger.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Startup Mode	0 - start not requested 1 - starter active, gear not engaged 2 - starter active, gear engaged 3 - start finished 4 - starter inhibited due to engine already running 5 - starter inhibited due to engine not ready for start 6 - starter inhibited due to driveline engaged or other transmission inhibit 7 - starter inhibited due to active immobilizer 8 - starter inhibited due to starter over-temp 9 -11 - reserved 12 - starter inhibited 13,14 - error (legacy implementation only, use 1110) 15 - not available
Engine speed EMCP	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders. Signal received from EMCP controller.
Accelerator Pedal Position 1	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.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
DesiredOpSpd	An indication by the engine of the optimal operating speed of the engine for the current
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Change in fuel delivery pressure, measured across the filter, due to accumulation of solid or semisolid matter on the filter element
Engine Oil Pressure EMCP	Gage pressure of oil in engine lubrication system as provided by oil pump. Signal received from EMCP controller.
Fuel Delivery Pressure EMCP	Change in fuel delivery pressure, measured across the filter, due to accumulation of solid or semisolid matter on the filter element. Signal received from EMCP controller.
Fuel Filter Intake Abs Pressure	Absolute pressure of fuel at the intake of the fuel filter.
Pre-filter Oil Pressure	Gage pressure of the engine oil before the oil reaches the oil filter.
Exhaust Gas Port 1 Temp - Exhaust Gas Port 16 Temp	Temperature at the cylinder exhausts port of the engine.
Exhaust Gas Temp - Left Manifold	Temperature of combustion exhausts within the left engine exhaust manifold.
Exhaust Gas Temp - Right Manifold	Temperature of combustion exhausts within the right engine exhaust manifold.
Coolant Temp	Temperature of liquid found in engine cooling system.
Fuel Temp	Temperature of fuel entering injectors.
IntercoolTemp	Temperature of liquid found in the intercooler located after the turbocharger.
Oil Temperature	Temperature of the engine lubricant.
Coolant Temp EMCP	Temperature of liquid found in engine cooling system. Signal received from EMCP controller.
Fuel Temp EMCP	Temperature of fuel entering injectors. Signal received from EMCP controller.
Fuel Temperature 2	Temperature of the fuel.
Air Filter Differential Pressure	Change in engine air system pressure, measured across the filter, due to the filter and any

	accumulation of solid foreign matter on or in the filter. This is the measurement of the first filter in a multiple air filter system.
Air Inlet Pressure	Absolute air pressure at input port to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Air Filter 2 Differential Press	Change in engine air system pressure, measured across air filter 2.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle Position	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.
Turbo 1 Inlet Pressure	Gage pressure of the air entering the compressor side of the turbocharger 1.
Turbo 2 Inlet Pressure	Gage pressure of the air entering the compressor side of the turbocharger 2.
Turbocharger 1 Intake Temp	Temperature of the combustion entering the turbine side of the turbocharger 1.
Turbocharger 2 Intake Temp	Temperature of the combustion entering the turbine side of the turbocharger 2.
Battery Potential (Voltage)	Measured electrical potential of the battery.
Electrical Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Battery Potential (Voltage) EMCP	Measured electrical potential of the battery. Signal received from EMCP controller.
Electrical Potential (Voltage) EMCP	Electrical potential measured at the input of the electronic control unit supplied through a switching device. Signal received from EMCP controller.
ECU analog inputs (controller's outputs)	

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

WARNING!
Speed control can be done by using PWM from the controller (SG interface) to the ADEM. PWM rate for InteliGen-NT or InteliSys-NT 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 by configured as Remote Start/Stop EMCP input. Use ECU PwrRelay controller output for this purpose.

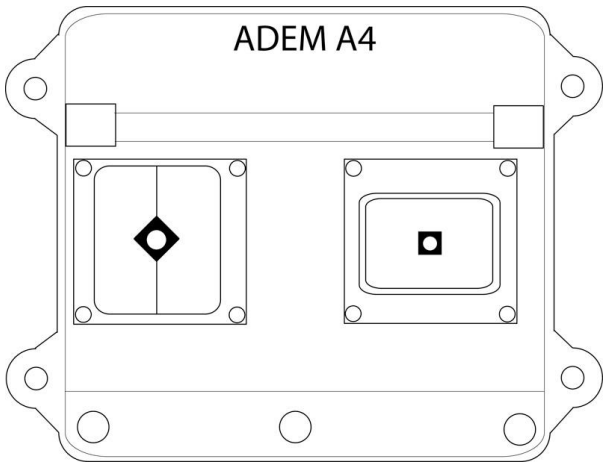
Recommended wiring

Function	ECU 70pin AMP connector	9pin diagnostic connector	Controller
CAN H	50	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,55	N/A	N/A
Battery - (negative)	61,63,65,69	N/A	N/A
Key Switch	70	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	66 (38-S-SPD*)	N/A	SG OUT
Analog Speed Control	68 (39-D-SPD*)	N/A	SG COM

* Caterpillar PWM speed contol terminal

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

ADEM



ECU selection in PC software for ADEM

Caterpillar J1939

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Alternator Potential (Voltage)	Electrical potential measured at the alternator output.
AuxPress	Temperature measured by auxiliary temperature sensor #1
AuxTemp	Pressure measured by auxiliary pressure sensor #1
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Temp	Temperature of liquid found in engine cooling system.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Fuel Filter Diff.Press	Change in fuel delivery pressure, measured across the filter, due to accumulation of solid or semisolid matter on the filter element.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Fuel Temp	Temperature of fuel entering injectors.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Left Exhaust Temp	Temperature of the combustion by-products entering the turbine side of the turbocharger.

Oil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
Oil Temperature	Temperature of the engine lubricant
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Right Exhaust Temp	Temperature of the combustion by-products entering the turbine side of the turbocharger.
ECU analog inputs (controller's outputs)	
Requested Speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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 70pin AMP connector	9pin diagnostic connector	Controller
CAN H	50	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,55	N/A	N/A
Battery - (negative)	61,63,65,69	N/A	N/A
Key Switch	70	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	66 (38-S-SPD*)	N/A	SG OUT
Analog Speed Control	68 (39-D-SPD*)	N/A	SG COM

* Caterpillar PWM speed control terminal

Diagnostic connector layout is on page 16 or here.

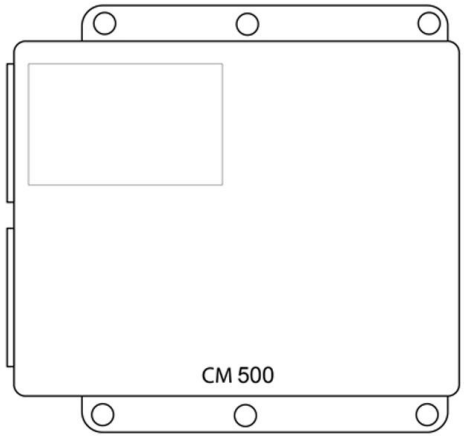
NOTE:
In case of **Marine** application the settings of the ECU has to be set to "Startboard". It changes the ECU address to 0 which is expected by the ComAp controller. Settings "Port" uses an address 1 and is not allowed.

Cummins

ECU Types

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
CM850	Tier3 > QSL9, QSB5/7, QSK38 , QSK19, QST30, QSK50/60
PGI 1.1 (CM850,CM2150,CM2250)	Tier4i > QSB7 and QSL9 Tier 2 > QSK50/60, QSK19, QSK38 MCRS Tier 3 > QSB5, QSB7, QSL9, QSM11
CM2350	Tier4 QSB6.7, QSL9, QSX15, QSF3.8, QSB4.5, QSG12
CM2250	Industrial engines (ISX, ISB series)
GCS	Tier2 > QSK23, QSK45/60/78, QST30

CM500



ECU selection in PC software:

Cummins CM500

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
AP low idle switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Water In Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	

ECU analog outputs (controller's inputs)	
Actual Torque	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.
Air Inlet Temperature	Temperature of air entering air induction system.
AP Position	The ratio of actual position of the analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device. This parameter is intended for the primary accelerator control in an application.
Barometric Pressure	Absolute air pressure of the atmosphere.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Coolant Temp	Temperature of liquid found in engine cooling system.
Demand Torque	The requested torque output of the engine by the torque controller.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Fuel Temp	Temperature of fuel entering injectors.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Oil Temp	Temperature of the engine lubricant.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Reguested Speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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)

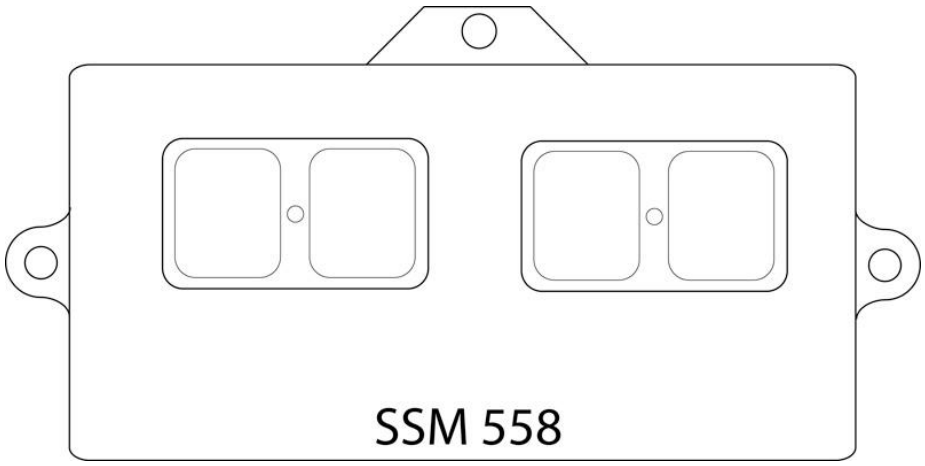
Recommended wiring

Function	ECU A2 connector	9pin diagnostic connector	Controller
CAN H	32	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	33	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	3,4,5	B	N/A
Battery - (negative)	7,8	A	N/A
Key Switch	10	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

Diagnostic connector layout is on page 16 or here.

CM558

NOTE:
Support of this ECU is so far done for engines where CM558 is a standalone module not as a part of the gas genset system with master unit CM700 and other components.



ECU selection in PC software:

Cummins CM558

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Engine Fuel Shutoff 1 Control	For more information about, please contact local Cummins engine representative.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp123456	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Aftertreat1 ExhGas Temp 1	The reading from the exhaust gas temperature sensor located farthest upstream in the aftertreatment system in exhaust bank 1.
Aftertreat1 ExhGas Temp 2	The reading from the exhaust gas temperature sensor located midstream of the other two temperature sensors in the in the aftertreatment system in exhaust bank 1.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Barometric Pressure	Absolute air pressure of the atmosphere.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine Throttle Position	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.
EngineOil Temp	Temperature of the engine lubricant.
EngTemp	Temperature of liquid found in engine cooling system.

Fuel Actuator 1 Command	The control command to fuel actuator 1, normalized to percent, where 0% represents fully cloase and 100% represents fully open. Typically, this fuel actuator is used to regulate low pressure natural gas flow rate, mixing into the air flow, which together then come into the engine.
Fuel Valve 1 Position	The position of a gaseous fuel valve that is metering the fuel flow to the engine. 0% indicates no fuel flow through value and 100% mean maximum fuel flow through value.
Intake Manif. Absolute Press	The absolute pressure measured of the air intake manifold. If there are multiple air pressure sensors in the intake stream, this is the last one in flow direction before entering the combustion chamber.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
T-ECU	Temperature of the engine electronic control unit.
Throttle Actuator 1 Command	The control command to throttle actuator 1, normalized to percent, where 0% represents fully cloase and 100% represents fully open. Typically, this throttle actuator is used to regulate air or air / fuel mix to the engine.
ECU analog inputs (controller's outputs)	

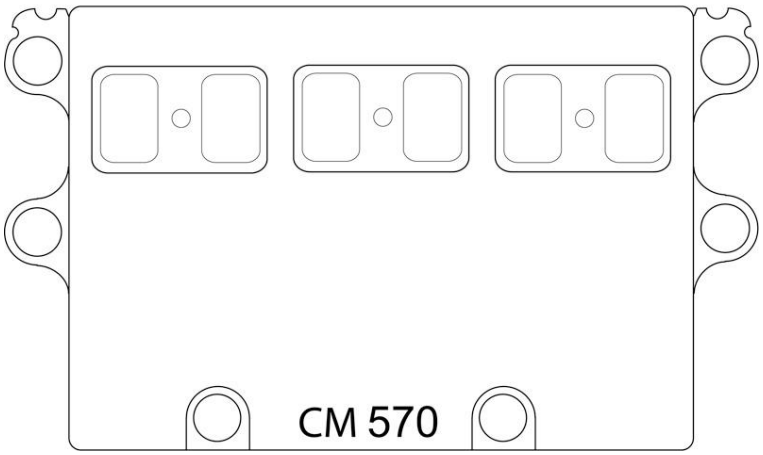
Controller's analog output for speed control configuration

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

Recommended wiring

No documentation available so far!
Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

CM570



ECU selection in PC software:

Cummins CM570

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
PTO VarSpdSw	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position. If the toggle switch is enabled and other conditions are satisfied then the remote PTO control feature is activated and the PTO will control at a variable speed.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water in fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Emergency Stop Indication *1*2*3*4	The command which should be used for normal shutdown and Emergency Stop is implemented by providing a normally-closed signal. The ECU will react in a manner as to disable fuel flow to the engine any time the command is active. The ECU will power down and stop the communication and broadcast of J1939 messages when the engine reaches 0 RPM. The recommended source value for this command Logical 0.
Idle/Rated *1*2*3*4	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Run/Stop123456 *1*2*3*4*5*6	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.
Utility/Isochronous Gain Select *1*2*3*4	Please contact Cummins representative for further information about this command. The recommended source value for this command is Logical 0.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Temp	Temperature of liquid found in engine cooling system.
DesiredOpSpd	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.

Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Frequency Selection *1*2*3*4*5	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 contstant following the requested function.
Requested Speed (TSC1) *3*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active. This value is available only on ECU with non G-Drive calibraiton.
Speed Bias Reference *1*2*3*4*5*6	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.
Shutdown Override *1*2*3*4*5*6	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 is a contstant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Speed Bias Reference settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpdRegOut	
Convert	Yes	
Limits	-10.000 V	-10 %
	10.000 V	10 %
Speed Bias Reference settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	-10 %
	100.0 %	10 %

Frequency Selection	Source Value
50 Hz	0
60 Hz	1
Reserved	2 - 5
Error	6
Do not care	7

Shutdown override values meening

Shutdown Override	Source Value
No shutdown override	0
Start block override	1
General shutdown override	2
All shutdown override	3
Error	4 -6
Don’t care	7

NOTE:
If you have bought 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 software with calibration for G-drive engines (with PGI).

Recommended wiring

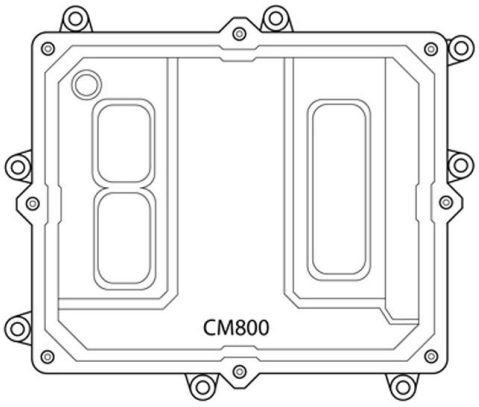
Function	ECU C-01 50pin connector	9pin diagnostic connector	Controller
CAN H	46	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	36	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	7,8,17,18,28	B	N/A
Battery - (negative)	29,30,39,40,50	A	N/A
Key Switch	38	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

Diagnostic connector layout is on page 16 or here.

Table of supported ECU calibration

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

CM800



ECU selection in PC software:

Cummins CM800

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
PTO VarSPdSw	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position. If the toggle switch is enabled and other conditions are satisfied then the remote PTO control feature is activated and the PTO will control at a variable speed.
Water In Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Run/Stop *1*2*3*4*5*6	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.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Temp	Temperature of liquid found in engine cooling system.
DesiredOpSpd	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Requested Speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Shutdown Override *1*2*3*4*5*6	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 is a contstant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite[NT] *3 – InteliDrive Lite *4 – InteliCompact[NT] *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

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)

Shutdown override values meaning

Shutdown Override	Source Value
No shutdown override	0
Start block override	1
General shutdown override	2
All shutdown override	3
Error	4 -6
Don't care	7

Recommended wiring

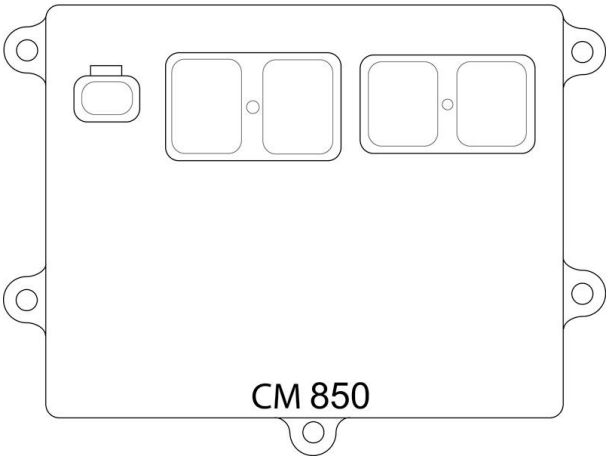
Function	ECU 40pin top connector	3pin diagnostic connector	Controller
CAN H	53	2	CAN1 (extension modules/J1939) – CAN H
CAN COM	51	3	CAN1 (extension modules/J1939) – CAN COM
CAN L	52	1	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,7,12,13	N/A	N/A
Battery - (negative)	3,9,14,15	N/A	N/A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

Diagnostic connector layout is on page 16 or here.

Table of supported ECU calibration

Engine type	G-Drive ECU calibration
6ISBe	90132.05

CM850



ECU selection in PC software:

Cummins CM850

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
PTO VarSpdSw	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position. If the toggle switch is enabled and other conditions are satisfied then the remote PTO control feature is activated and the PTO will control at a variable speed.
Red Stop Lamp123456	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Water in fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Engine Auxiliary Shutdown Switch *5*6	Switch signal requests that engine fueling stop.
Idle/Rated *1*2*3*4	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Run/Stop *1*2*3*4*5*6	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.
Shutdown Override *1*2*3*4*5*6	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.
Shutdown Override CC *4	Switch signal which indicates the position of the engine shutdown override switch. This switch function allows the operator to override an impending engine shutdown.
ECU analog outputs (controller's inputs)	
Auxiliary Pressure #1	Pressure measured by auxiliary pressure sensor 1.
Barometric Pressure	Absolute air pressure of the atmosphere.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Temp	Temperature of liquid found in engine cooling system.
DesiredOpSpd	An indication by the engine of the optimal operating speed of the engine for the current existing

	conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Electrical Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Engine Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Engine Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
EngineOil Temp	Temperature of the engine lubricant.
Exhaust Gas Port 1 Temp - Exhaust Gas Port 16 Temp	Temperature at the cylinder exhausts port of the engine.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Exhaust Gas Temperature - Left Manifold	Temperature of combustion exhausts within the left engine exhaust manifold.
Exhaust Gas Temperature - Right Manifold	Temperature of combustion exhausts within the right engine exhaust manifold.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Fuel Temp	Temperature of fuel (gas) passing through the first fuel control system.
Inj. Timing Rail 1 Pressure	Gage pressure of fuel in the timing rail delivered from the supply pump to the injector timing intake.
Intake Manifold 2 Temperature - Intake Manifold 6 Temperature	Temperature of pre-combustion air in intake manifold of engine air supply system.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Intercooler Temp	Temperature of liquid found in the intercooler located after the turbocharger.
Intercooler Thermostat Opening	The current position of the thermostat used to regulate the temperature of the engine intercooler. A value of 0% represents the thermostat being completely closed.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Pre-filter Oil Pressure	Gage pressure of the engine oil before the oil reaches the oil filter.
Turbo Oil Temp	Temperature of the turbocharger lubricant.
Turbocharger 1 Boost Pressure - Turbocharger 4 Boost Pressure	Gage pressure of air measured of the compressor discharge side of the turbocharger.
ECU analog inputs (controller's outputs)	
Frequency Selection *1*2*3*4*5	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 contstant following the requested function. 0 – 50Hz 1 – 60Hz 2-5 – reserved 6 – error 7 – do not care
Governor Gain Adjustment	For service purpose only! Default value is 5 (20480_{Dec} or 5000_{Hex})
Requested speed (TSC1) *3*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
Speed Bias Reference	Speed bias provides the means to adjust the engine speed set point while the engine is running. It is

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

More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Speed Bias Reference settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpdRegOut	
Convert	Yes	
Limits	-10.000 V	-10 %
	10.000 V	10 %
Speed Bias Reference settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	-10 %
	100.0 %	10 %

Recommended wiring

Function	ECU J2 50pin connector	9pin diagnostic connector	Controller
CAN H	46	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	47	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	B	N/A
Battery - (negative)	?	A	N/A
Key Switch	39	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

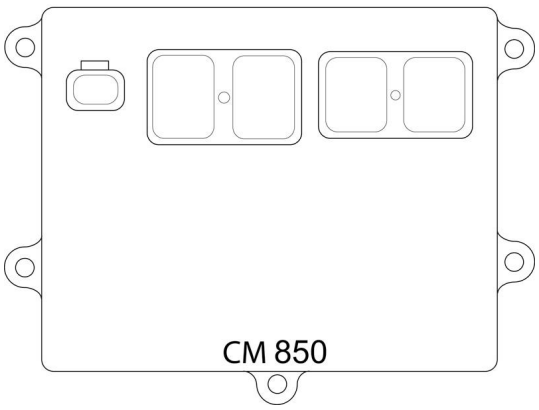
Diagnostic connector layout is on page 16 or here.

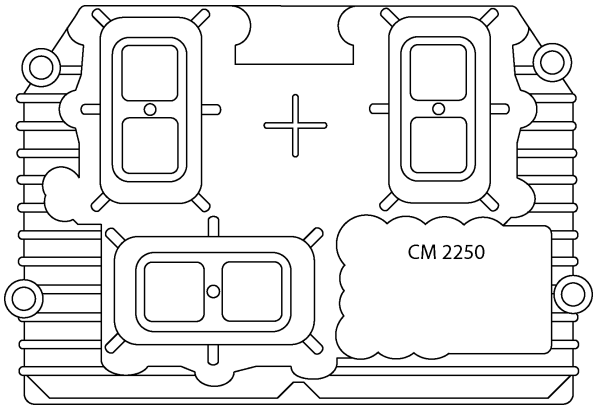
Table of supported ECU calibration

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

Engine type	Industrial ECU calibration
Engine QSK38	AQ 60186.98 AQ 60176.01

PGI 1.1 interface (CM850 or CM2150 or CM2250)





ECU selection in PC software:

Cummins CM850/CM2150/CM2250

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
DPF Act. Reg. Inhibit Status	Indicates the state of diesel particulate filter active regeneration inhibition.
DPF ActRegInhibitDueTo InhSw	Indicates the state of diesel particulate filter active regeneration inhibition due to the diesel particulate filter regeneration inhibit switch.
DPF ActRegInhibNot WarmUp	Indicates the state of diesel particulate filter active regeneration inhibition due to engine not warmed up.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water in fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
DPF Reg.Force Switch *1*2*3*4	Indicates the state of a switch available to the operator that forces diesel particulate filter regeneration. The recommended source should follow the requested function.
DPF Reg.Inhibit Switch *1*2*3*4	Indicates the state of a switch available to the operator that inhibits diesel particulate filter regeneration. The recommended source should follow the requested function.
Idle/Rated *1*2*3*4	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Shutdown Override *1*2*3*4	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)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Temp	Temperature of liquid found in engine cooling system.
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
DPF Lamp Command	Value used for Tier4 icon control.
DPF Status	Value used for Tier4 icon control.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine Oil Temp	Temperature of the engine lubricant.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by

	the number of cylinders.
Exhaust Gas Temp	Temperature of combustion exhausts byproducts leaving the engine.
Fuel Rate1234	Amount of fuel consumed by engine per unit of time.
HEST Lamp Command	Command to control the exhaust system high temperature lamp. This lamp indicates that the exhaust system temperature is high.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Interface Version1	For more information about, please contact local Cummins representative.
Interface Version2	For more information about, please contact local Cummins representative.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Frequency Selection *1*2*3*4*5	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 contstant 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	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.
Speed Bias Reference *5	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 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Generator Governing Bias settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpdRegOut	
Convert	Yes	
Limits	-10.000 V	-10 %
	10.000 V	10 %
Generator Governing Bias settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	-10 %
	100.0 %	10 %

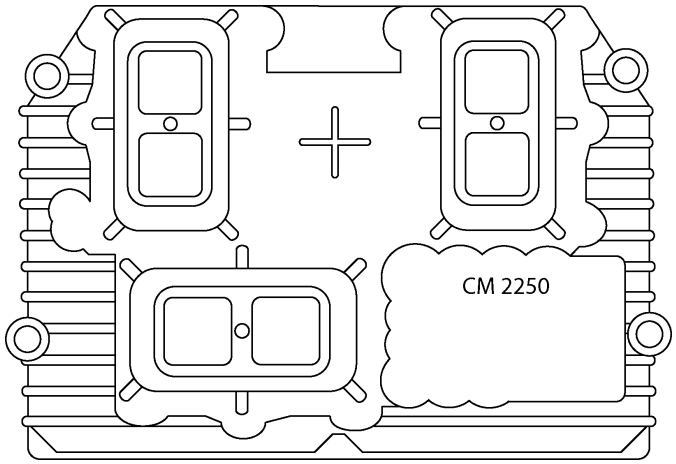
NOTE:
If you have bought the engine as a part of gen-set package (with PCC panel) the ECU might be delivered with different communication interface (not PGI) which means that speed control doesn't work with ComAp controller. It is necessary to use/order ECU software with calibration for G-drive engines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

Recommended wiring

Function	ECU J2 50pin connector	9pin diagnostic connector	Controller
CAN H	46	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	37	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	47	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	B	N/A
Battery - (negative)	?	A	N/A
Key Switch	39	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

Diagnostic connector layout is on page 16 or here.

CM2250 industrial



ECU selection in PC software:

Cummins CM2250

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
DPF ActRegInhib NotWarmUp	Indicates the state of diesel particulate filter active regeneration inhibition due to engine not warmed up.
DPF ActRegInhibit DueToInhSw	Indicates the state of diesel particulate filter active regeneration inhibition due to the diesel particulate filter regeneration inhibit switch.
DPF Act. Reg. Inhibit Status	Indicates the state of diesel particulate filter active regeneration inhibition.
Water in fuel	Signal which indicates the presence of water in the fuel.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
DPFR Inhibit Switch *1*2*3*4*	Indicates the state of a switch available to the operator that inhibits diesel particulate filter regeneration. The recommended source should follow the requested function.
DPFR Force Switch *1*2*3*4	Indicates the state of a switch available to the operator that forces diesel particulate filter regeneration. The recommended source should follow the requested function.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Coolant Temp	Temperature of liquid found in engine cooling system.
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
DPF Lamp Command	Value used for Tier4 icon control.
DPF Status	Value used for Tier4 icon control.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.

Engine torque	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.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
HEST Lamp Command	Command to control the exhaust system high temperature lamp. This lamp indicates that the exhaust system temperature is high.
Intake Manifold Pressure	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 Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Accelerator Pedal Position	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.
Requested Speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

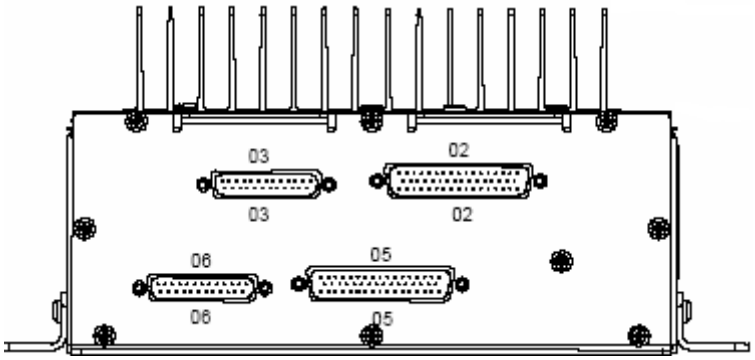
Requested Speed settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested Speed settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

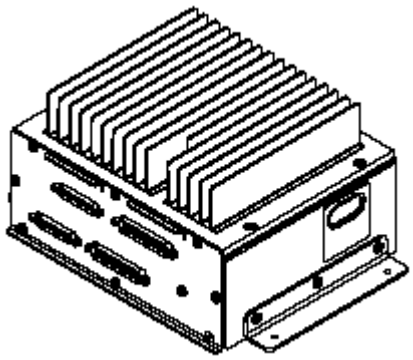
Recommended wiring

Function	ECU connector	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

Diagnostic connector layout is on page 16 or here.

GCS





ECU selection in PC software:

Cummins Modbus

Available signals

ECU binary outputs (controller's inputs)	
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)	
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)	
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 ±3Hz 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.
ECU analog inputs (controller's outputs)	

Available list of texts of fault codes is here.

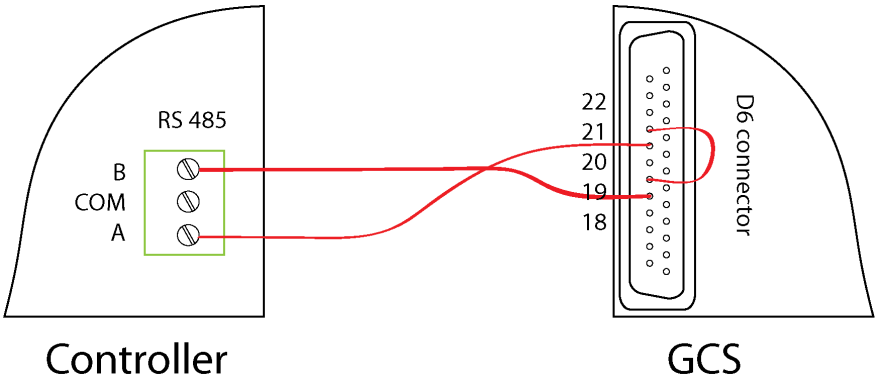
Controller's analog output for speed control configuration

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

Recommended wiring

Function	ECU 25pin D6 connector	9pin diagnostic connector	Controller
RS485 A	21	N/A	RS485 – RS485 A
RS485 COM	?	N/A	RS485 – RS485 COM
RS485 B	18	N/A	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
Service Mode Enable	19 and 22	N/A	Loop
Function	**ECU 25pin D3 connector**	**9pin diagnostic connector**	**Controller**
Analog Speed Control*	11	N/A	SG OUT
Analog Speed Control	12	N/A	SG COM
Analog Speed Control Shield	20		N/A
			*Analog Speed Control range 2.5VDC – 7.5VDC

Recommended wiring



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

Controller recommended setting (Setpoints/Comms settings group)

Controller	Setpoint	Value	Interface (Connector)
InteliGen NT	RS232(1) mode RS232(2) mode	ECU LINK	
	RS485(X)conv.	ENABLED DISABLED	RS 485(1), RS 485(2) RS 232(1) *3, RS 232(2) *3
InteliSys NT	RS232(2) mode	ECU LINK	
	RS485(X)conv.	ENABLED DISABLED	RS 485(2) RS 232(1) *3, RS 232(2) *3
InteliLite NT	COM2 Mode	ECU LINK	RS 485 *2
InteliCompact NT	COM2 Mode	ECU LINK	RS 485 *2
InteliDrive DCU *4	RS485 Mode	ECU LINK	RS 485 *3
InteliDrive Mobile *4	RS485 Mode	ECU LINK	RS 485 pin 85(A), pin 87(B), pin 86(COM)
InteliDrive Lite	COM2 Mode	ECU LINK	RS 485 *2

*2 IL-NT RS232-485 communication module is required
*3 external RS232-485 converter is required
*4 Setpoints/Basic setpoints group

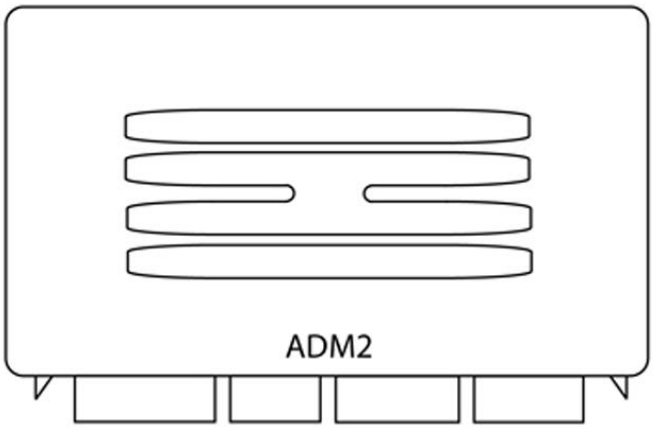
Available list of texts of fault codes is here.

DaimlerChrysler

ECU Types

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

ADM2



ECU selection in PC software:

DaimlerChrysler ADM2

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
ECU binary inputs (controller's outputs - commands)	
Engine start *1*2*3*4*5*6	The command used for engine start. The recommended source value for this command is Fuel solenoid.
Inhibit engine start	The command used for engine start inhibits. The recommended source value for this command is Logical 0.
Inhibit fuel injection *1*2*3*4*5*6	The command used for engine fuel injection inhibits. The recommended source value for this command is Logical 0.
Engine overspeed enable	For more information about these commands, please contact the local Cummins representative.
TorqueConvLockup Engaged	
ECU analog outputs (controller's inputs)	

Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Actual Torque	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.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Temp	Temperature of liquid found in engine cooling system.
Demand Torque	The requested torque output of the engine by the driver.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
ECU analog inputs (controller's outputs)	
Output shaft speed	If the speed signal Engine speed is not available, the Transmission output shaft speed can also be used to generate speed information.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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 21pin connector	9pin diagnostic connector	Controller
CAN H	19	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	20	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1	N/A	N/A
Battery - (negative)	3	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

Diagnostic connector layout is on page 16 or here.

ADM3

ECU selection in PC software:

DaimlerChrysler ADM3

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
ECU binary inputs (controller's outputs - commands)	
Engine start	The command used for engine start. The recommended source value for this command is Fuel solenoid.
Inhibit engine start	The command used for engine start inhibits. The recommended source value for this command is Logical 0.
Inhibit fuel injection	The command used for engine fuel injection inhibits. The recommended source value for this command is Logical 0.
Engine overspeed enable	For more information about these commands, please contact the local Daimler/MTU representative.
TorqueConvLockup Engaged	
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Software Version	For service purpose only!
ECU analog inputs (controller's outputs)	
Output shaft speed	If the speed signal Engine speed is not available, the Transmission output shaft speed can also be used to generate speed information.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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 21pin connector	9pin diagnostic connector	Controller
CAN H	19	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	20	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1	N/A	N/A
Battery - (negative)	3	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

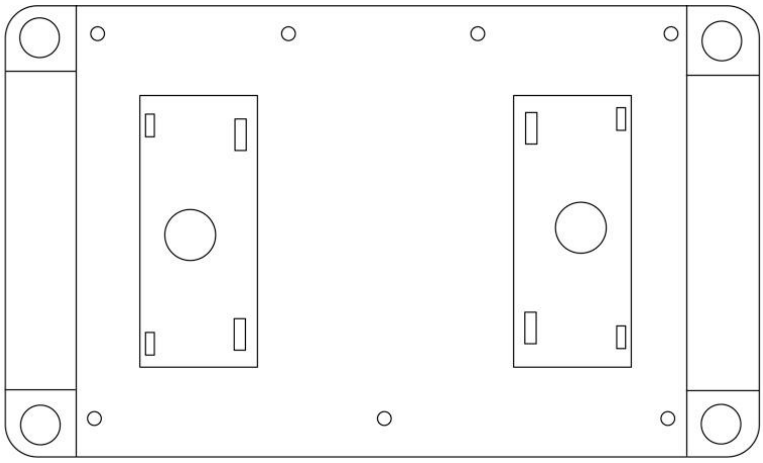
Diagnostic connector layout is on page 16 or here.

Detroit Diesel

ECU Types

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

DDEC IV or DDEC V



ECU selection in PC software:

DDC DDEC IV/V

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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	6pin communication connector	9pin diagnostic connector	Controller
CAN H	F	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	D	E	CAN1 (extension modules/J1939) – CAN COM
CAN L	E	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	A	N/A
Battery - (negative)	?	B	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

Diagnostic connector layout is on page 16 or here.

Deutz

ECU Types

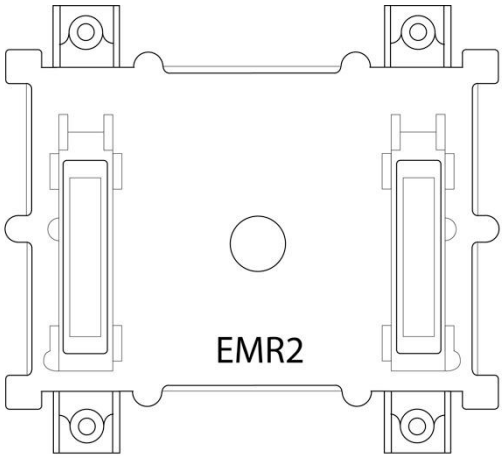
ECU Type	Engine Type
EMR2	10xx series
EMR3-E (EDC16, EDC7)	TCD 2012 4V TCD 2013 4V TCD 2015
EMR3-S (EDC16, EDC7)	TCD 2012 2V TCD 2013 2V TCD 2013 4V
EMR4 (EDC17CV52)	TCD 3.6 L4 TCD 4.1 L4 TCD 6.1 L6 TCD 7.8 L6 TCD 12 V6 TCD 16 V8
TEM Evolution	TBG 616/620/632 TCG 2016/2020/2032

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

Engine type explanation

Engine Type	Meaning
Txxxxxx	Turbocharged
xCxxxxx	Charge air cooled
xxDxxxx	Diesel enfine
xxx12xx	Displacement in liters
xxxxxLx	L – in line engine, V – V-engine
Xxxxxx6	Number of cylinders

EMR2



ECU selection in PC software:

Deutz EMR2

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Lock status	The command activates the engine start. If set engine stops and engine start prohibition will be active. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command stops the running engine. The recommended source value for this command is stop pulse.
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.

Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Software ID	For service purpose only!
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

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)

WARNING!
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:

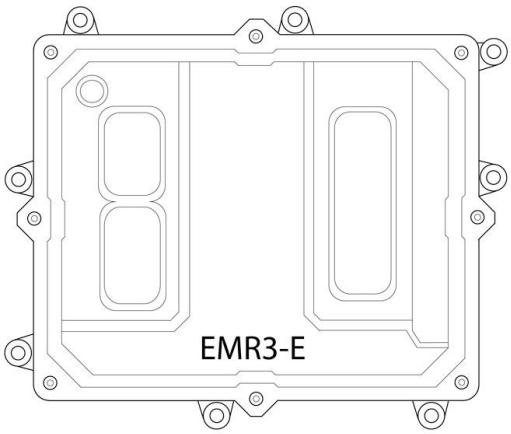
NOTE:
Page 30: 4400 = 1 … CAN activation
Page 31: 4412 = 1 … Activate TSC1a receive telegram
Page 31: 4470 = 1 … Activate CAN set point by TSC1a
Page 12: 4829 = 8… Enable stop request telegram
Page 10: 4900 = 8 … Selection of input channel type for nominal speed value sensor
829 = FunctEngineStop – Switch assignment for "Engine stop" function
4424 = TelStopRequestOn – SAEJ1939: Active Engine Stop Request receives telegram

Recommended wiring

Function	ECU 25pin F connector	9pin diagnostic connector	Controller
CAN H	12	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	13	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	14	N/A	N/A
Battery - (negative)	1	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

Diagnostic connector layout is on page 16 or here.

EMR3-E



ECU selection in PC software:

Deutz EMR3

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Lock status	The command activates the engine start. If set engine stops and engine start prohibition will be active. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command stops the running engine. The recommended source value for this command is stop pulse.
Start Lock *4	As long as the start is forbidden, the value 1 has to be send. Sending the 0 will release the start lock. This value is used for normal operation with no start prohibition. It can not release a start prohibition which is caused by other sources, i.e. internal engine protection functions or other CAN bus messages. The recommended source value for this command is Logical 0.
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.

Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Software ID	For service purpose only!
ECU analog inputs (controller's outputs)	
Engine speed droop	Switch between internal droop1 and droop2. The recommended source value is a contstant following the requested function.
High Idle Droop	Switch between internal high idle droop1 and high idle droop2. The recommended source value is a contstant following the requested function.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active. **It is not allowed by Deutz to control speed over CAN bus on genset engines! Use pedal position input on ECU instead (see more details in Recommended wiring).**
Torque Map	Switch between internal torque map1 and torque map0. The recommended source value is a contstant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here.
Available list of texts of fault codes is here.

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)

Torque Map values meaning

Value	Torque Map	Engine Speed Droop	High Idle Droop
0	no modification of torque map	no modification of droop	no modification of high idle droop
1	switch to torque map 1	selects droop 1	Selects high idle droop 1
2	switch to torque map 2	selects droop 2	selects high idle droop 2

Recommended wiring

Function	ECU D2 connector	diagnostic connector	Controller
CAN H	35	M	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	2,3,8,9 (klemme 30)	A	N/A
Battery - (negative)	5,6,10,11 (klemme	B	N/A

	31)		
Key Switch	40	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	79	N/A	SG OUT *
Analog Speed Control	78	N/A	SG COM

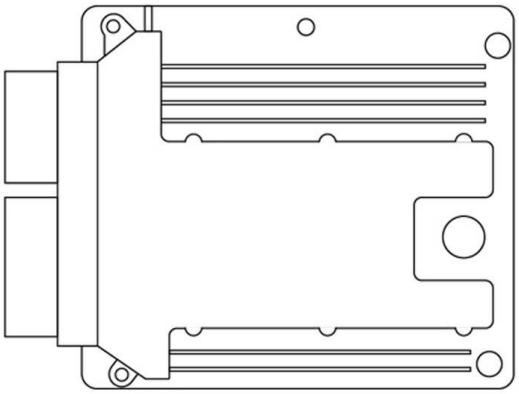
*Analog Speed Control range 0VDC to 5VDC, 100kOhm pull-down resitance

Diagnostic connector layout is on page 16 or here.

WARNING!
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).

EMR3-S



ECU selection in PC software:

Deutz EMR3

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Lock status	The command activates the engine start. If set engine stops and engine start prohibition will be active. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command stops the running engine. The recommended source value for this command is stop pulse.
Start Lock *4	As long as the start is forbidden, the value 1 has to be send. Sending the 0 will release the start lock. This value is used for normal operation with no start prohibition. It can not release a start prohibition which is caused by other sources, i.e. internal engine protection functions or other CAN bus messages. The recommended source value for this command is Logical 0.
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.

Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Software ID	For service purpose only!
ECU analog inputs (controller's outputs)	
Engine speed droop	Switch between internal droop1 and droop2. The recommended source value is a contstant following the requested function.
High Idle Droop	Switch between internal high idle droop1 and high idle droop2. The recommended source value is a contstant following the requested function.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active. **It is not allowed by Deutz to control speed over CAN bus on genset engines! Use pedal position input on ECU instead (see more details in Recommended wiring).**
Torque Map	Switch between internal torque map1 and torque map0. The recommended source value is a contstant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here.
Available list of texts of fault codes is here.

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)

Torque Map values meaning

Value	Torque Map	Engine Speed Droop	High Idle Droop
0	no modification of torque map	no modification of droop	no modification of high idle droop
1	switch to torque map 1	selects droop 1	Selects high idle droop 1
2	switch to torque map 2	selects droop 2	selects high idle droop 2

Recommended wiring

Function	ECU D2 connector	diagnostic connector	Controller
CAN H	62	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	61	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,3,5	N/A	N/A

Battery - (negative)	2,4,6	N/A	N/A
Key Switch	28	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	9	N/A	SG OUT
Analog Speed Control	30	N/A	SG COM

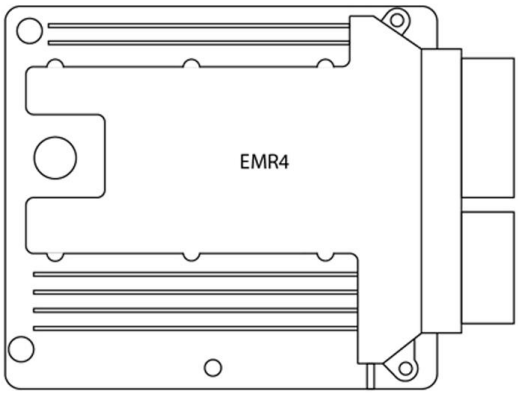
Diagnostic connector layout is on page 16 or here.

WARNING!
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-E 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 +.

EMR4



ECU selection in PC software:

Deutz EMR4

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
DPF Active Regeneration	Indicates the state of diesel particulate filter active regeneration inhibition.
DPF ActRegInhibitDue ToInhSw	Indicates the state of diesel particulate filter active regeneration inhibition due to the diesel particulate filter regeneration inhibit switch.
DPF Inhibited Status	Indicates the state of diesel particulate filter active regeneration inhibition.
DPF Passive Regeneration	Indicates the state of diesel particulate filter passive regeneration.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Bank 1 Exhaust Dew Point	Indicates that the temperature on the exhaust side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 1.
Bank 1 Intake Dew Point	Indicates that the temperature on the intake side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 1.
Bank 2 Exhaust Dew Point	Indicates that the temperature on the exhaust side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 2.
Bank 2 Intake Dew Point	Indicates that the temperature on the intake side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 2.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
DPF Regeneration Force1234	Indicates the state of a switch available to the operator that forces diesel particulate filter regeneration. The recommended source should follow the requested function.
DPF Regeneration Inhibit1234	Indicates the state of a switch available to the operator that inhibits diesel particulate filter regeneration. The recommended source should follow the requested function.
DPF Inhibit Command	Indicates the state of a switch available to the operator that inhibits diesel particulate filter regeneration.
DPF Regeneration Request	Indicates the state of a switch available to the operator that forces diesel particulate filter regeneration.
Start Lock EP	For more information about this signal contact local Deutz representative

Start Lock	As long as the start is forbidden, the value 1 has to be send. Sending the 0 will release the start lock. This value is used for normal operation with no start prohibition. It can not release a start prohibition which is caused by other sources, i.e. internal engine protection functions or other CAN bus messages. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command stops the running engine. The recommended source value for this command is stop pulse.
ECU analog outputs (controller's inputs)	
Air Intake Temperature	Temperature of air entering air induction system.
Barometric pressure (absolute)	Absolute air pressure of the atmosphere.
Catalyst Intake Temperature	Temperature of the engine combustion exhausts entering the diesel oxidation catalyst in exhaust bank 1. This diesel parameter should be used with engines fueled by diesel fuel (not natural gas or propane).
Catalyst Outlet Temperature	Temperature of the engine combustion exhausts leaving the diesel oxidation catalyst in exhaust bank 1. This diesel parameter should be used with engines fueled by diesel fuel (not natural gas or propane).
DPF Differential Pressure	Exhaust differential pressure measured between the intake and exhaust of a diesel particulate filter in exhaust bank 1.
DPF Ash Load Percent	Indicates the ash load percent of diesel particulate filter 1. 100% is the level at which active diesel particulate filter ash service should be performed.
DPF Soot Load Percent	Indicates the soot load percent of diesel particulate filter 1. 100% is the level at which active diesel particulate filter regeneration should be triggered.
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
Urea Temperature	Temperature of the diesel exhausts fluid in the storage tank.
DPF Lamp	Command to control the diesel particulate filter lamp.
DPF Status	Indicates the state of the diesel particulate filter regeneration need and urgency.
HEST Lamp Command	Command to control the exhaust system high temperature lamp. This lamp indicates that the exhaust system temperature is high.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Starter mode	0 - start not requested 1 - starter active, gear not engaged 2 - starter active, gear engaged 3 - start finished 4 - starter inhibited due to engine already running 5 - starter inhibited due to engine not ready for start 6 - starter inhibited due to driveline engaged or other transmission inhibit 7 - starter inhibited due to active immobilizer 8 - starter inhibited due to starter over-temp 9 -11 - reserved 12 - starter inhibited 13,14 - error (legacy implementation only, use 1110) 15 - not available
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Hand Gas Position	The ratio of actual position of the remote analog engine speed/torque request input device to the maximum position of the input device. For example, in on-highway vehicles this could be an accelerator control device that is external to the drivers cab or an accelerator that is controlled by a hand lever from the operator's seat.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Exhaust Gas Mass Flow	Measured/calculated exhaust gas mass upstream of the aftertreatment system in exhaust bank 1 and 2.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.

Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Fuel Temperature	Temperature of fuel entering injectors.
Air Filter Differential Pressure	Change in engine air system pressure, measured across the filter, due to the filter and any accumulation of solid foreign matter on or in the filter. This is the measurement of the first filter in a multiple air filter system.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
DPF Inlet Pressure	Exhaust back pressure as a result of particle accumulation on filter media placed in the exhaust stream.
Exhaust Gas Temperature	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Software ID	For service purpose only!
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Power Reduction	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	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Available list of texts of fault codes is here.

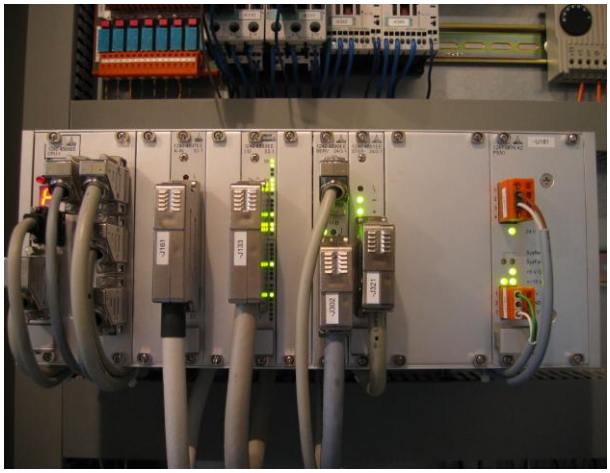
Controller's analog output for speed control configuration

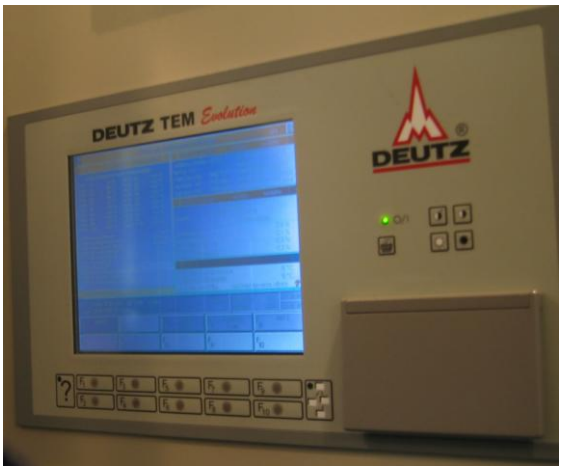
Requested Speed settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested Speed settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

No documentation available so far!
Diagnostic connector layout is on page 16 or here.

TEM Evolution





Configuration

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.

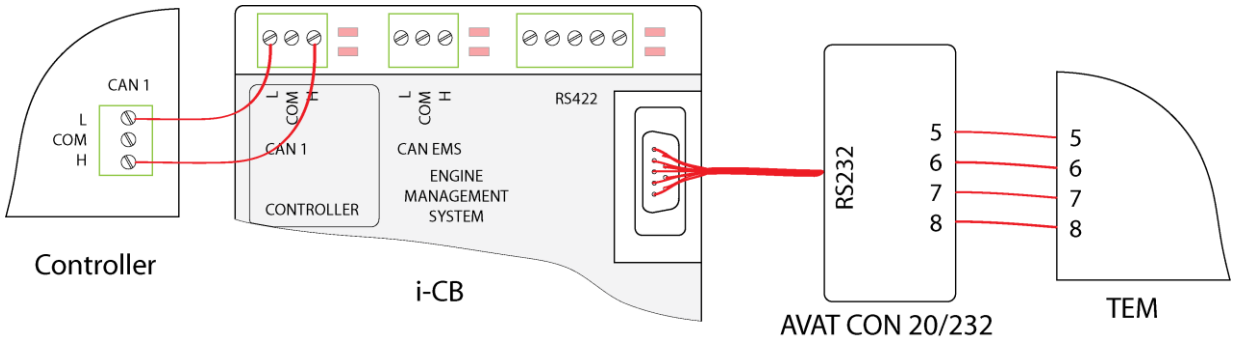
ECU selection in PC software:

Deutz TEM
Legacy I-CB/DeutzTEME / ICB module + I/O modules

Available commands

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

Recommended wiring

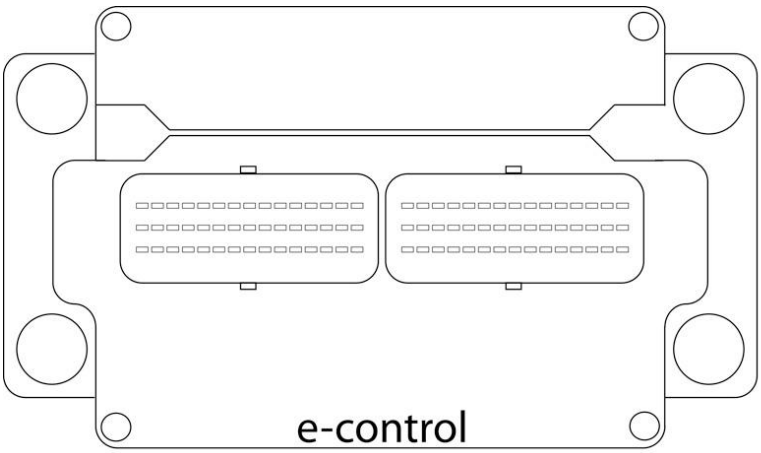


Ford

ECU Types

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

E-control



ECU selection in PC software:

Deutz EMR4

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Air Inlet Temperature	Temperature of air entering air induction system.
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine torque	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.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Accelerator Pedal Position2	The ratio of actual position of the second analog engine speed/torque request input device to the maximum position of the input device. This parameter is intended for the secondary accelerator control in an application.
AccPedal 1 Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Load At Current Speed	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Intercooler Temp	Temperature of liquid found in the intercooler located after the turbocharger.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle Position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Requested speed123456	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported by the non-configurable controllers:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *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

Recommended wiring

Function	ECU B connector	Customer 42-pin 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

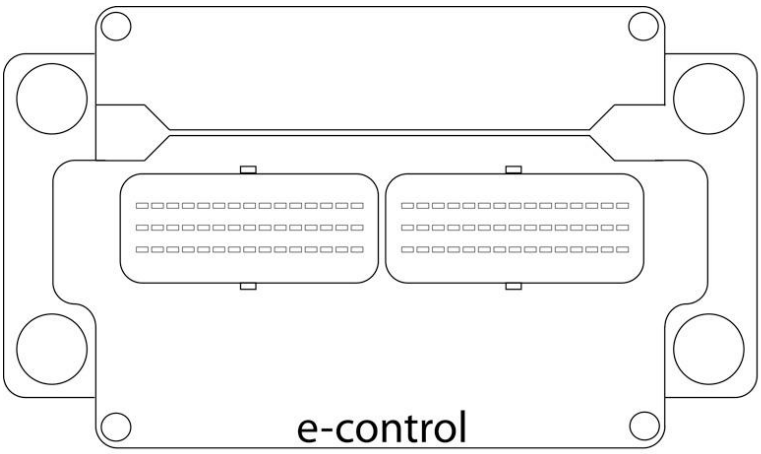
Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

GM

ECU Types

ECU Type	Engine Type
MEFI4B MEFI5B MEFI6	Diesel engines
SECM	Gas engines
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

E-control



ECU selection in PC software for E-control

GM e-control

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal

	becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Air Inlet Temperature	Temperature of air entering air induction system.
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine torque	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.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Accelerator Pedal Position2	The ratio of actual position of the second analog engine speed/torque request input device to the maximum position of the input device. This parameter is intended for the secondary accelerator control in an application.
AccPedal 1 Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Load At Current Speed	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Intercooler Temp	Temperature of liquid found in the intercooler located after the turbocharger.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle Position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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	diagnostic connector	Controller
CAN H	A (N)	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	? (S)	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	B (P)	N/A	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

Diagnostic connector layout is on page 16 or here.

E-control LCI

ECU selection in PC software for E-control LCI

GM e-control LCI

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Air Inlet Temperature	Temperature of air entering air induction system.
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine torque	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.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Intercooler Temp	Temperature of liquid found in the intercooler located after the turbocharger.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle Position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

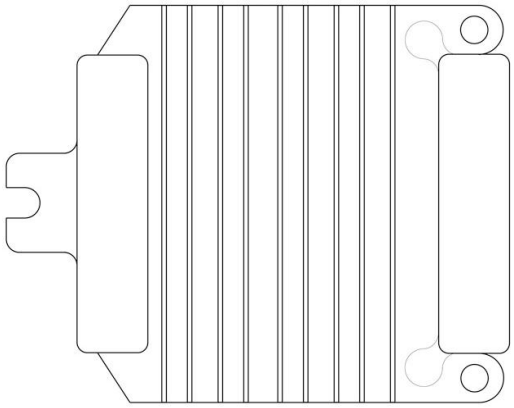
Requested Speed settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested Speed settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring

Function	ECU B connector	diagnostic connector	Controller
CAN H	A	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	B	N/A	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

Diagnostic connector layout is on page 16 or here.

MEFI4B, MEFI5B



ECU selection in PC software:

GM MEFI4/MEFI5B

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Amber Warning Lamp prop	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.
Malfunction Lamp prop	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp prop	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp prop	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Fuel Level (MEFI5B only)	Ratio of volume of fuel to the total volume of fuel storage container.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Air Intake Pressure (MEFI5B	Absolute air pressure at inlet to intake manifold or air box.

only)	
Boost Pressure (MEFI5B only)	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp (MEFI5B only)	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp (MEFI5B only)	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate (MEFI5B only)	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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 J1 or J2 connectors	diagnostic connector	Controller
CAN H	24 (J2)	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	9 (J2)	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1 (J2)	N/A	N/A
Battery - (negative)	13,28,29 (J1)	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

Diagnostic connector layout is on page 16 or here.

MEFI6

ECU selection in PC software:

GM MEFI6

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
MEFI6 Amber Warning Lamp	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. This is a proprietary GM lamp.
MEFI6 Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active. This is a proprietary GM lamp.
MEFI6 Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related. This is a proprietary GM lamp.
MEFI6 Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine. This is a proprietary GM lamp.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
AT1 Intake O2	Indicates that the temperature on the intake side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 1.
AT1 Outlet O2	Indicates that the temperature on the exhaust side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 1.
AT2 IntakeO2	Indicates that the temperature on the intake side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 2.
AT2 Outlet O2	Indicates that the temperature on the exhaust side of the aftertreatment system has exceeded the dew point, as estimated by the ECM in exhaust bank 2.
Fuel Level	Ratio of volume of fuel to the total volume of fuel storage container.
ECM Hardware	For service purpose only!
ECM Information1	For service purpose only!
Engine Displacement	For service purpose only!
OEM Engine ID	For service purpose only!
Actual Torque	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.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Starter Mode	0 - start not requested 1 - starter active, gear not engaged 2 - starter active, gear engaged 3 - start finished 4 - starter inhibited due to engine already running 5 - starter inhibited due to engine not ready for start 6 - starter inhibited due to driveline engaged or other transmission inhibit

	7 - starter inhibited due to active immobilizer 8 - starter inhibited due to starter over-temp 9 -11 - reserved 12 - starter inhibited 13,14 - error (legacy implementation only, use 1110) 15 - not available
AP Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Oil Temperature	Temperature of the engine lubricant.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active. This is a proprietary GM speed request.
TSC1 Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active. This is a standard J1939 speed request.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

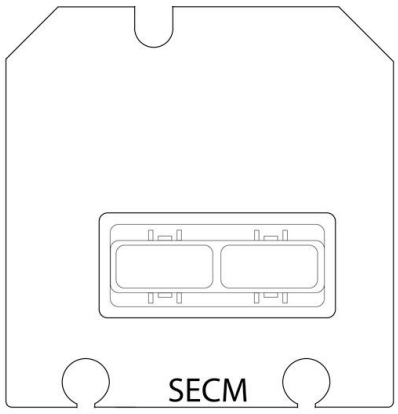
Controller's analog output for speed control configuration

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

No documentation available so far!
Diagnostic connector layout is on page 16 or here.

SECM



ECU selection in PC software:

GM SECM

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Approaching Shutdown	Status signal which indicates that engine shutdown is imminent. This engine protection signal can be a result of different systems failing, i.e., engine overheating.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
System Configuration	Parameter which indicates the configuration of the engine shutdown system.
System Timer State	Status signal which indicates the current mode of the engine protection system timer system.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Inlet Air Mass Flow Rate	Mass flow rate of fresh air entering the engine air intake, before any EGR mixer, if used. Flow rate of fresh air conducted to the engine cylinders to support combustion.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.

Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Engine Throttle Position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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	diagnostic connector	Controller
CAN H	20	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	22	N/A	N/A
Battery - (negative)	17	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

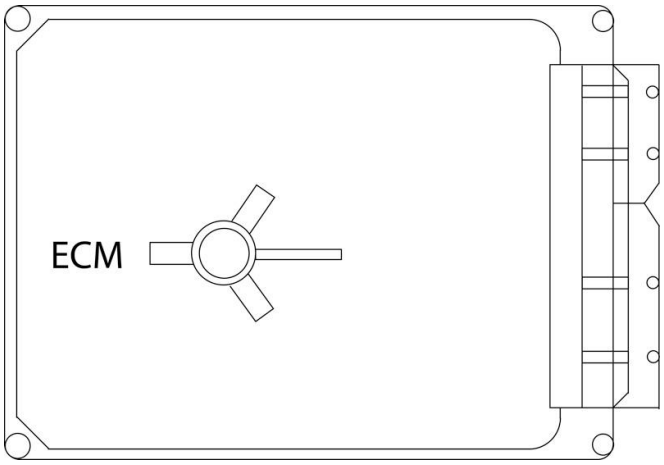
Diagnostic connector layout is on page 16 or here.

Isuzu

ECU Types

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)

ECM



ECU selection in PC software:

Isuzu ECM

Available signals

ECU binary outputs (controller's inputs)	
DPF BuzzerMode	For more information about this signal contact local Isuzu representative
DPF GrLampMode	DPF green lamp mode. For more information about this signal contact local Isuzu representative
DPF RegenFlag	For more information about this signal contact local Isuzu representative
DPF RegLampReq	DPF option regen lamp request. For more information about this signal contact local Isuzu representative
StarterSwitch	For more information about this signal contact local Isuzu representative
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
DPF SwitchKnd	For more information about this signal contact local Isuzu representative
DPF SwitchUns	For more information about this signal contact local Isuzu representative
EGRGasTmpWrn	EGR gas temp warning. For more information about this signal contact local Isuzu representative
Ignition key switch	For more information about this signal contact local Isuzu representative

RegAuxLoadReq1	For more information about this signal contact local Isuzu representative
RegAuxLoadReq2	For more information about this signal contact local Isuzu representative
StartCutRelay	Starter cut relay signal. For more information about this signal contact local Isuzu representative
BoostTmpRise	Boost temp rise warning. For more information about this signal contact local Isuzu representative
ClntTmpRise	Coolant temp rise warning. For more information about this signal contact local Isuzu representative
EmerSDoperSig	Emergency shutdown operation signal. For more information about this signal contact local Isuzu representative
EngOilPresDrop	Engine oil press drop warning. For more information about this signal contact local Isuzu representative
ExhstGasTmpWrn	Exhaust gas temp warning. For more information about this signal contact local Isuzu representative
FuelFltrClogg	Fuel filters clogging warning. For more information about this signal contact local Isuzu representative
FuelTmpRise	Fuel temp rise warning. For more information about this signal contact local Isuzu representative
Glow signal	For more information about this signal contact local Isuzu representative
InAirBstTmpWrn	I ntake air and boost temp diff warning. For more information about this signal contact local Isuzu representative
IntAirTmpWrn	Intake air temperature warning. For more information about this signal contact local Isuzu representative
OverrunWrn	For more information about this signal contact local Isuzu representative
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
EngProtHoldSig	Engine Protection System Holding Signal. For more information about this signal contact local Isuzu representative
PreheatStartSg	Preheating Start Signal. For more information about this signal contact local Isuzu representative
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop solenoid.
ECU analog outputs (controller's inputs)	
Atmospheric pressure	Absolute air pressure of the atmosphere.
T-Ambient	Temperature of air entering vehicle air induction system.
DPF AmLampMode	DPF amber lamp mode. For more information about this signal contact local Isuzu representative
DPF IndiStat	DPF indicator status. For more information about this signal contact local Isuzu representative
EngOil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
PCode	For more information about this signal contact local Isuzu representative
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Remote Accelerator Pedal Position	The ratio of actual position of the remote analog engine speed/torque request input.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Commonrail Pressure	The gage pressure of fuel in the first metering rail as delivered from the supply pump.
DiffPressJudg1	For more information about this signal contact local Isuzu representative
Turmo actual opening	For more information about this signal contact local Isuzu representative

Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temperature	Temperature of fuel passing the first fuel control system.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Boost temp	Status of the (virtual) boost temperature alarm switch.
Catalyst inlet gas temp	For more information about this signal contact local Isuzu representative
DPF filter Inlet Gas Temp	For more information about this signal contact local Isuzu representative
EGR gas temp	For more information about this signal contact local Isuzu representative
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Boost Pressure	For more information about this signal contact local Isuzu representative
Engine percent torque	For more information about this signal contact local Isuzu representative
Fuel injection quantity level	For more information about this signal contact local Isuzu representative
Target engine speed	For more information about this signal contact local Isuzu representative
Commonrail Diff Pressure	For more information about this signal contact local Isuzu representative
Instruction engine speed	For more information about this signal contact local Isuzu representative
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Main relay voltage	Volatge of the first source of battery potential as measured at the input of the ECM.
ECU analog inputs (controller's outputs)	
EngineModel/SN	For more information about this signal contact local Isuzu representative
Requested speee *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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 121pin connector	diagnostic connector	Controller
CAN H	18	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	37	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	2,5	N/A	N/A
Battery - (negative)	1,3,4	N/A	N/A
Key Switch	24	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

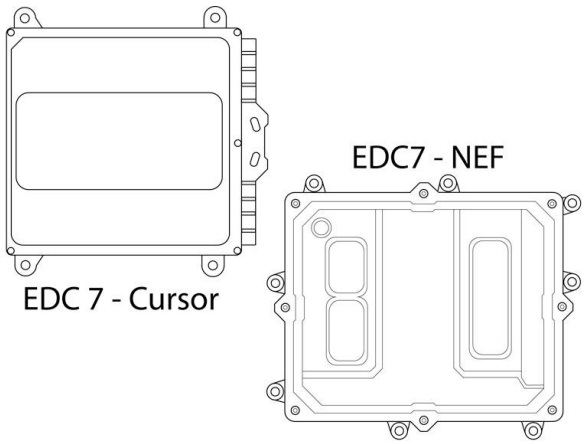
Diagnostic connector layout is on page 16 or here.

Iveco

ECU Types

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 Genset industrial application (Cursor and NEF engines)
ADEMIII	Vector

EDC or NEF



ECU selection in PC software:

Iveco NEF&Cursor

Available signals

ECU binary outputs (controller's inputs)	
Brake Switch	Switch signal which indicates that the driver operated brake foot pedal is being pressed. This brake foot pedal is controlling the vehicles' service brake (total braking application, not park brakes). It is necessary for safe drivetrain behavior that the switch activates before the physical braking components are activated.
Clutch Switch	Switch signal which indicates that the clutch pedal is being pressed. It is necessary for a safe drivetrain behavior that the clutch switch is set before the clutch is opened.
Cruise Control Active	Cruise control is switched on. It is not ensured that the engine is controlled by Druide control, as in the case of a large driver's demand the engine is controlled by the driver while cruise control is active. The cruise control is set to 0 if a switch off condition occurs.
Amber Warning Lamp	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 Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Diagnostic Lamp Status	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Engine Oil Pressure Low	Low pressure of oil in engine lubrication system as provided by oil pump.
Engine Oil Temperature High	High temperature of oil in engine lubrication system as provided by oil pump.
Engine Overspeed	This signal is active when the actual engine speed is above the operating range.
Fuel Filter Heater Status	This signal is active when the fuel filter heater is active.
Immobilizer Fuel Block	Please contact local Iveco representative for further information about this signal.
Water In Fuel	Signal which indicates the presence of water in the fuel.
APP Kick Down Switch	Switch signal which indicates whether the accelerator pedal kickdown switch is opened or closed.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Retarder Brake Assist Switch	Switch signal which indicates whether the operator wishes the retarder to be enabled for braking assist. The retarder does not check this switch, nor does the enabling of this switch engage the retarder.
Retarder Shift Assist Switch	Switch signal which indicates whether the operator wishes the retarder to be enabled for braking assist. The retarder does not check this switch, nor does the enabling of this switch engage the retarder.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait To Start Lamp	Lamp signal which indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Catalyst Tank Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container.
Barometric Pressure	Absolute air pressure of the atmosphere.
DEF Tank 1 Level	For more information about this signal contact local Iveco representative
Cold Start Heater Status	Please contact local Iveco representative for further information about this signal.
ECM Operational Status	For service purpose only!
Engine Degradation Level	Please contact local Iveco representative for further information about this signal.
Engine Over Temp Status	Indicates the state of pre-warming of the engine. 0 – No warning 1 – Prewarning 2 – Warning 3 to 7 – Not defined
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine Torque Mode	State signal which indicates which engine torque mode is currently generating, limiting, or controlling the torque. Note that the modes are not in prioritized order. Not all modes may be relevant for a given device. Some device may not implement all functions. The data type of this parameter is measured. Mode 0 means 'No request': engine torque may range from 0 to full load only due to low idle governor output; retarder torque = 0 (no braking). Modes 1b to 14 indicate that there is either a torque request or the identified function is currently controlling the engine/retarder: engine/retarder torque may range from 0 (no fueling/no braking) to the upper limit.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are

	excluded from this calculation.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Operating Speed Asymmetry	For service purpose only!
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
DEF Warning	For more information about this signal contact local Iveco representative
Actual Retarder Torque	Actual braking torque of the retarder as a percent of retarder configuration reference torque.
Retarder Torque Mode	State signal which indicates which retarder torque mode is currently generating, limiting, or controlling the torque. Note that the modes are not in prioritized order. Not all modes may be relevant for a given device. Mode 0 means 'No request': engine torque may range from 0 to full load only due to low idle governor output; retarder torque = 0 (no braking). Modes 1 to 14 indicate that there is either a torque request or the identified function is currently controlling the engine/retarder: engine/retarder torque may range from 0 (no fueling/no braking) to the upper limit.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Trap Inlet Pressure	Exhaust back pressure as a result of particle accumulation on filter media placed in the exhaust stream.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Catalyst Downstream Temp	For more information about this signal contact local Iveco representative
Catalyst Upstream Temp	For more information about this signal contact local Iveco representative
Urea Pressure	For more information about this signal contact local Iveco representative
Urea Quantity	For more information about this signal contact local Iveco representative
Urea tank level	For more information about this signal contact local Iveco representative
Urea Tank Temp	For more information about this signal contact local Iveco representative
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Mode with SCI	This mode must be used when a SCI module is connected to the CAN bus. Source has to be set "**Not *used*"**, i.e. there can't be set any value!
Mode without SCI *1*2*3*4*5*6	This mode is recommeded to used when there is no SCI connected to the CAN bus. Source has to be set "**Not *used*"**, i.e. there can't be set any value!
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
Requested speed (VE) *1*2*3*4	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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 for NEF

Function	ECU A2 89pin connector	diagnostic connector	Controller
CAN H	52	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	53	D	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	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	diagnostic connector	Controller
CAN H	11	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	12	D	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

Diagnostic connector layout is on page 16 or here.

EDC Tier3

ECU selection in PC software:

Iveco NEF&Cursor Tier 3

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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 Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Diagnostic Lamp Status	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
ECM Fuelling	For more information about this signal contact local Iveco representative
Engine Oil Pressure Low	Low pressure of oil in engine lubrication system as provided by oil pump.
Engine Oil Temperature High	High temperature of oil in engine lubrication system as provided by oil pump.
Engine Overspeed	This signal is active when the actual engine speed is above the operating range.
Fuel Block Status By Immobilizer	Please contact local Iveco representative for further information about this signal.
Fuel Filter Heater Status	This signal is active when the fuel filter heater is active.
OBD MIL Status	For more information about this signal contact local Iveco representative
Status Of Start Button	For more information about this signal contact local Iveco representative
Status Of Stop Button	For more information about this signal contact local Iveco representative
Water In Fuel	Signal which indicates the presence of water in the fuel.
Wait To Start Lamp	Lamp signal which indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Air Inlet Temperature	Temperature of air entering air induction system.
Ambient Air Temperature	Temperature of air surrounding vehicle
Barometric Pressure	Absolute air pressure of the atmosphere.
Cab Interior Temperature	Temperature of air inside the vehicle.
Cold Start Status	Please contact local Iveco representative for further information about this signal.
ECM Operational Status	Please contact local Iveco representative for further information about this signal.
Engine Degradation Level	Please contact local Iveco representative for further information about this signal.
Engine Overtemperature	Please contact local Iveco representative for further information about this signal.
Humidity	Please contact local Iveco representative for further information about this signal.
Actual Torque	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.
Controlling Device Address	The source address of the device currently controlling the engine.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine Starter Mode	0 - start not requested 1 - starter active, gear not engaged 2 - starter active, gear engaged 3 - start finished 4 - starter inhibited due to engine already running 5 - starter inhibited due to engine not ready for start 6 - starter inhibited due to driveline engaged or other transmission inhibit

	7 - starter inhibited due to active immobilizer 8 - starter inhibited due to starter over-temp 9 -11 - reserved 12 - starter inhibited 13,14 - error (legacy implementation only, use 1110) 15 - not available
Engine Torque Mode	
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Remote Accelerator	The ratio of actual position of the remote analog engine speed/torque request input device.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions.
Nominal Friction - % Torque	The calculated torque that indicates the amount of torque required by the engine itself and the loss torque of accessories.
Operating Speed Asymetry	Indicates the engine's preference of lower versus higher engine speeds should its desired speed not be achievable.
Coolant Pressure	Gage pressure of liquid found in engine cooling system. Dones from Master unit.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Extended Crankcase Blow-by Pressure	Differential crankcase blow-by pressure as measured through a tube.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Intercooler Temperature	Temperature of liquid found in the intercooler located after the turbocharger.
Turbo Oil Temperature	Temperature of the turbocharger lubricant.
Air Filter Diff. Pressure	Change in engine air system pressure, measured across the filter, due to the filter and any accumulation of solid foreign matter on or in the filter. This is the measurement of the first filter in a multiple air filter system.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Coolant Filter Diff. Pressure	Change in coolant pressure, measured across the filter.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Trap Inlet Pressure	Exhaust back pressure as a result of particle accumulation on filter media placed in the exhaust stream.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

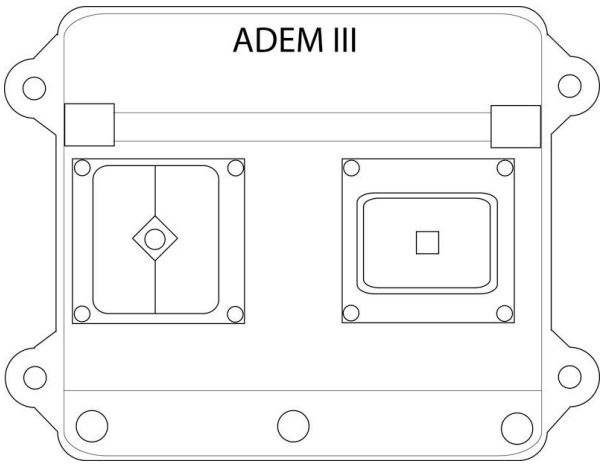
Requested Speed settings for InteliGen^{NT} or InteliSys^{NT}		
Source	SpeedReq RPM	
Convert	NO	
Limits	N/A	N/A
	N/A	N/A
Requested Speed settings for InteliDrive DCU, InteliDrive Mobile		
Source	Speed Request	
Convert	Yes	
Limits	0.0 %	Min eng. speed (800RPM)
	100.0 %	Max eng. speed (2100RPM)

Recommended wiring for EDC

Function	ECU A2 89pin connector	diagnostic connector	Controller
CAN H	52	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	53	D	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	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

Diagnostic connector layout is on page 16 or here.

ADEMIII



ECU selection in PC software:

Iveco Vector

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Cold Start Request	The command for start the engine in cold enviroment conditions. If Cold Start Request signal is not used, configure it to Logical 0. Otherwise the engine will not start.
Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Cooling water temp	Temperature of liquid found in engine cooling system.
Oil pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.

Oil temperature	Temperature of the engine lubricant.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

WARNING!
In case if alternative format (°F, psi, gph) is selected in LiteEdit PC software, the value Total Fuel Used is showed in dimension US gaollon instead of Imperial gallon !

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	Interface card	diagnostic connector	Controller
CAN H	J2 1	C	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	J2 2	D	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	116	N/A	N/A
Battery - (negative)	117	N/A	N/A
Key Switch	J7 18,19 *	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

Diagnostic connector layout is on page 16 or here.

WARNING!
Emergency 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.

JCB

ECU Types

ECU Type	Engine Type
JCB Delphi DCM	Dieselmax or ecoMAX

Delphi DCM

ECU selection in PC software:

JCB Delphi DCM

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
APP Kick Down Switch	Switch signal which indicates whether the accelerator pedal kickdown switch is opened or closed.
Idle Shutdown has Shutdown Engine	Status signal which identifies whether or not the engine has been shutdown by the idle shutdown timer system.
Idle Shutdown Timer Function	Parameter which indicates the configuration of the idle shutdown timer system.
Idle Shutdown Timer Override	Status signal which indicates the status of the override feature of the idle shutdown timer system.
Idle Shutdown Timer State	Status signal which indicates the current mode of operation of the idle shutdown timer system.
Wait to Start Lamp	Lamp signal which indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water In Fuel Indicator	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine Demand Torque	The requested torque output of the engine by all dynamic internal inputs, including smoke control, noise control and low and high speed governing.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Engine Torque Mode	State signal which indicates which engine torque mode is currently generating, limiting, or controlling the torque. Note that the modes are not in prioritized order. Not all modes may be relevant for a given device. Some device may not implement all functions. The data type of this parameter is measured. Mode 0 means 'No request': engine torque may range from 0 to full load only due to low idle governor output; retarder torque = 0 (no braking). Modes 1b to 14 indicate that there is either a torque request or the identified function is currently controlling the engine/retarder: engine/retarder torque may range from 0 (no fueling/no braking) to the upper limit.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Remote Accelerator	The ratio of actual position of the remote analog engine speed/torque request input device to the maximum position of the input device. For example, in on-highway vehicles this could be an accelerator control device that is external to the drivers cab or an accelerator that is controlled by a hand.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
T-ECU	Temperature of the engine electronic control unit.
Estimated Percent Fan Speed	Estimated fan speed as a ratio of the fan drive (current speed) to the fully engaged fan drive. A two state fan (off/on) will use 0% and 100% respectively. A variable speed fan will use 0% to 100%. Multiple fan systems will use 0 to 100% to indicate the percent cooling capacity being provided.
Fan Drive State	This parameter is used to indicate the current state or mode of operation by the fan drive. See the table below. 0 - Fan off 1 - Engine system–General 2 - Excessive engine air temperature 3 - Excessive engine oil temperature 4 - Excessive engine coolant temperature 5 - Excessive transmission oil temperature 6 - Excessive hydraulic oil temperature 7 - Default Operation 8 - Reverse Operation 9 - Manual control 10 - Transmission retarder 11 - A/C system 12 - Timer 13 - Engine brake 14 - Other 15 - Not available
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Fuel Level	Ratio of volume of fuel to the total volume of fuel storage container.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLiteNT *3 – InteliDrive Lite *4 – InteliCompactNT *5 – InteliNano *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 X2 62pin connector	diagnostic connector	Controller
CAN H	27	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	19	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	23	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	57, 60, 53, 49	N/A	N/A
Battery - (negative)	58, 59, 61, 62	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

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

Jenbacher

ECU Types

ECU Type	Engine Type
DIA.NE	Gas engines

DIA.NE

WARNING!
To enable communication with Jenbacher Diane over Modbus, order the engine with Modbus interface!

ECU selection in PC software for DIA.NE

Jenbacher Diane

Available signals

ECU binary outputs (controller's inputs)	
GCB Closed	This signal indicates closed position of generator circuit breaker.
GCB Open	This signal indicates open position of generator circuit breaker.
MCB Closed	This signal indicates closed position of utility circuit breaker.
MCB Open	This signal indicates open position of utility circuit breaker.
Operation OFF	For more information about this signal contact local Jenbacher representative
Operation ON	For more information about this signal contact local Jenbacher representative
Ready for Aut. Demand OFF	For more information about this signal contact local Jenbacher representative
Ready for Aut. Demand ON	For more information about this signal contact local Jenbacher representative
Service Selector Switch AUT	The feedback from Service Selector Switch. The switch is in Auto position.
Service Selector Switch MAN	The feedback from Service Selector Switch. The switch is in Manual position.
Service Selector Switch OFF	The feedback from Service Selector Switch. The switch is in OFF position.
Demand for Auxiliaries	For more information about this signal contact local Jenbacher representative
GCB Closed 2	For more information about this signal contact local Jenbacher representative
General Trip	For more information about this signal contact local Jenbacher representative
General Warning	For more information about this signal contact local Jenbacher representative
MCB Closed 2	For more information about this signal contact local Jenbacher representative
Module is Demanded	For more information about this signal contact local Jenbacher representative
Operation - Engine is	For more information about this signal contact local Jenbacher representative

Running	
Pulse for Start Counter	For more information about this signal contact local Jenbacher representative
Ready for Aut. Demand	For more information about this signal contact local Jenbacher representative
Re-synchronizing Activated	For more information about this signal contact local Jenbacher representative
Service Select. Switch AUT 2	For more information about this signal contact local Jenbacher representative
Service Select. Switch MAN 2	For more information about this signal contact local Jenbacher representative
Synchronizing Gen. Activated	For more information about this signal contact local Jenbacher representative
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Jacket Water Temperature	For more information about this signal contact local Jenbacher representative
Jacket Water Pressure	Gage pressure of liquid found in engine cooling system.
Engine Oil Temperature	Temperature of the engine lubricant.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
ExhstGasTemp-Turbocharger	For more information about this signal contact local Jenbacher representative
ExhstGasTemp-HeatExchanger	For more information about this signal contact local Jenbacher representative
PlateTempExhstGasHeatExch.	For more information about this signal contact local Jenbacher representative
Cylinder Exhaust Gas Temp	For more information about this signal contact local Jenbacher representative
Heating Water Return Temp	For more information about this signal contact local Jenbacher representative
Generator Power Factor	For more information about this signal contact local Jenbacher representative
Generator Frequency	For more information about this signal contact local Jenbacher representative
Gener. Current Average	For more information about this signal contact local Jenbacher representative
Gener. Voltage Aver. Ph-Ph	For more information about this signal contact local Jenbacher representative
Total Active Output	For more information about this signal contact local Jenbacher representative
Total Reactive Output	For more information about this signal contact local Jenbacher representative
Setpoint Power Control	For more information about this signal contact local Jenbacher representative
Operation Hours Counter	Accumulated time of operation of engine.
Start Counter	For more information about this signal contact local Jenbacher representative
Fuel Mixture Temperature	For more information about this signal contact local Jenbacher representative
Excitation Voltage	For more information about this signal contact local Jenbacher representative
Generator Voltage L1-L2	For more information about this signal contact local Jenbacher representative
Generator Power	For more information about this signal contact local Jenbacher representative
Generator Reactive Power	For more information about this signal contact local Jenbacher representative
Generator Apparent Power	For more information about this signal contact local Jenbacher representative
Generator Neutral Current	For more information about this signal contact local Jenbacher representative
Boost Pressure Actual Value	For more information about this signal contact local Jenbacher representative
Gasmixer Position	For more information about this signal contact local Jenbacher representative
Throttle Valve Position	For more information about this signal contact local Jenbacher representative
Turbocharg Bypass Position	For more information about this signal contact local Jenbacher representative
ECU analog inputs (controller's outputs)	

Controller's analog output for speed control configuration

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

Recommended wiring

Function	Siemens converter	9pin diagnostic connector	Controller
RS485 A	A	N/A	RS485 – RS485 A
RS485 COM	COM	N/A	RS485 – RS485 COM
RS485 B	B	N/A	RS485 – RS485 B
Battery + (positive)	?	N/A	N/A
Battery - (negative)	?	N/A	N/A
Key Switch	N/A	N/A	Any binary output configured as ECU PwrRelay

Diagnostic connector layout is on page 16 or here.

Controller recommended setting (Setpoints/Comms settings group)

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

*3 external RS232-485 converter is required

NOTE:
The address of the DIA.NE has to be set to 11 ($0B_{HEX}$).

John Deere

ECU Types

ECU Type	Engine Type
JDEC	Diesel engines

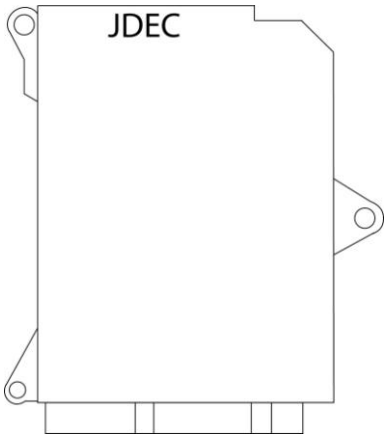
Engine type explanation

Engine type		Meaning
4045HF275	4xxxxxxxx	Number of cylinders
	x045xxxxx	Displacement in litres 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
	xxxxxxxx5	0 - no ECU 5 - J1939 ECU 9 - J1939 ECU, Tier II electronic

PowerTech engine type explanation

Engine type		Meaning
PSS 6.8L	Pxxxxx	Technology : P - Powertech plus E - Powertech E
	xSxxxx	Turbocharger : V – Variable geometry turchocharger (VGT) S – Series turbochargers W – wastegate turbocharger
	xxSxxx	Aftertreatment : S – Exhaust filter and SCR X – Exhaust filter
	xxx6.8L	Displacement

JDEC



ECU selection in PC software:

John Deere

Available signals

ECU binary outputs (controller's inputs)	
Brake Switch	Indicates that the brake foot pedal is being pressed.
Clutch Switch	Indicates that the clutch pedal is being pressed.
Cruise Control Accelerate Switch	Indicates that the activator is in the position "accelerate."
Cruise Control Active	Cruise control is switched on.
Cruise Control Coast Switch	Indicates that the activator is in the position "coast (decelerate)."
Cruise Control Enable Switch	Indicates that it is possible to manage the cruise control function.
Cruise Control Resume Switch	Indicates that the activator is in the position "resume."
Cruise Control Set Switch	Indicates that the activator is in the position "set."
Engine Test mode switch	Indicates the position of the engine test mode switch.
Idle Decrement Switch	Indicates the position of the idle decrement switch.
Idle Increment Switch	Indicates the position of the idle increment switch.
Parking Brake Switch	Indicates when the parking brake is set.
Two Speed Axle Switch	Indicates the current axle range.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
DPF Act. Reg. Inhibit Status	Indicates the state of diesel particulate filter active regeneration inhibition.
DPF ActRegInhibitDueToInhSw	Indicates the state of diesel particulate filter active regeneration inhibition due to the Diesel Particulate Filter Regeneration Inhibit Switch.
DPF ActRegInhibNotWarmUp	Indicates the state of diesel particulate filter active regeneration inhibition due to the engine not being warmed up.
DPF Auto Reg.Configuration	Indicates the configuration of diesel particulate filter active regeneration automatic initiation.
DPF ConditionNotRegen	Indicates that diesel particulate filter is not able to begin or continue an active regenerate event at the current engine operating conditions.
DPF Inhibit DueTo Breake	Indicates the state of diesel particulate filter active regeneration inhibition due to the service brake being active.

DPF Inhibit DueTo Clutch	Indicates the state of diesel particulate filter active regeneration inhibition due to the clutch being disengaged.
DPF Inhibit DueTo Exh.Press	Indicates the state of diesel particulate filter active regeneration inhibition due to low exhaust gas pressure.
DPF Inhibit DueTo Exh.Temp	Indicates the state of diesel particulate filter active regeneration inhibition due to the exhaust gas temperature being too low.
DPF Inhibit DueTo Idle	Indicates the state of diesel particulate filter active regeneration inhibition due to the accelerator pedal being off idle.
DPF Inhibit DueTo LowSpeed	Indicates the state of diesel particulate filter active regeneration inhibition due to vehicle speed being less than the allowed vehicle speed.
DPF Inhibit DueTo Neutral	Indicates the state of diesel particulate filter active regeneration inhibition due to the transmission being out of neutral.
DPF Inhibit DueTo Park.Brake	Indicates the state of diesel particulate filter active regeneration inhibition due to the parking brake being not set.
DPF Inhibit DueTo Peranent Lockout	Indicates the state of diesel particulate filter active regeneration inhibition due to a permanent system lockout.
DPF Inhibit DueTo PTO	Indicates the state of diesel particulate filter active regeneration inhibition due to the PTO being active.
DPF Inhibit DueTo Speed	Indicates the state of diesel particulate filter active regeneration inhibition due to the vehicle speed being above an allowed limit.
DPF Inhibit DueTo SysFault	Indicates the state of diesel particulate filter active regeneration inhibition due to a system fault being active.
DPF Inhibit DueTo SysLockout	Indicates the state of diesel particulate filter active regeneration inhibition due to a temporary system lockout.
DPF Inhibit DueTo SysTimeout	Indicates the state of diesel particulate filter active regeneration inhibition due to a system timeout.
DPF Pas.Regen.Status	Indicates the state of diesel particulate filter passive regeneration.
DPF Regen. Status	Indicates the state of diesel particulate filter active regeneration.
HydrocarbonDoserEna	Purging enable of the Hydrocarbon Doser (HCD).
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
DPF Regen.Force Switch *1*2*3*4	Indicates the state of a switch available to the operator that forces diesel particulate filter regeneration. The recommended source should follow the requested function.
DPF Regen.Inhibit Switch *1*2*3*4*	Indicates the state of a switch available to the operator that inhibits diesel particulate filter regeneration. The recommended source should follow the requested function.
Cleaning Allow *1*2*3*4	Please contact local John Deere representation for more information about this command. The recommended source should follow the requested function.
ECU analog outputs (controller's inputs)	
Ash Load Percent	Indicates the ash load percent of diesel particulate filter 1. 100% is the level at which active diesel particulate filter ash service should be performed.
Soot Load Percent	Indicates the soot load percent of diesel particulate filter 1. 100% is the level at which active diesel particulate filter regeneration should be triggered.
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
DPF Act.Reg.ForcedStatus	Value used for Tier4 icon control.
DPF Lamp Command	Value used for Tier4 icon control.
DPF Staus	Indicates the state of the diesel particulate filter regeneration need and urgency.
HEST Lamp Command	Command to control the exhaust system high temperature lamp. This lamp indicates that the exhaust system temperature is high.
Fuel Rail Pressure	Please contact John Deere representative for further information about this value.
Manifold Air Pressure	Please contact John Deere representative for further information about this value.
Actual Torque	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.

Demand Torque	The requested torque output of the engine by the driver.
Engine Demand Torque	The requested torque output of the engine by all dynamic internal inputs, including smoke control, noise control and low and high speed governing.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Remote Accelerator	The ratio of actual position of the remote analog engine speed/torque request input device to the maximum position of the input device. For example, in on-highway vehicles this could be an accelerator control device that is external to the drivers cab or an accelerator that is controlled by a hand.
Desired Operation Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system. Dones from Master unit..
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Coolant Temp	Temperature of liquid found in engine cooling system.
Fuel Temp	Temperature of fuel entering injectors.
Intercooler Temp	Temperature of liquid found in the intercooler located after the turbocharger.
Oil Temp	Temperature of the engine lubricant.
Turbo Oil Temp	Temperature of the turbocharger lubricant.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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 21pin connector	diagnostic connector	Controller
CAN H	V	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	F	F	CAN1 (extension modules/J1939) – CAN COM
CAN L	U	B	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	B	E	N/A
Battery - (negative)	E	D	N/A
Key Switch	G	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

Diagnostic connector layout is on page 16 or here.

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

MAN

ECU Types

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

Engine type explanation

Engine type	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 LE - turbocharged and intercooled engine
Number of cylinders, arrangement	**Meaning**
6 R	R - vertically arranged in-line V - cylinders in 90° V arrangement

Data logger

ECU selection in PC software:

MAN data logger

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	Please contact MAN representative for further information about this value.
Malfunction Lamp	Please contact MAN representative for further information about this value.
Protect Lamp	Please contact MAN representative for further information about this value.
Red Stop Lamp	Please contact MAN representative for further information about this value.
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Oil Temp A	Please contact MAN representative for further information about this value.
Oil Temp B	Please contact MAN representative for further information about this value.
Boost Pressure	Please contact MAN representative for further information about this value.
Oil Pressure A	Please contact MAN representative for further information about this value.
Oil Pressure B	Please contact MAN representative for further information about this value.
Cooling Water	Please contact MAN representative for further information about this value.
Cooling Water 2	Please contact MAN representative for further information about this value.
Exhaust Temp A	Please contact MAN representative for further information about this value.
Exhaust Temp B	Please contact MAN representative for further information about this value.
ECU analog inputs (controller's outputs)	

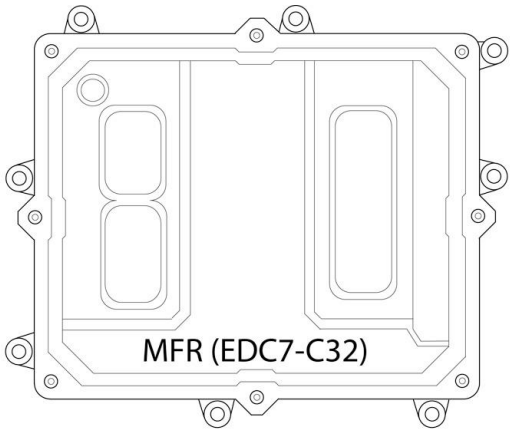
Diagnostic

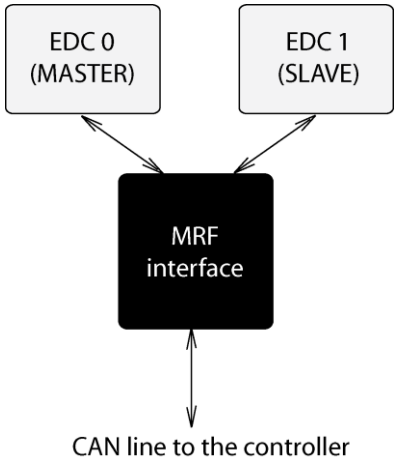
The ECU does not support any diagnostic protocol.

Recommended wiring

Function	Left (L) or Right (R) 48pin connector	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)	L12, 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

EDC Master, EDC Slave and MFR interface system





ECU selection in PC software:

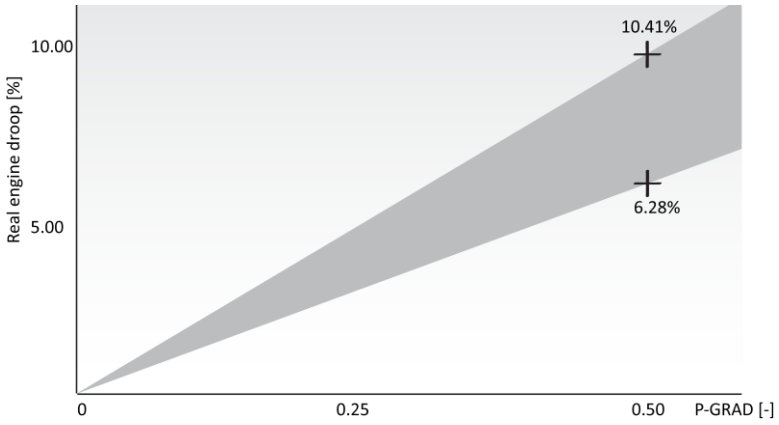
MAN MFR

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Amber Warning Lamp (MFR)	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.
Malfunction Lamp (MFR)	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active. This signal comes from Master ECU.
Protect Lamp (MFR)	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related. This signal comes from Master ECU.
Red Stop Lamp (MFR)	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine. . This signal comes from Master ECU.
Amber Warning Lamp (sl)	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. . This signal comes from Slave ECU.
Malfunction Lamp (sl)	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active. This signal comes from Slave ECU.
Protect Lamp (sl)	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related. This signal comes from Slave ECU.
Red Stop Lamp (sl)	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine. This signal comes from Slave ECU.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop solenoid.
ECU analog outputs (controller's inputs)	

Actual Torque	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.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Fakt UW	For more information about this signal contact the local MAN representative.
Load	For more information about this signal contact the local MAN representative.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Pressure Master	Gage pressure of liquid found in engine cooling system. Dones from Master unit..
Engine Oil Pressure Master	Gage pressure of oil in engine lubrication system as provided by oil pump. Comes from Master unit.
Fuel Del. Pressure Master	Gage pressure of fuel in system as delivered from supply pump to the injection pump. Comes from Mater unit.
Coolant Pressure Slave	Gage pressure of liquid found in engine cooling system.
Engine Oil Pressure Slave	Gage pressure of oil in engine lubrication system as provided by oil pump. Comes from Slave unit.
Fuel Del. Pressure Slave	Gage pressure of fuel in system as delivered from supply pump to the injection pump. Comes from Slave unit.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Coolant level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Water in fuel	Signal which indicates the presence of water in the fuel.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
P-Grad *1*2*3*4*5*6	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 can not be set exactly – it depends on engine. The value lies between MAX and MIN engine droop. The recommended source value is a contstant following the requested function. See the chart below.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
ZDR Parametersatz *1*2*3*4*5*6	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 contstant following the requested function.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here.
Available list of texts of fault codes is here.



NOTE:
Controller ECU PwrRelay output can be used to activate Ignition (Kl.15).

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)

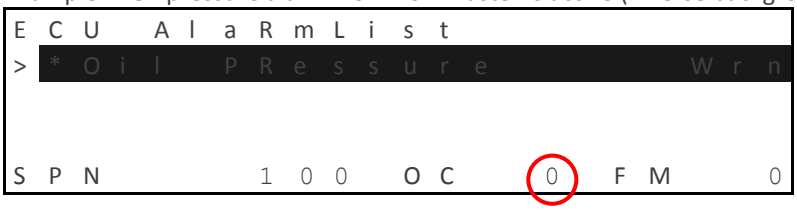
Diagnostic

The controller shows in the alarm list for each fault:

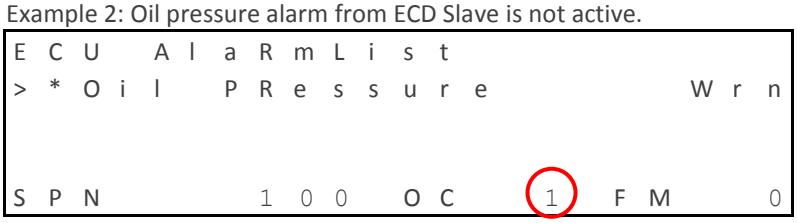
- Text message or fault code number
- SPN number on the bottom row
- OC number on the bottom row which says from where comes this fault:
  - 0 ... EDC Master
  - 1 ... EDC Slave
  - 39 ... MFR
- FMI number in the right bottom corner

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

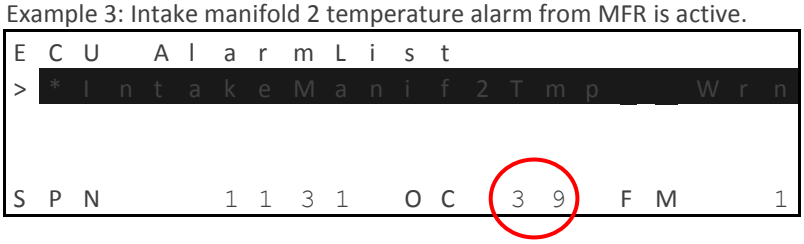
Example 1: Oil pressure alarm from ECD Master is active (inverse background color).



Example 2: Oil pressure alarm from ECD Slave is not active.



Example 3: Intake manifold 2 temperature alarm from MFR is active.



Recommended wiring

Function	ECU 89pin connector	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	Any binary output configured as ECU PwrRelay
Analog Speed Control	?	N/A	SG OUT
Analog Speed Control	?	N/A	SG COM

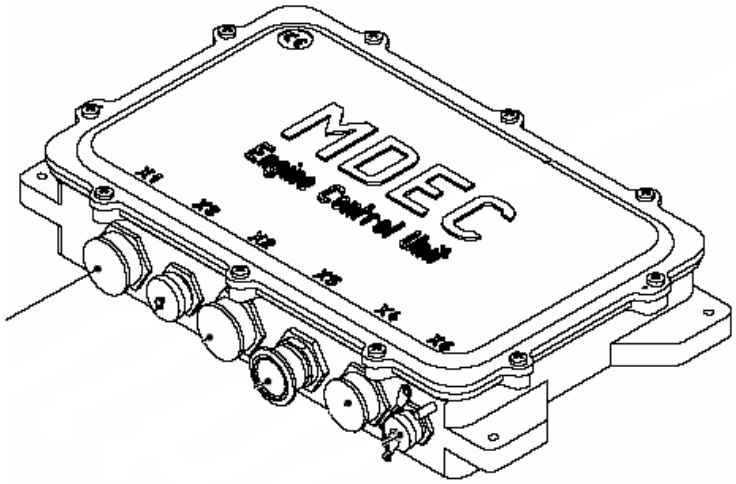
Diagnostic connector layout is on page 16 or here.

MTU

ECU Types

ECU Type	Engine Type
MDEC ADEC & SAM	Series 2000, 4000
ADEC & SAM ECU8 (ADEC) & SMART Connect	Series 1600
DDEC10	Series 4R1000, 6R1000, 6R1100, 6R1300, 6R1500

MDEC



Configuration

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.

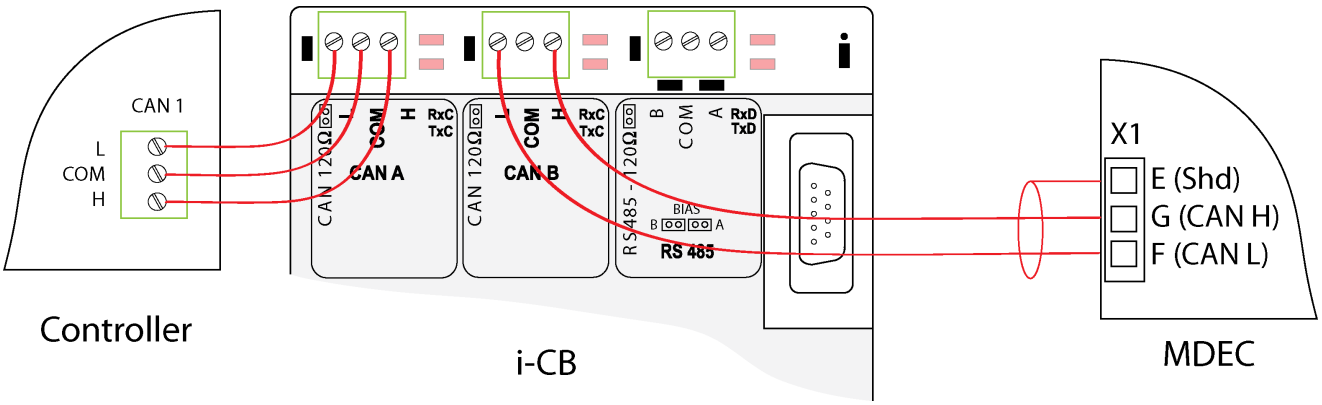
ECU selection in PC software:

MTU MDEC
Legacy I-CB/MTU-Diesel / ICB module + I/O modules

Available commands

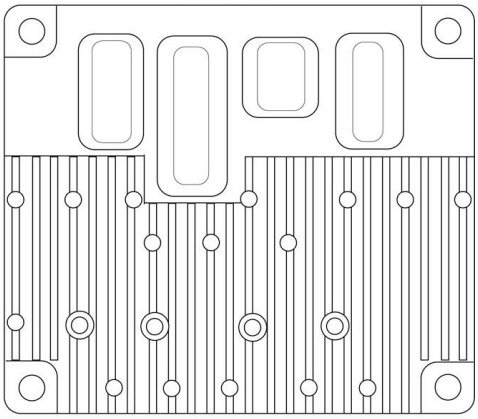
For more information about available values and signals, please refer to I-CB manual or ICBEdit PC software.

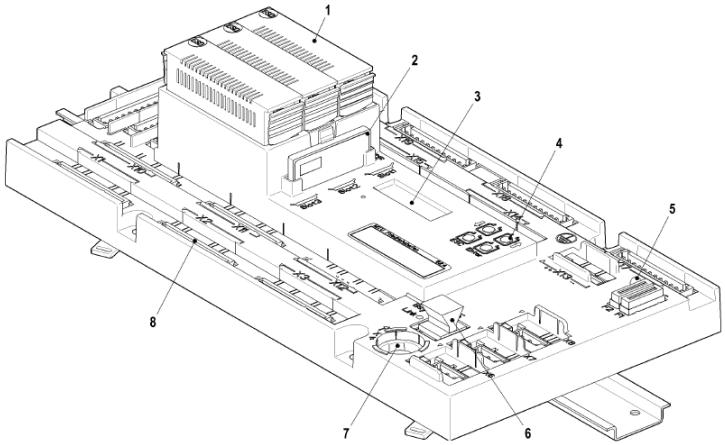
Recommended wiring



WARNING!
Please check that CAN bus terminating resistors or appropriate jumpers are connected.

ADEC (ECU7) & SAM





NOTE:
For communication with the ComAp controller the CCB2 card has to be present and J1939 has to be configured using the minidialog.

WARNING!
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)!

ECU selection in PC software:

MTU ADEC J1939 or MTU ADEC J1939 P-engines

Available signals for MTU ADEC J1939

ECU binary outputs (controller's inputs)	
AL ECU Defect	For more information about this signal contact local MTU representative. PV index = 116
AL Speed Demand Defect	For more information about this signal contact local MTU representative. PV index = 118
HI Power Supply	Power supply voltage over the limit. Protection Level1. PV index = 123
HI T-Coolant	Coolant temperature over the limit. Protection Level1. PV index = 129
HI T-ECU	Temperature of the ECU over the limit. Protection Level1. PV index = 170
HI T-Exhaust A	Temperature of the exhaust A-side over the limit. Protection Level1. PV index = 500
HI T-Exhaust B	Temperature of the exhaust B-side over the limit. Protection Level1. PV index = 510
HI T-Charge Air	Temperature of the turbocharger over the limit. Protection Level1. PV index = 133
HI T-Lube Oil	Temperature of the engine lubes oil over the limit. Protection Level1. PV index = 143
HIHI ECU Power Supp Volt	Power supply voltage over the limit. Protection Level2. PV index = 271
HIHI T-Coolant	Coolant temperature over the limit. Protection Level2. PV index = 129
HIHI T-Charge Air	Temperature of the turbocharger over the limit. Protection Level2. PV index = 168
HIHI T-Lube Oil	Temperature of the engine lubes oil over the limit. Protection Level2. PV index = 144
LO Coolant Level	Level of the coolant under the limit. Protection Level1. PV index = 55
LO P-Lube Oil	Pressure of the engine lubes oil under the limit. Protection Level1. PV index = 29
LO Power Supply	Power supply voltage under the limit. Protection Level1. PV index = 122
LOLO ECU Power Supp Volt	Power supply voltage under the limit. Protection Level2. PV index = 270
LOLO P-Lube Oil	Pressure of the engine lubes oil under the limit. Protection Level1. PV index = 30
SS Engine Speed Low	For more information about this signal contact local MTU representative. PV index = 177

HI T-Fuel	Fuel temperature over the limit. Protection Level1. PV index = 299
Override Feedback for ECU	For more information about this signal contact local MTU representative. PV index = 66
SS Overspeed	For more information about this signal contact local MTU representative. PV index = 3
Cylinder Cutout	For more information about this signal contact local MTU representative. PV index = 74
Engine Running	For more information about this signal contact local MTU representative. PV index = 68
Ext Stop Activated	For more information about this signal contact local MTU representative. PV index = 1
Feedback CAN Mode Switch	For more information about this signal contact local MTU representative.
Feedback Decrease Speed	For more information about this signal contact local MTU representative. PV index = 19
Feedback Increase Speed	For more information about this signal contact local MTU representative. PV index = 18
Load Generator ON	For more information about this signal contact local MTU representative. PV index = 78
Preaheat Temp. Not Reached	For more information about this signal contact local MTU representative. PV index = 89
Priming Pump On	For more information about this signal contact local MTU representative. PV index = 301
Speed Demand Fail Mode	For more information about this signal contact local MTU representative. PV index = 13
AL Idle Speed Not Reached	For more information about this signal contact local MTU representative. PV index = 241
AL Prelubrication Fault	For more information about this signal contact local MTU representative.
AL Runup Speed Not Reached	For more information about this signal contact local MTU representative.
AL Start Speed Not Reached	For more information about this signal contact local MTU representative. PV index = 239
HI Level Day-Tank	For more information about this signal contact local MTU representative. PV index = 353
HI Level Holding-Tank	For more information about this signal contact local MTU representative. PV index = 363
HI Pressure 1	For more information about this signal contact local MTU representative. PV index = 520
HI Pressure 2	For more information about this signal contact local MTU representative. PV index = 530
HI T-Ambient	Ambient temperature over the limit. Protection Level1. PV index = 580
HI T-Coolant Intercooler	Intercooler temperature over the limit. Protection Level1. PV index = 139
HI T-Winding 1	Winding1 temperature over the limit. Protection Level1. PV index = 540
HI T-Winding 2	Winding2 temperature over the limit. Protection Level1. PV index = 550
HI T-Winding 3	Winding3 temperature over the limit. Protection Level1. PV index = 560
LO Intercooler Coolant Level	Level of the intercoolant under the limit. Protection Level1. PV index = 99
LO Level Day-Tank	For more information about this signal contact local MTU representative. PV index = 354
LO Level Holding-Tank	For more information about this signal contact local MTU representative. PV index = 364
T-Generator Warning	For more information about this signal contact local MTU representative. PV index = 241
AL Water In Fuel Prefilter 1	For more information about this signal contact local MTU representative. PV index = 590
AL Water In Fuel Prefilter 2	For more information about this signal contact local MTU representative. PV index = 600
Automatic Shutdown	For more information about this signal contact local MTU representative. PV index = 213
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
50/60Hz *1*2*3*4*5	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.
Alarm Reset *1*2*3*4	The command for Reset ECU Alarms. The recommended source value for this command is FltResButnEcho.
Disable CylinderCutOut 2	For more information about this signal contact local MTU representative.
Engine Start *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Governor ParameterSet Select.	For more information about this signal contact local MTU representative.
Intermittent Oil Priming	For more information about this signal contact local MTU representative.
Mode Switch	For more information about this signal contact local MTU representative.
Request Test Overspeed	For more information about this signal contact local MTU representative.
Speed Setting Limit Active	For more information about this signal contact local MTU representative.
Override *1*2*3*4	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 *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Pressure 1	Pressure measured by auxiliary pressure sensor #1.
Pressure 2	Pressure measured by auxiliary pressure sensor #2.
T-Ambient	Temperature of air surrounding vehicle.
Failure Codes	Number of fault codes. If there is more than 1 fault code, the "Failure Codes" shows are fault codes step by step.
Actual Droop	For more information about this signal contact local MTU representative.
Level Day-Tank	For more information about this signal contact local MTU representative.
Level Holding-Tank	For more information about this signal contact local MTU representative.
T-Winding 1	Temperature of the windings inside the alternator.
T-Winding 2	Temperature of the windings inside the alternator.
T-Winding 3	Temperature of the windings inside the alternator.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Speed	The maximum governed rotational velocity of the engine crankshaft under full load.
Rated Power	For more information about this signal contact local MTU representative.
P-Fuel	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
P-Lube Oil	Gage pressure of oil in engine lubrication system as provided by oil pump.
T-Exhaust A (20V4000 only)	Temperature of combustion exhausts leaving the engine. Measured on side – A.
T-Exhaust B (20V4000 only)	Temperature of combustion exhausts leaving the engine. Measured on side – B.
T-Coolant	Temperature of liquid found in engine cooling system.
T-Coolant Intercooler	Temperature of liquid found in the intercooler located after the turbocharger.
T-Fuel	Temperature of fuel entering injectors.
T-Lube Oil	Temperature of the engine lubricant.
T-ECU	Temperature of the engine electronic control unit.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
P-Charge Air	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Speed Demand Source	For more information about this signal contact local MTU representative.
Requested Torque	For more information about this signal contact local MTU representative.
Engine Optimized	For more information about this signal contact local MTU representative.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Trip Avg Fuel Rate	Average fuel rate, equal to trip fuel divided by trip time while the engine speed is above zero, since the last trip reset. This includes idle, PTO (both moving and non-moving) and drive operation but excludes ignition-on time while the engine speed is at zero rpm.
Start Process 1	For service purpose only!
Start Process 2	For service purpose only!
Effective Speed Demand	For more information about this signal contact local MTU representative.
Selected Speed Demand	For more information about this signal contact local MTU representative.
Fdb Spd Demand ana.CAN	For more information about this signal contact local MTU representative.
Fdb Spd Demand analog	For more information about this signal contact local MTU representative.
T-Charge Air	Temperature of the air exiting the turbocharger 1 compressor outlet.
ETC Speed Turbo Charger 1	Rotational velocity of rotor in the turbocharger.
ECU Power Supply Voltage	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Engine alternate droop accelerator 1 select *1*2*3*4*5*6	For more information about this signal contact local MTU representative.
Speed Demand Switches *1*2*3*4*5*6	For more information about this signal contact local MTU representative.
Speed Demand Analog	This is the engine speed which the engine is expected to operate at if the speed control mode is active

*1*2*3*4*5*6	or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Available signals for MTU ADEC J1939 P-engines

ECU binary outputs (controller's inputs)	
AL ECU Defect	For more information about this signal contact local MTU representative.
HI ETC Speed (Turbo Charger 1)	For more information about this signal contact local MTU representative.
HI P-Fuel (Common Rail)	For more information about this signal contact local MTU representative.
HI P-Oil Filter Difference	For more information about this signal contact local MTU representative.
HI Power Supply	For more information about this signal contact local MTU representative.
HI T-Coolant	For more information about this signal contact local MTU representative.
HI T-ECU	For more information about this signal contact local MTU representative.
HI T-Exhaust A	For more information about this signal contact local MTU representative.
HI T-Exhaust B	For more information about this signal contact local MTU representative.
HI T-Charge Air	For more information about this signal contact local MTU representative.
HI T-Lube Oil	For more information about this signal contact local MTU representative.
HIHI ECU Power Supp Volt	For more information about this signal contact local MTU representative.
LO P-Fuel (Common Rail)	For more information about this signal contact local MTU representative.
LO P-Charge Air A-Site	For more information about this signal contact local MTU representative.
LO P-Lube Oil (ECU)	For more information about this signal contact local MTU representative.
LO Power Supply	For more information about this signal contact local MTU representative.
LOLO ECU Power Supp Volt	For more information about this signal contact local MTU representative.
SS Engine Speed Low	For more information about this signal contact local MTU representative.
SS ETC (Turbo Charger 1)	For more information about this signal contact local MTU representative.
SS P-Lube Oil (ECU)	For more information about this signal contact local MTU representative.
SS T-Coolant	For more information about this signal contact local MTU representative.
SS T-Fuel	For more information about this signal contact local MTU representative.
SS T-Charge Air	For more information about this signal contact local MTU representative.
SS T-Lube Oil	For more information about this signal contact local MTU representative.
Combined Alarm	For more information about this signal contact local MTU representative.
HI T-Fuel	For more information about this signal contact local MTU representative.
Override Feedback for ECU	For more information about this signal contact local MTU representative.
SS Overspeed	For more information about this signal contact local MTU representative.
Engine Running	For more information about this signal contact local MTU representative.
HI P-Crankcase	For more information about this signal contact local MTU representative.
HI T-Coolant Intercooler	For more information about this signal contact local MTU representative.
LO P-Coolant After Pump	For more information about this signal contact local MTU representative.
SS P-Coolant After Pump	For more information about this signal contact local MTU representative.
SS P-Crankcase	For more information about this signal contact local MTU representative.
AL Barring Gear Engaged	For more information about this signal contact local MTU representative.
AL SDAF Closed	For more information about this signal contact local MTU representative.
BO Hi P-Diff. Fuel Prefilter	For more information about this signal contact local MTU representative.
Coolant Level Charge Air NT	For more information about this signal contact local MTU representative.
Coolant Level Switch HT	For more information about this signal contact local MTU representative.
Crankshaft (EMU)	For more information about this signal contact local MTU representative.
P-DiffFuel ECU	For more information about this signal contact local MTU representative.
SS P-Lube Oil Red (EMU)	For more information about this signal contact local MTU representative.
SS T-Coolant Intercooler	For more information about this signal contact local MTU representative.
SS T-Coolant water (EMU)	For more information about this signal contact local MTU representative.
SS T-Exhaust Combined A	For more information about this signal contact local MTU representative.
SS T-Exhaust Combined B	For more information about this signal contact local MTU representative.

TD P-Lube Oil	For more information about this signal contact local MTU representative.
TD T-Coolant	For more information about this signal contact local MTU representative.
HI Single cylinder A1	For more information about this signal contact local MTU representative.
HI Single cylinder A10	For more information about this signal contact local MTU representative.
HI Single cylinder A2	For more information about this signal contact local MTU representative.
HI Single cylinder A3	For more information about this signal contact local MTU representative.
HI Single cylinder A4	For more information about this signal contact local MTU representative.
HI Single cylinder A5	For more information about this signal contact local MTU representative.
HI Single cylinder A6	For more information about this signal contact local MTU representative.
HI Single cylinder A7	For more information about this signal contact local MTU representative.
HI Single cylinder A8	For more information about this signal contact local MTU representative.
HI Single cylinder A9	For more information about this signal contact local MTU representative.
HI Single cylinder B1	For more information about this signal contact local MTU representative.
HI Single cylinder B10	For more information about this signal contact local MTU representative.
HI Single cylinder B2	For more information about this signal contact local MTU representative.
HI Single cylinder B3	For more information about this signal contact local MTU representative.
HI Single cylinder B4	For more information about this signal contact local MTU representative.
HI Single cylinder B5	For more information about this signal contact local MTU representative.
HI Single cylinder B6	For more information about this signal contact local MTU representative.
HI Single cylinder B7	For more information about this signal contact local MTU representative.
HI Single cylinder B8	For more information about this signal contact local MTU representative.
HI Single cylinder B9	For more information about this signal contact local MTU representative.
AL Fuel Leakage	For more information about this signal contact local MTU representative.
EMU Emergency Stop-Open Circuit	For more information about this signal contact local MTU representative.
WB SaSy Emergency Stop Output	For more information about this signal contact local MTU representative.
Air Flap A wire break	For more information about this signal contact local MTU representative.
Air Flap B wire break	For more information about this signal contact local MTU representative.
ASO Voltage to Lo on Relay	For more information about this signal contact local MTU representative.
ASO Watchdog Relay	For more information about this signal contact local MTU representative.
ASO Flap A Feedback Contact	For more information about this signal contact local MTU representative.
ASO Flap B Feedback Contact	For more information about this signal contact local MTU representative.
Emergency Stop Input 2	For more information about this signal contact local MTU representative.
Emergency Stop Input 3	For more information about this signal contact local MTU representative.
Emergency Stop Input 4	For more information about this signal contact local MTU representative.
Water In Fuel Indicator	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
50/60Hz *1*2*3*4*5	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.
Alarm Reset *1*2*3*4	The command for Reset ECU Alarms. The recommended source value for this command is FltResButnEcho.
Disable CylinderCutOut 2	For more information about this signal contact local MTU representative.
Engine Start *1*2*3*4	The command used for engine running. The recommended source value for this command is Starter.
Governor ParameterSet Select.	For more information about this signal contact local MTU representative.
Intermittent Oil Priming	For more information about this signal contact local MTU representative.
Lamp Test	For more information about this signal contact local MTU representative.
Mode Switch	For more information about this signal contact local MTU representative.
Priming Engine Start	For more information about this signal contact local MTU representative.
Request Test Overspeed	For more information about this signal contact local MTU representative.
Speed Decrease	For more information about this signal contact local MTU representative.
Speed Increase	For more information about this signal contact local MTU representative.

Speed Setting Limit Active	For more information about this signal contact local MTU representative.
Override *1*2*3*4*5	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 *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
Starter Reset	For more information about this signal contact local MTU representative.
ECU analog outputs (controller's inputs)	
Auxiliary Temperature 2	Temperature measured by auxiliary temperature sensor 2.
P-Fuel Before Filter	Pressure measured by auxiliary pressure sensor #1.
T-Coolant water (EMU) AUX	For more information about this signal contact local MTU representative.
Engine Speed Camshaft	For more information about this signal contact local MTU representative.
Engine Speed Crankshaft	For more information about this signal contact local MTU representative.
Failure Codes	For more information about this signal contact local MTU representative.
T-Bearing DE	Temperature of the bearing inside the alternator.
T-Bearing NDE	Temperature of the bearing inside the alternator.
T-Winding 1	Temperature of the windings inside the alternator.
T-Winding 2	Temperature of the windings inside the alternator.
T-Winding 3	Temperature of the windings inside the alternator.
P-Coolant Water Intercooler	Gage pressure of coolant found in the intercooler which is located after the turbocharger.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
P-Coolant Water After Pump	Gage pressure of liquid found in engine cooling system.
P-Crankcase	Gage pressure inside engine crankcase.
P-Fuel	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
P-Lube Oil	Gage pressure of oil in engine lubrication system as provided by oil pump.
P-Lube Oil Before Filter	Gage pressure of the engine oil before the oil reaches the oil filter.
Single Cylinder A1 - Single Cylinder A10	Temperature at the cylinder exhausts port of the engine.
Single Cylinder B1 - Single Cylinder B10	Temperature at the cylinder exhausts port of the engine.
T-Exhaust A	Temperature of combustion exhaust within the left engine exhaust manifold.
T-Exhaust B	Temperature of combustion exhaust within the right engine exhaust manifold.
T-Coolant	Temperature of liquid found in engine cooling system.
T-Coolant Intercooler	Temperature of liquid found in the intercooler located after the turbocharger.
T-Fuel	Temperature of fuel of the first fuel control system.
T-Lube Oil	Temperature of the engine lubricant.
T-ECU	For more information about this signal contact local MTU representative.
P-Fuel After Filter	For more information about this signal contact local MTU representative.
Crankshaft (EMU) (Engine Speed)	For more information about this signal contact local MTU representative.
P-Charge Air	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
T-Intake Air	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Trip Avg Fuel Rate	Fuel consumed during all or part of a journey.
Start Process 1	For more information about this signal contact local MTU representative.
Start Process 2	For more information about this signal contact local MTU representative.
T-Charge Air	Temperature of the air exiting the turbocharger compressor outlet.
Transmission Oil Pressure	Gage pressure of lubrication fluid in transmission, measured after pump.
ETC Speed Turbo Charger 1	For more information about this signal contact local MTU representative.
ECU analog inputs (controller's outputs)	
Load Signal	For more information about this signal contact local MTU representative.

Engine alternate droop accelerator 1 select	For more information about this signal contact local MTU representative.
Rating Switch 1	0 – indicates maximum power fueling 1 – indicates alternate power fueling 1 2 – indicates alternate power fueling 2 3 – indicates alternate power fueling 3 4 - 253 - indicates alternate power fueling 4 thru 253 254 – Error condition 255 – Not available
Speed Demand Switches	For more information about this signal contact local MTU representative.
Speed Demand Analog *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.
More about a constant for ECU controller is on page 17 or here.

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)

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 Buton - Indicator due to the activation of certain control keys

Protection Level	Protection type
Protection Level1	Warning
Protection Level2	Shutdown

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

NOTE:
Automatically it is 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.

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 for power supply

Function	ADEC X3 connector	SAM X13 connector
+24VDC	3,6,9,12,13	1,2
GND	1,4,7,10	3,4

Recommended wiring (SAM with CCP2 card)

Function	SAM module	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	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 CCP2 card – marine version)

Function	SAM module	diagnostic connector	Controller
CAN H	X8 – 3	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	X8 – 1	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	X8 – 2	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	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

Diagnostic connector layout is on page 16 or here.

DDEC10

ECU selection in PC software:

MTU DDEC10

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
DPF Active Regeneration Inhibited Due to Accelerator Pedal Off Idle	Indicates the state of diesel particulate filter active regeneration inhibition due to the accelerator pedal being off idle.
DPF Active Regeneration Inhibited Due to Clutch Disengaged	Indicates the state of diesel particulate filter active regeneration inhibition due to the clutch being disengaged.
DPF Active Regeneration Inhibited Due to Inhibit Switch	Indicates the state of diesel particulate filter active regeneration inhibition due to the Diesel Particulate Filter Regeneration Inhibit Switch.
DPF Active Regeneration Inhibited Due to Low Exhaust Gas Temperature	Indicates the state of diesel particulate filter active regeneration inhibition due to the exhaust gas temperature being too low.
DPF Active Regeneration Inhibited Due to Parking Brake Not Set	Indicates the state of diesel particulate filter active regeneration inhibition due to the parking brake being not set.
DPF Active Regeneration Inhibited Due to PTO Active	Indicates the state of diesel particulate filter active regeneration inhibition due to the PTO being active.
DPF Active Regeneration Inhibited Due to System Fault Active	Indicates the state of diesel particulate filter active regeneration inhibition due to a system fault being active.
DPF Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed	Indicates the state of diesel particulate filter active regeneration inhibition due to the vehicle speed being above an allowed limit.
DPF Active Regeneration Inhibited Status	Indicates the state of diesel particulate filter active regeneration inhibition.
DPF Active Regeneration Status	Indicates the state of diesel particulate filter active regeneration.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water In Fuel Indicator	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
DPF Regeneration Force Switch *1*2*3*4*5*6	For more information about this signal contact local MTU representative.
DPF Regeneration Inhibit Switch *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.

ECU analog outputs (controller's inputs)	
Diesel Exhaust Fluid Concentration	A measure of the concentration of urea in water.
Diesel Exhaust Fluid Temperature 2	Temperature of the diesel exhausts fluid at the device measuring diesel exhaust fluid quality.
SCR Catalyst Intake Gas Temperature	Temperature of engine combustion exhausts entering the SCR catalyst in exhaust bank 1.
SCR Catalyst Outlet Gas Temperature	Temperature of engine combustion exhausts leaving the SCR catalyst exhaust in exhaust bank 1.
Turbocharger Wastegate Valve Position	The position of the turbocharger wastegate valve (not the electronic wastegate control valve).
DPF Intake Pressure 1	The diesel particulate filter intake gage pressure.
DPF Outlet Pressure 1	The diesel particulate filter outlet gage pressure.
Intake NOx	The amount of combined NO and NO2 in the exhaust entering the aftertreatment system.
DPF Intake Gas Temperature	Temperature of engine combustion exhausts entering the diesel particulate filter in exhaust bank 1.
Exhaust Gas Temperature 1	The reading from the exhaust gas temperature sensor located farthest upstream in the aftertreatment system.
DPF Differential Pressure	Exhaust differential pressure measured between the intake and exhaust of a diesel particulate filter.
Outlet NOx	The amount of combined NO and NO2 in the exhaust exiting the aftertreatment system.
DPF Outlet Gas Temperature	Temperature of engine combustion exhausts leaving the diesel particulate filter exhaust in exhaust bank 1.
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
Diesel Exhaust Fluid Tank 1 Heater	Percentage of heating applied to the aftertreatment diesel exhaust fluid tank heater.
Diesel Exhaust Fluid Tank 1 Temperature	Temperature of the diesel exhausts fluid in the storage tank.
SCR Operator Inducement Severity	The severity of operator inducement for anomalies with the SCR system, such as tampering, low DEF quality, and DEF tank level.
DPF Lamp Command	Value used for Tier4 icon control.
Exhaust System High Temperature Lamp Command	Command to control the exhaust system high temperature lamp.
Engine Speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Torque	The calculated output torque of the engine.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Remote Accelerator Pedal Position	The ratio of actual position of the remote analog engine speed/torque request input device.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated Power	For more information about this signal contact local MTU representative.
Rated Speed	For more information about this signal contact local MTU representative.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.

Injector Metering Rail Pressure	The gage pressure of fuel in the primary, or first, metering rail as delivered from the supply pump to the injector metering intake.
Coolant Temperature	Temperature of liquid found in engine cooling system.
Fuel Temperature	Temperature of the fuel.
Intercooler Temperature	Temperature of liquid found in the intercooler located after the turbocharger.
Oil Temperature	Temperature of the engine lubricant.
ECU Temperature	Temperature of the engine electronic control unit.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Exhaust Gas Temperature	Temperature of combustion exhausts leaving the engine.
Intake Manifold Pressure	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 Manifold Temperature	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle Valve Position	For more information about this signal contact local MTU representative
Turbocharger 1 Speed	Rotational velocity of rotor in the turbocharger.
Battery Potential	Measured electrical potential of the battery.
Keyswitch Battery Potential	Battery potential measured at the input of the electronic control unit.
ECU analog inputs (controller's outputs)	
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here.

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)

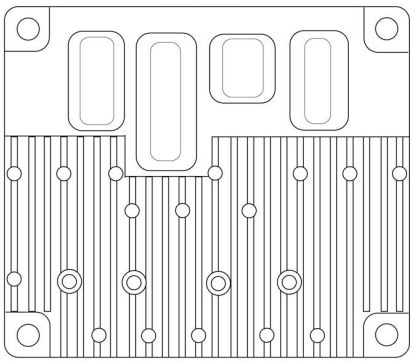
Recommended wiring

Function	Unit connectors ST2(B) or ST3(C)	diagnostic connector	Controller
CAN H	ST2-18	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	ST2-17	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	ST2-16	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	ST2-01	N/A	N/A
Battery - (negative)	ST2-02	N/A	N/A
Key Switch	ST2-03	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	ST3-04	N/A	SG OUT
Analog Speed Control	ST3-02	N/A	SG COM

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

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

ADEC (ECU7)



Configuration

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.

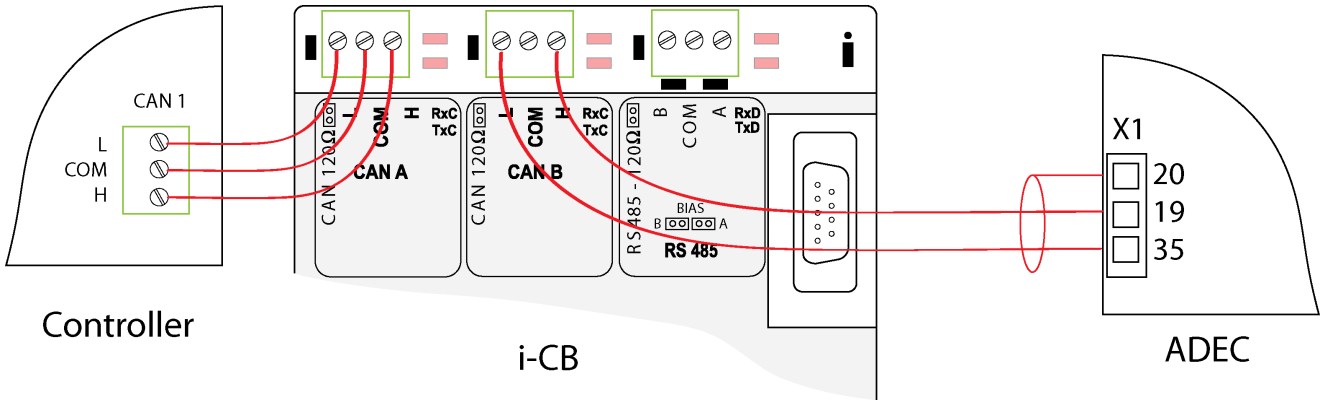
ECU selection in PC software:

Legacy I-CB/MTU-Diesel / ICB module + I/O modules

Available commands

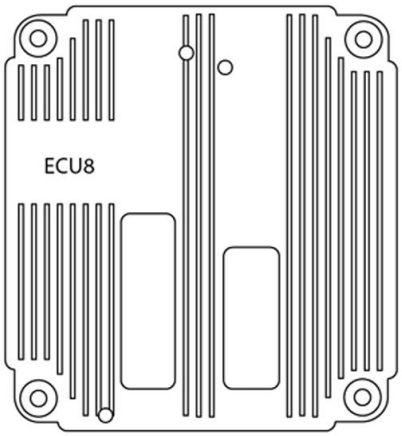
For more information about available values and signals, please refer to I-CB manual or ICBEdit PC software.

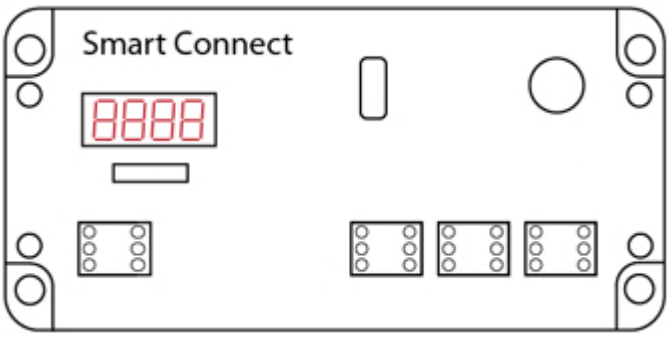
Recommended wiring



WARNING!
Please check that CAN bus terminating resistors or appropriate jumpers are connected.

ECU8 and SMARTConnect





ECU selection in PC software:

MTU SMART Connect

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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 Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Coolant Pre-heated State	For more information about this signal contact local MTU representative.
Engine Cylinder Cutoff	Status of "global" cylinder cutoff. This means there is at least one cylinder cut off.
External Stop State	For more information about this signal contact local MTU representative.
Load Generator Status	For more information about this signal contact local MTU representative.
MTU Engine Running State	For more information about this signal contact local MTU representative.
Safety&ProtectionOverStat	For more information about this signal contact local MTU representative.
Oper Speed Down Switch Fdb	For more information about this signal contact local MTU representative.
Oper. Speed Up Switch Fdb	For more information about this signal contact local MTU representative.
Speed Demand Fail Mode	For more information about this signal contact local MTU representative.
EPS Engine Shutdown	For more information about this signal contact local MTU representative.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
MTU Req Speed Limit Switch	For more information about this signal contact local MTU representative.
Oper. Speed Down Switch	For more information about this signal contact local MTU representative.
Operating Speed Up Switch	For more information about this signal contact local MTU representative.
DisableEngCyl CutoffCmd2	For more information about this signal contact local MTU representative.
Engine Overspeed Test Cmd	For more information about this signal contact local MTU representative.
Engine Start Command *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop Command *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
EngSafety&ProtOverrideCmd *1*2*3*4	Overrides Engine Safety System and Engine Protection System ("Limp home switch"). The recommended source value for this command is Logical 0.

EngSpdGovernor ParamSwitch	For more information about this signal contact local MTU representative.
IntermittentOil PrimingCmd	For more information about this signal contact local MTU representative.
Trip Group 1	For more information about this signal contact local MTU representative.
ECU analog outputs (controller's inputs)	
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated Power	For more information about this signal contact local MTU representative.
Rated Speed	For more information about this signal contact local MTU representative.
Engine Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
T-Lube Oil	Temperature of the engine lubricant.
ECU Temperature	Temperature of the engine electronic control unit.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
P-Charge Air	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Abs Press	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.
Trip Fuel	Fuel consumed during all or part of a journey.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Trip Avg Fuel Rate	Fuel consumed during all or part of a journey.
MTU Requested Abs. Torque	For more information about this signal contact local MTU representative.
Current Speed Demand src	For more information about this signal contact local MTU representative.
Demanded Operating Speed	For more information about this signal contact local MTU representative.
Speed Demand Analog In fdb	For more information about this signal contact local MTU representative.
Speed Demand CAN fdb	For more information about this signal contact local MTU representative.
Actual Droop	For more information about this signal contact local MTU representative.
MTU Error Codes	For more information about this signal contact local MTU representative.
Keyswitch Battery Voltage	For more information about this signal contact local MTU representative.
ECU analog inputs (controller's outputs)	
Frequency Selection *1*2*3*4*5	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 contstant following the requested function.
Speed Demand Switches	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 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)
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active

*1*2*3*4*5*6	or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here.

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)

Frequency Selection	Source Value
50 Hz	0
60 Hz	1
Reserved	2 - 5
Error	6
Do not care	7

Smart module DIP switches adjustment

1	2	3	4	5	6	7	8
Speed demand			Droop (0/4%)	50/60Hz	J1939/CANOpen	N/A	N/A
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**	
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 by done via DiaSys at the ECU.
2	010	ECU analogue relative	The analogoue speed demand controlled over analogue input directly at the ECU. Settings can by done via DiaSys at the ECU. 0VDC = -100RPM 5VDC = +100RPM
3	011	ECU analogue relative	The analogoue speed demand controlled over analogue input directly at the ECU. Settings can by done via DiaSys at the ECU. 0VDC = -100RPM 10VDC = +100RPM
4	100	ECU analogue relative	The analogoue 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

NOTE:
Please, notice that this wiring is valid for the engines where SMART CAN1 is configured for MCS5 protocol (MTU proprietary) and CAN2 is configured for J1939 protocol. This configuration is going to be available on 1600 series engines since May 2011.

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

Function	SMART connector	diagnostic connector	Controller
CAN H	X4 – 1	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	X4 – 3	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	X4 – 2	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	X1 – 2	N/A	N/A

Battery - (negative)	X1 – 3	N/A	N/A
Key Switch	?	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

Ignition (switched by K1)

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

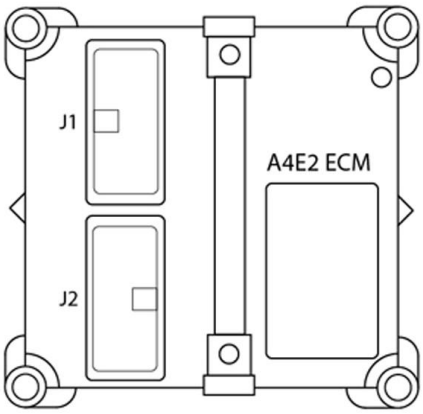
Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

Perkins

ECU Types

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

1100 series



ECU selection in PC software:

Perkins ECM

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Alarm Reset *4	For more information about this signal contact local Perkins representative.
Engine Start *4	For more information about this signal contact local Perkins representative.
Override *4	For more information about this signal contact local Perkins representative.
Stop Request	The command for normal stopping of the engine. The recommended source value for this command is

*1*2*3*4*5*6	Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated engine speed	For more information about this signal contact local Perkins representative.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Engine alternate droop accelerator 1 select	For more information about this signal contact local Perkins representative.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

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 for A4E1

Function	ECU connector	diagnostic connector	Controller
CAN H	52	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	61	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	56,57	A	N/A

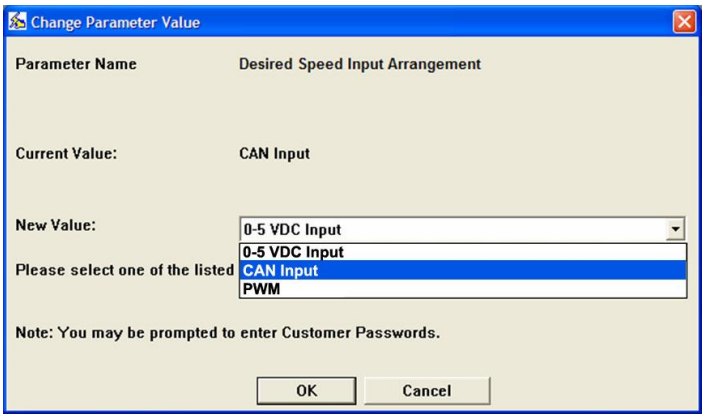
Battery - (negative)	68,69	B	N/A
Key Switch	70	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	25	N/A	SG OUT
Analog Speed Control	44	N/A	SG COM

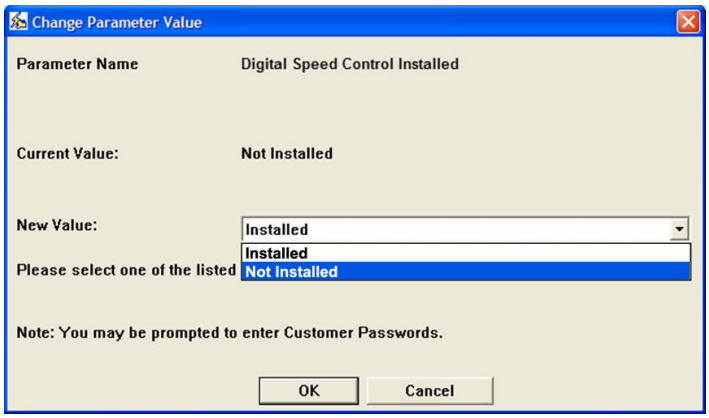
Recommended wiring for A4E2

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

Diagnostic connector layout is on page 16 or here.

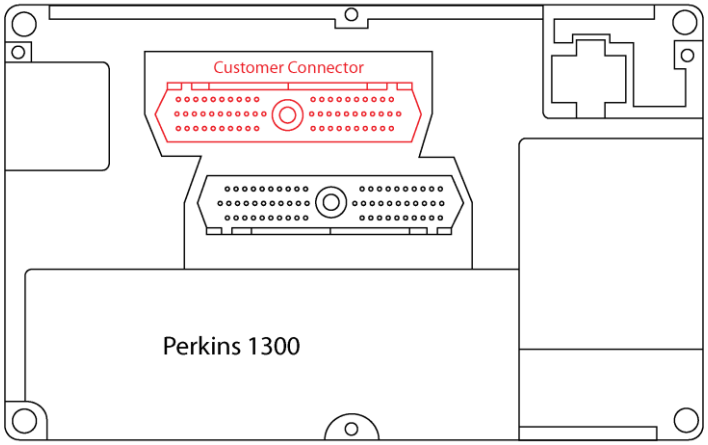
NOTE:
To enable speed control over CAN bus set Desired Speed Input Arrangement to "CAN Input" and Digital Speed Control Installed to "Not Installed" in Perkins EST program.





Diagnostic connector layout is on page 16 or here.

1300 series



NOTE:
To enable speed control over the CAN bus, order the engine with load sharing option. Speed control over the datalink is supported by the engine manufactured since 2003.

ECU selection in PC software:

Perkins ECM Or Perkins 1300 (option) – no speed control

Available signals – Perkins ECM

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Alarm Reset *4	For more information about this signal contact local Perkins representative.
Engine Start *4	For more information about this signal contact local Perkins representative.
Override *4	For more information about this signal contact local Perkins representative.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands

	from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated engine speed	For more information about this signal contact local Perkins representative.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Engine alternate droop accelerator 1 select	For more information about this signal contact local Perkins representative.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLiteNT *3 – InteliDrive Lite *4 – InteliCompactNT *5 – InteliNano *6 –InteliDrive Nano

Available signals – Perkins 1300

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated engine speed	For more information about this signal contact local Perkins representative.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.

Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *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 for 1300 unit

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

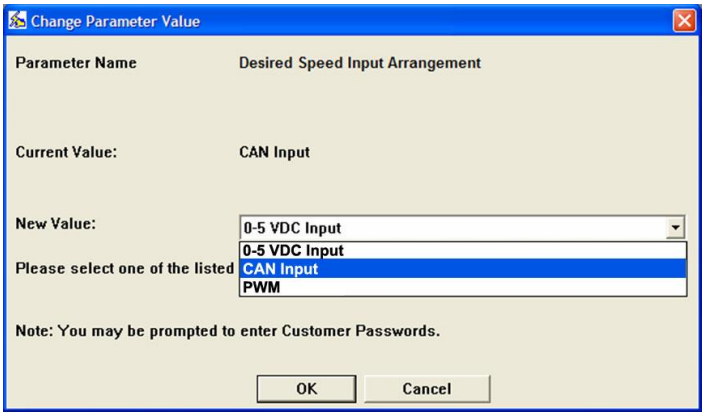
Recommended wiring for CAT unit

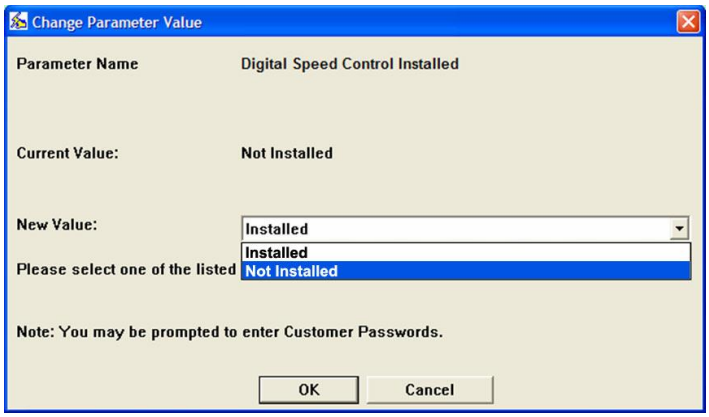
Function	ECU J1 21-pin connector	diagnostic connector	Controller
CAN H	20	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	22	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	21	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	7,8,15,16	A	N/A
Battery - (negative)	1,2,3,9,10	B	N/A
Key Switch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

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

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

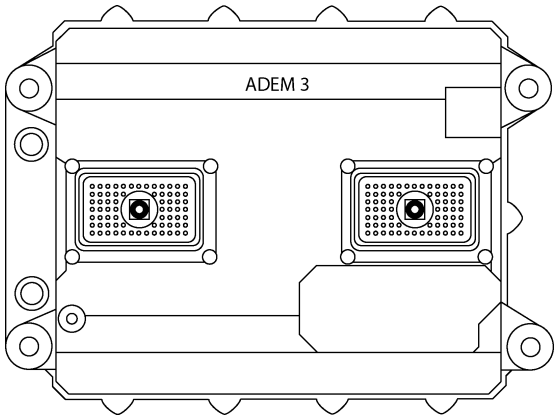
NOTE:
To enable speed control over CAN bus set Desired Speed Input Arrangement to "CAN Input" and Digital Speed Control Installed to "Not Installed" in Perkins EST program.

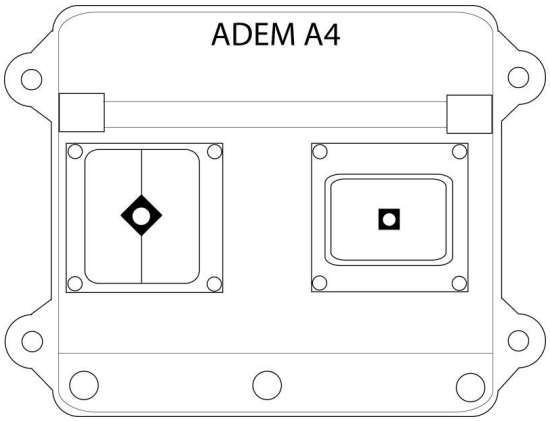




Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

2300, 2500, 2800 series





ECU selection in PC software:

Perkins ECM

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Alarm Reset *4	For more information about this signal contact local Perkins representative.
Engine Start *4	For more information about this signal contact local Perkins representative.
Override *4	For more information about this signal contact local Perkins representative.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Rated engine speed	For more information about this signal contact local Perkins representative.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.

Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Throttle position	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.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential (Voltage)	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Engine alternate droop accelerator 1 select	For more information about this signal contact local Perkins representative.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *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 for ADEM4 (2200, 2500 series)

Function	ECU J1 connector	diagnostic connector	Controller
CAN H	50	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,70	A	N/A
Battery - (negative)	61,63,65	B	N/A
Key Switch	?	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

Diagnostic connector layout is on page 16 or here.

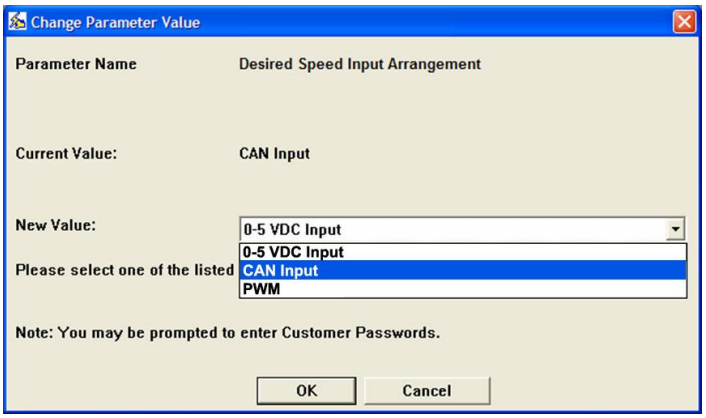
Recommended wiring for ADEM 3 (2300, 2800 series)

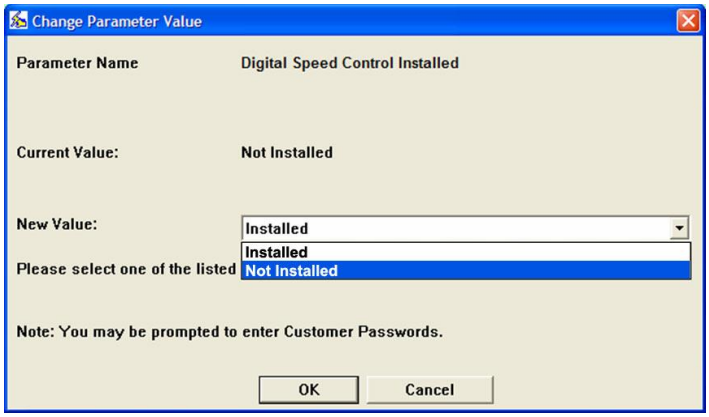
Function	ECU J1 connector	diagnostic connector	Controller
CAN H	50	G	CAN1 (extension modules/J1939) – CAN H
CAN COM	42	C	CAN1 (extension modules/J1939) – CAN COM
CAN L	34	F	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	48,52,53,70	A	N/A

Battery - (negative)	61,63,65	B	N/A
Key Switch	?	N/A	Any binary output configured as ECU PwrRelay
Analog Speed Control	17	N/A	SG OUT
Analog Speed Control	3	N/A	SG COM

Diagnostic connector layout is on page 16 or here.

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.





Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

Scania

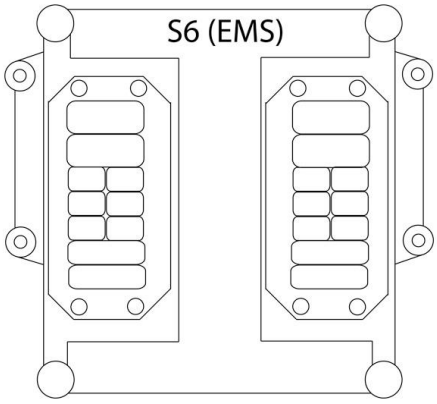
ECU Types

ECU Type	Engine Type
S6 (EMS)	DC9, DI12, DC12, DC16, D9M, DI12M, DI16M
S8	DC9, DC13,DC16

Engine type explanation

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

S6



ECU selection in PC software:

Scania S6 Singlespeed; Scania S6 Singlespeed from ver.1794335
Or
Scania S6 Allspeed; Scania S6 Allspeed from ver.1794335

Available signals – S6 Singlespeed

ECU binary outputs (controller's inputs)	
Engine stop limit exceed	For more information about this signal contact local Scania representative.
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Temperature of liquid in engine cooling system over the limit.
Low Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system

	that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Brake Switch	Indicates that the brake foot pedal is being pressed.
Clutch Switch	Indicates that the clutch pedal is being pressed.
Cruise Control Accelerate Switch	Indicates that the activator is in the position "accelerate."
Cruise Control Coast Switch	Indicates that the activator is in the position "coast (decelerate)."
Cruise Control Enable Switch	Indicates that it is possible to manage the cruise control function.
Cruise Control Resume Switch	Indicates that the activator is in the position "resume."
Engine Shutdown Override Switch	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
Engine Test mode switch	Indicates the position of the engine test mode switch.
Parking Brake Switch	Indicates when the parking brake is set.
Droop enable	Enable or disable droop function. The droop value is changeble with calibration parameter or with TSC-proprietary. The recommended source value for this command is Logical 0.
Emergency Engine Stop	Normaly 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 Start	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop	Normaly used for engine emergency stop. Engine Stop (without error code).
Exhaust brake – Brake Assist Switch	For more information about this signal contact local Scania representative.
Exhaust brake floor switch	For more information about this signal contact local Scania representative.
Idle Command	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Nominal Speed 1 *1*2*3*4*5*6 Nominal Speed 2 *1*2*3*4*5*6	Choose nominal engine speed with these switches. NSSW1 NSSW2 Nominal speed 0 0 Use changeable calibration parameter 1 0 1500 RPM 0 1 1800 RPM 1 1 Low idle command
Torque enable	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.
Torque Limit 1 Torque Limit 2	Choosing between 4 different torque limit curves (if available) 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)
White smoke limit request	For more information about this signal contact local Scania representative.
ECU analog outputs (controller's inputs)	
CAN Version of DLN2	For service purpose only!
Economy Speed High	For more information about this signal contact local Scania representative.
Economy Speed Low	For more information about this signal contact local Scania representative.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.

Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
ECU analog inputs (controller's outputs)	
Nominal speed offset *1*2*3*4*5*6	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed. The offset range is changeble with calibration parameters. (normaly ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Available signals – S6 Singlespeed ver.1794335

ECU binary outputs (controller's inputs)	
Diagnostic Status	For more information about this signal contact local Scania representative.
Engine stop limit exceed	For more information about this signal contact local Scania representative.
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Temperature of liquid in engine cooling system over the limit.
Low Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
New DTC	For more information about this signal contact local Scania representative.
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Test Engine Lamp	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Brake Switch	For more information about this signal contact local Scania representative.
Clutch Switch	For more information about this signal contact local Scania representative.
Cruise Control Accelerate Switch	For more information about this signal contact local Scania representative.

Cruise Control Coast Switch	For more information about this signal contact local Scania representative.
Cruise Control Enable Switch	For more information about this signal contact local Scania representative.
Cruise Control Resume Switch	For more information about this signal contact local Scania representative.
Engine Shutdown Override Switch1234	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
Engine Test mode switch	For more information about this signal contact local Scania representative.
Parking Brake Switch	For more information about this signal contact local Scania representative.
Droop enable1234	Enable or disable droop function. The droop value is changeble with calibration parameter or with TSC-proprietary. The recommended source value for this command is Logical 0.
Emergency Engine Stop	Normaly 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 Start123456	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop123456	Normaly used for engine emergency stop. Engine Stop (without error code).
Exhaust brake – Brake Assist Switch	For more information about this signal contact local Scania representative.
Exhaust brake floor switch	For more information about this signal contact local Scania representative.
Idle Command	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Nominal Speed 1 *1*2*3*4*5*6 Nominal Speed 2 *1*2*3*4*5*6	Choose nominal engine speed with these switches. NSSW1 NSSW2 Nominal speed 0 0 Use changeable calibration parameter 1 0 1500 RPM 0 1 1800 RPM 1 1 Low idle command
Torque enable	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.
Torque Limit 1 Torque Limit 2	Choosing between 4 different torque limit curves (if available) 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)
White smoke limit request	For more information about this signal contact local Scania representative.
Droop Dec	For more information about this signal contact local Scania representative.
Droop Inc	For more information about this signal contact local Scania representative.
TSC1 Droop Enable	Enable or disable droop function. The droop value is changeble with calibration parameter or with TSC-proprietary. The recommended source value for this command is Logical 0.
ECU analog outputs (controller's inputs)	
CAN Version of DLN2	For service purpose only!
Single Speed Droop Value	The actual droop value for single speed engines is transmitted.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself,

	and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Nominal speed offset *1*2*3*4*5*6	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed. The offset range is changeble with calibration parameters. (normaly ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
Requested Droop	For more information about this signal contact local Scania representative.
Requested Speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Available signals – S6 Allspeed

ECU binary outputs (controller's inputs)	
Engine stop limit exceed	For more information about this signal contact local Scania representative.
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Temperature of liquid in engine cooling system over the limit.
Low Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Test Engine Lamp	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
ECU binary inputs (controller's outputs - commands)	
Brake Switch	For more information about this signal contact local Scania representative.
Clutch Switch	For more information about this signal contact local Scania representative.
Cruise Control Accelerate Switch	For more information about this signal contact local Scania representative.
Cruise Control Coast Switch	For more information about this signal contact local Scania representative.
Cruise Control Enable Switch	For more information about this signal contact local Scania representative.
Cruise Control Resume Switch	For more information about this signal contact local Scania representative.
Engine Shutdown Override Switch *1*2*3*4	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
Engine Test mode switch	For more information about this signal contact local Scania representative.

Parking Brake Switch	For more information about this signal contact local Scania representative.
AP kickdown switch	A plausibility check is performed in engine control unit between kickdown switch and Accelerator Pedal Position.
AP Low Idle Switch	A plausibility check is performed in engine control unit between Low Idle Switch and Accelerator Pedal Position.
CC-Off	CC-off turns off the cruise-control or PTO if they are active.
Emergency Engine Stop	Normaly 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 Control Allowed	With this switch you override the Nominal speed switch 1 and 2 and choose nominal speed in message TSC-proprietary instead.
Engine Start *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop *1*2*3*4*5*6	Normaly used for engine emergency stop. Engine Stop (without error code).
Exhaust brake – Brake Assist Switch	For more information about this signal contact local Scania representative.
Exhaust brake floor switch	For more information about this signal contact local Scania representative.
Idle Command	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Increased Speed Sw1 *1*2*3*4 Increased Speed Sw1 *1*2*3*4	Choose between 4 different PTO (power take off) modes. NSSW1 NSSW2 PTO-mode 0 0 Normal hand throttle 1 0 Limited hand throttle 0 1 Temporary changed low idle 1 1 Locked engine speed
Retarder Speed Control Off	For more information about this signal contact local Scania representative.
Retarder Speed Control Set	Retarder Speed Control Setswitch
Torque Limit 1 Torque Limit 2	Choosing between 4 different torque limit curves (if available) 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)
White smoke limit request	For more information about this signal contact local Scania representative.
ECU analog outputs (controller's inputs)	
CAN Version of DLN2	For service purpose only!
Economy Speed High	For more information about this signal contact local Scania representative.
Economy Speed Low	For more information about this signal contact local Scania representative.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.

Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
ECU analog inputs (controller's outputs)	
Accelerator Pedal Position *1*2*3*4*5*6	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed. The offset range is changeble with calibration parameters. (normaly ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Available signals – S6 Allspeed from ver.1794335

ECU binary outputs (controller's inputs)	
Diagnostic Status	
Engine stop limit exceed	For more information about this signal contact local Scania representative.
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Temperature of liquid in engine cooling system over the limit.
Low Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
New DTC	
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Test Engine Lamp	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
ECU binary inputs (controller's outputs - commands)	
Brake Switch	For more information about this signal contact local Scania representative.
Clutch Switch	For more information about this signal contact local Scania representative.
Cruise Control Accelerate Switch	For more information about this signal contact local Scania representative.
Cruise Control Coast Switch	For more information about this signal contact local Scania representative.
Cruise Control Enable Switch	For more information about this signal contact local Scania representative.
Cruise Control Resume Switch	For more information about this signal contact local Scania representative.
Engine Shutdown Override Switch *1*2*3*4	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
Engine Test mode switch	For more information about this signal contact local Scania representative.
Parking Brake Switch	For more information about this signal contact local Scania representative.
AP kickdown switch	A plausibility check is performed in engine control unit between kickdown switch and Accelerator Pedal Position.
AP Low Idle Switch	A plausibility check is performed in engine control unit between Low Idle Switch and Accelerator Pedal Position.
CC-Off	CC-off turns off the cruise-control or PTO if they are active.
Emergency Engine Stop	Normaly 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 Control Allowed	Enables speed control in TSC-proprietary (PTO mode 4).
Engine Start *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop *1*2*3*4*5*6	Normaly used for engine emergency stop. Engine Stop (without error code).
Exhaust brake – Brake Assist Switch	For more information about this signal contact local Scania representative.
Exhaust brake floor switch	For more information about this signal contact local Scania representative.
Idle Command	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Increased Speed Sw1 *1*2*3*4 Increased Speed Sw1 *1*2*3*4	Choose between 4 different PTO (power take off) modes. NSSW1 NSSW2 PTO-mode 0 0 Normal hand throttle 1 0 Limited hand throttle 0 1 Temporary changed low idle 1 1 Locked engine speed
Retarder Speed Control Off	For more information about this signal contact local Scania representative.
Retarder Speed Control Set	For more information about this signal contact local Scania representative.
Torque Limit 1 Torque Limit 2	Choosing between 4 different torque limit curves (if available) 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)
White smoke limit request	For more information about this signal contact local Scania representative.
ECU analog outputs (controller's inputs)	
CAN Version of DLN2	For service purpose only!
Single Speed Droop Value	
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Accelerator Pedal Position *5*6	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed. The offset range is changeble with calibration parameters. (normaly ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active

	or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite[NT] *3 – InteliDrive Lite *4 – InteliCompact[NT] *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

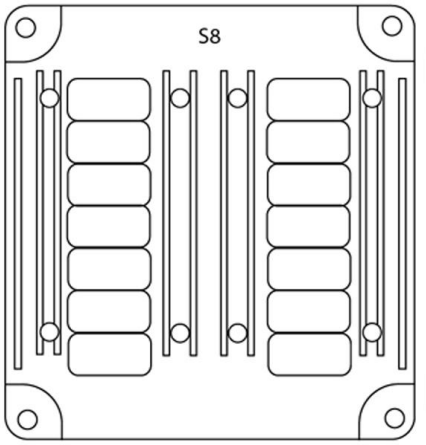
Nominal speed offset **settings for InteliGen[NT] or InteliSys[NT]**	
Source	Speed request
Convert	No
Speed Bias Reference settings for InteliDrive DCU, InteliDrive Mobile	
Source	Speed Request
Convert	No

Recommended wiring for

Function	ECU B1 connector	diagnostic connector	Controller
CAN H	9	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	10	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,6	N/A	N/A
Battery - (negative)	2,7	N/A	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

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

S8



ECU selection in PC software:

Scania S8 Singlespeed
or
Scania S8 Allspeed

Available signals – Scania S8 Allspeed

ECU binary outputs (controller's inputs)	
Diagnostic Status	For more information about this signal contact local Scania representative.
Engine stop limit exceed	The message is sent when the coolant temperature exceeds the switch-off limit (normally 103°C).
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Normally controls the high coolant temperature warning lamp. The parameter is set when the coolant temperature exceeds the limit (normally 95°C).
High Engine Oil Level	Oil level over the limit.
Low Engine Oil Level	Oil level under the limit.
Low Engine Oil Pressure	Oil pressure under the limit.
Low Urea Level	Urea level under the limit.
New DTC	When a new DTC has been saved in the engine control unit, parametre is set for 1 second.
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Test Engine Lamp	For more information about this signal contact local Scania representative.
Afterrun Status	For more information about this signal contact local Scania representative.
Engine Air Filter Clogged	For more information about this signal contact local Scania representative.
GasLeakage	For more information about this signal contact local Scania representative.
Incorrect Driver Init Engine Sd	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Acceleration Rate Limit	For more information about this signal contact local Scania representative.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.

Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Shutdown Override Switch	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
AP Low Idle Switch Released	A plausibility check is performed in engine control unit between Low Idle Switch and Accelerator Pedal Position.
Emergency Engine Stop	Normaly 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 Start *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Engine Stop *1*2*3*4*5*6	Normaly used for engine emergency stop. Engine Stop (without error code).
Idle Command	Idle Command, forces the engine to run on low idle.
Lamp Test	Activates AC_ACT on the engine control unit, which is used for the Throttle out of order lamp if it is connected.
White smoke limit request	Exhaust brake floor switch, Exhaust brake – Brake Assist Switch or White smoke limit request.
DPF Manual Inhibit	For more information about this signal contact local Scania representative.
ECU analog outputs (controller's inputs)	
Single Speed Droop Value	The actual droop value for single speed engines is transmitted.
Malfunction Indicator	For more information about this signal contact local Scania representative.
Oil Level Measuring Status	Oil Level Measuring
Urea Level	For more information about this signal contact local Scania representative.
Starter Motor Normal Temp	For more information about this signal contact local Scania representative.
Urea level inducement state	0 – urea level OK 1 – low urea level 2 – fill up urea 3 – urea tank empty 6 – error 7 – not available
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.

ECU analog inputs (controller's outputs)	
APP - Nominal Speed Offset *1*2*3*4*5*6	If Torque enable is engine speed control. Increase or decrease the reference speed (with or without droop) in relation to nominal engine speed. The setting range can be changed with calibration parameters, normally ±120 rpm.
DPF Manual Activation	0 – No request 1 – Unvalidated manual renegeration request 2 - Manual regeneration request 3 – 13 – Reserved 14 – Error 15 – Don't care
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Available signals – Scania S8 Singlespeed

ECU binary outputs (controller's inputs)	
Diagnostic Status	For more information about this signal contact local Scania representative.
Engine stop limit exceed	For more information about this signal contact local Scania representative.
Generator Charge	For more information about this signal contact local Scania representative.
High Engine Coolant Temp	Temperature of liquid in engine cooling system over the limit.
High Engine Oil Level	Oil level over the limit.
Low Engine Oil Level	Oil level under the limit.
Low Engine Oil Pressure	Oil pressure under the limit.
Low Urea Level	Urea level under the limit.
New DTC	For more information about this signal contact local Scania representative.
PowerLost Due to HighTemp	For more information about this signal contact local Scania representative.
Test Engine Lamp	For more information about this signal contact local Scania representative.
Afterrun Status	For more information about this signal contact local Scania representative.
Engine Air Filter Clogged	For more information about this signal contact local Scania representative.
GasLeakage	For more information about this signal contact local Scania representative.
Incorrect Driver Init Engine Sd	For more information about this signal contact local Scania representative.
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Acceleration Rate Limit	For more information about this signal contact local Scania representative.
APP Kickdown Switch	For more information about this signal contact local Scania representative.
APP Low Idle Switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch. The low idle switch is defined in SAE J1843.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Shutdown Override Switch	If engine shut down due to low oil pressure, low coolant level or high water temperature is available this switch can override the function. The recommended source value for this command is Logical 0.
Droop enable *1*2*3*4	Engage or disengage the droop function. The droop value can be changed with a calibration parameter or with TSC-proprietary.
Emergency Engine Stop	Normaly 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 Start	The command used for engine running. The recommended source value for this command is Starter.

*1*2*3*4*5*6	
Engine Stop *1*2*3*4*5*6	Normaly used for engine emergency stop. Engine Stop (without error code).
Exhaust brake Brake Assist Switch	For more information about this signal contact local Scania representative.
Exhaust brake floor switch	For more information about this signal contact local Scania representative.
Nominal speed switch 1 *1*2*3*4 Nominal speed switch 2 *1*2*3*4	Choose nominal engine speed with these switches. NSSW1 NSSW2 Nominal speed 0 0 Use changeable calibration parameter 1 0 1500 RPM 0 1 1800 RPM 1 1 Low idle command
Retarder Selection	For more information about this signal contact local Scania representative.
Torque Limit 1 Torque Limit 2	Choosing between 4 different torque limit curves (if available) 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)
White smoke limit request	For more information about this signal contact local Scania representative.
DPF Manual Inhibit	For more information about this signal contact local Scania representative.
ECU analog outputs (controller's inputs)	
Single Speed Droop Value	The actual droop value for single speed engines is transmitted.
Malfunction Indicator	For more information about this signal contact local Scania representative.
Oil Level Measuring Status	Oil Level Measuring
Urea Level	For more information about this signal contact local Scania representative.
Starter Motor Normal Temp	For more information about this signal contact local Scania representative.
Urea level inducement state	0 – urea level OK 1 – low urea level 2 – fill up urea 3 – urea tank empty 6 – error 7 – not available
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Nominal Friction Torque	The calculated torque that indicates the amount of torque required by the basic engine itself added by the loss torque of accessories. It contains the frictional and thermodynamic loss of the engine itself, and the losses of fuel, oil and cooling pumps.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching

	device.
ECU analog inputs (controller's outputs)	
APP - Nominal Speed Offset *1*2*3*4*5*6	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed. The offset range is changeble with calibration parameters. (normaly ± 120 rpm, 0% = -120 rpm and 100% = +120 rpm)
DPF Manual Activation	0 – No request 1 – Unvalidated manual renegeration request 2 - Manual regeneration request 3 – 13 – Reserved 14 – Error 15 – Don't care
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Nominal speed offset **settings for InteliGen^{NT} or InteliSys^{NT}**	
Source	Speed request
Convert	No
Speed Bias Reference settings for InteliDrive DCU, InteliDrive Mobile	
Source	Speed Request
Convert	No

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	?	6	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	?	7	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	1,3,4	N/A
Battery - (negative)	?	2,5	N/A
Key Switch	?	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

Diagnostic connector layout is on page 16 or here.

SISU

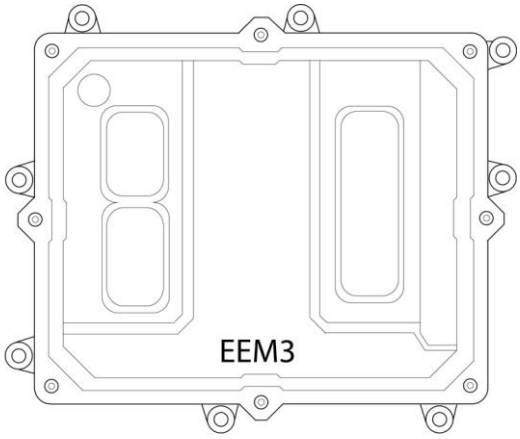
ECU Types

ECU Type	Engine Type
EEM2	xxDxx
EEM3	xxCxx

Engine type explanation

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

EEM2 or EEM3



ECU selection in PC software:

SISU EEM3 Gen-set or SISU EEM3 Propulsion

Available signals – Gen-set

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Wait to Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	

Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Engine Oil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Droop percentage request	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Available signals – Propulsion

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
ECU binary inputs (controller's outputs - commands)	
Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Fuel solenoid.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Actual Torque	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.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.

Coolant Temp	Temperature of liquid found in engine cooling system.
Fuel Temp	Temperature of fuel entering injectors.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
Droop percentage request	Nominal speed offset (if Torque enable is "Engine speed control"). Increase or decrease the referens speed (with or without droop) in relation to nominal speed.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

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 – EEM2

Function	ECU 31pin connector	8pin diagnostic connector	Controller
CAN H	30	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	31	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,3,8,13	N/A	N/A
Battery - (negative)	2,4,7,9	N/A	N/A
Key Switch	5	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

Diagnostic connector layout is on page 16 or here.

Recommended wiring – EEM3

Function	ECU A2 89pin connector	8pin diagnostic connector	Controller
CAN H	53	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	51	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	52	N/A	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

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

Steyr

ECU Types

ECU Type	Engine Type
M1	Marine engines

M1

ECU selection in PC software for M1

Steyr M1

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Engine Oil Pressure Light	For more information about this signal contact local Steyr representative.
Engine Warning Light	For more information about this signal contact local Steyr representative.
Preheating Control Light	For more information about this signal contact local Steyr representative.
ECU binary inputs (controller's outputs - commands)	
ECU analog outputs (controller's inputs)	
Engine Speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Position	For more information about this signal contact local Steyr representative.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Keyswitch Battery Potential	Battery potential measured at the input of the electronic control unit.
ECU analog inputs (controller's outputs)	

Controller's analog output for speed control configuration

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

Recommended wiring

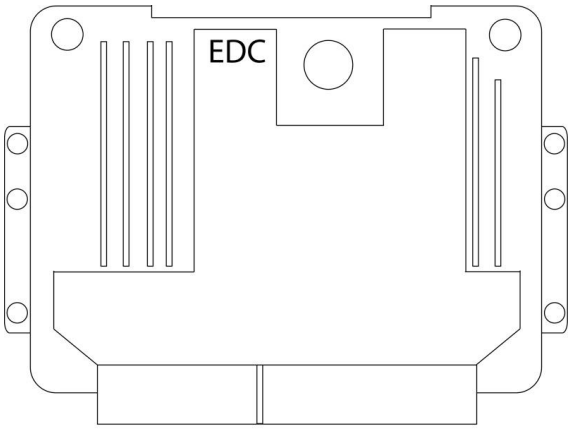
No documentation available so far!
Diagnostic connector layout is on page 16 or here.

VM

ECU Types

ECU Type	Engine Type
EDC	Industrial and marine

EDC



ECU selection in PC software:

VM Industrial or VM Marine

Available signals - Industrial

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
PTO Accelerate Switch	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position. If the toggle switch is enabled and other conditions are satisfied then the remote PTO control feature is activated and the PTO will control at a variable speed.
PTO Cost/Decelerate Switch	For more information about this signal contact local VM representative.
PTO Enable Switch	For more information about this signal contact local VM representative.
PTO Resume Switch	For more information about this signal contact local VM representative.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water in Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Brake Switch	Switch signal which indicates when the brake is set. The recommended source value for this command is Logical 0.
Clutch Switch	For more information about this signal contact local VM representative.
Cruise Control Accelerate Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'accelerate.' The recommended source value for this command is Logical 0.

Cruise Control Coast Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'coast (decelerate).' The recommended source value for this command is Logical 0.
Cruise Control Enable Switch	Switch signal which indicates that it is possible to manage the cruise control function. The recommended source value for this command is Logical 0.
Cruise Control Resume Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'resume.' The recommended source value for this command is Logical 0.
Parking Brake Switch	Switch signal which indicates when the parking brake is set. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
PartTrapAshLoad	For more information about this signal contact local VM representative.
PartTrapSootLoad	For more information about this signal contact local VM representative.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Estimated Percent Fan Speed	Estimated fan speed as a ratio of the fan drive (current speed) to the fully engaged fan drive. A two state fan (off/on) will use 0% and 100% respectively. A variable speed fan will use 0% to 100%. Multiple fan systems will use 0 to 100% to indicate the percent cooling capacity being provided.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temperature	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
PTO State	For more information about this signal contact local VM representative.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

Available signals - Marine

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
PTO Accelerate Switch	Switch signal which indicates that the remote PTO toggle switch is in the enabled (ON) position. If the

	toggle switch is enabled and other conditions are satisfied then the remote PTO control feature is activated and the PTO will control at a variable speed.
PTO Cost/Decelerate Switch	For more information about this signal contact local VM representative.
PTO Enable Switch	For more information about this signal contact local VM representative.
PTO Resume Switch	For more information about this signal contact local VM representative.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
Water in Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Brake Switch	Switch signal which indicates when the brake is set. The recommended source value for this command is Logical 0.
Clutch Switch	For more information about this signal contact local VM representative.
Cruise Control Accelerate Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'accelerate.' The recommended source value for this command is Logical 0.
Cruise Control Coast Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'coast (decelerate).' The recommended source value for this command is Logical 0.
Cruise Control Enable Switch	Switch signal which indicates that it is possible to manage the cruise control function. The recommended source value for this command is Logical 0.
Cruise Control Resume Switch	Switch signal of the cruise control activator which indicates that the activator is in the position 'resume.' The recommended source value for this command is Logical 0.
Parking Brake Switch	Switch signal which indicates when the parking brake is set. The recommended source value for this command is Logical 0.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
Barometric Pressure	Absolute air pressure of the atmosphere.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
EngineOil Temp	Temperature of the engine lubricant.
Fuel Temp	Temperature of fuel entering injectors.
Estimated Percent Fan Speed	Estimated fan speed as a ratio of the fan drive (current speed) to the fully engaged fan drive. A two state fan (off/on) will use 0% and 100% respectively. A variable speed fan will use 0% to 100%. Multiple fan systems will use 0 to 100% to indicate the percent cooling capacity being provided.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
ECU analog inputs (controller's outputs)	
PTO State	For more information about this signal contact local VM representative.
Requested speed *1*2*3*4*5*6	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
More about a constant for ECU controller is on page 17 or here. Available list of texts of fault codes is here.

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 connector	diagnostic connector	Controller
CAN H	62	N/A	CAN1 (extension modules/J1939) – CAN H
CAN COM	N/A	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	83	N/A	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	1,5	N/A	N/A
Battery - (negative)	2,4,6	N/A	N/A
Key Switch	28	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

Diagnostic connector layout is on page 16 or here.

Volvo

ECU Types

ECU Type	Engine Type
EDC3 (EMS1)	xxD12xxxx
EMS2	xxD9xxxx, xxD16xxxx, xxD734xx
EDC4 (EMR2)	xxD5xxxx, xxD7xxxx

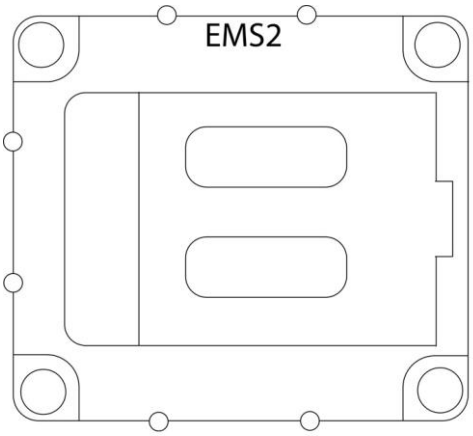
Engine type explanation

Engine Type	Meaning
Txxxxxxxx	Turbocharged
xAxxxxxxx	Air to air intercooled
xxDxxxxxx	Diesel fuel
xxx16xxxx	Displacement indication
xxxxx3xxx	Generation
xxxxxx0xx	Version
xxxxxxxGx	Generator drive
xxxxxxxxE	Emission controlled

Standalone connection (hardwired speed potentiometer)

On D12 industrial genset engines it's possible to connect stand alone 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.

EDC3 (EMS1) or EMS2 (singlespeed engines only)



ECU selection in PC software:

Volvo EMSI Singlespeed / EMSII

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Approaching Shutdown	Status signal which indicates that engine shutdown is imminent. This engine protection signal can be a result of different systems failing, i.e., engine overheating.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
15 Fuse Status	The of the 15 supply fuse.
30 Fuse Status	The of the 30 supply fuse.
Buzzer	Controls the buzzer.
Buzzer/Lamptest	Controls the buzzertest / lamptest.
Coolant Level Alarm	The status of the coolant level alarm switch.
Coolant Temperature	The status of the (virtual) coolant temperature alarm switch.
EMS DiagnoseRedLamp	The status of the red diagnose lamp of the EMS (Mirror of PID 44, J1587)
EMS DiagnoseYellow Lamp	The status of the yellow diagnose lamp of the EMS (Mirror of PID 44, J1587).
EMS Fuse Status	The of the EMS supply fuse.
EngineOil Filter Diff.Press	The status of the engine oil filters differential pressure alarm.
Extra Fuse Status	The of the extra supply supply fuse.
Fuel Pressure Alarm	The status of the Fuel pressure alarm.
General Lamptest	Controls the general lamptest.
Charge Alarm	The status of the (virtual) charge alarm switch.
Oil Pressure Alarm	The status of the (virtual) oil pressure alarm switch.
Oil Temperature Alarm	The status of the (virtual) oil temprature alarm switch.
Override Indication	The status of the engine protection override.
Overspeed Alarm	Status of the (virtual) overspeed alarm switch.

Preheat Indication	The status of the preheat relay.
Primary Bat.Status	Status of the primary battery circuit.
Running Indication	The running status of the engine.
Secondary Bat.Status	Status of the secondary battery circuit.
Water in Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	
Diagnostic Request *1*2*3*4*5*6	For more information about this commands, please contact local Volvo representative.
Frequency Select *1*2*3*4*5	Indicates if the engine shall operate at Primary engine speed or Secondary engine speed.
Fuel disable request	For more information about this commands, please contact local Volvo representative. The recommended source value for this command is Logical 0.
Governor Mode *1*2*3*4*5*6	Indicates if the engine shall operate in Engine speed mode or Torque mode. 0 – Isochronous mode 1 – Droop mode
Idle Speed Select *1*2*3*4	The idle/rated switch allows commanding the engine between idle speed and rated speed. The recommeneded source value for this command is Idle/Nominal.
Preheat Request *1*2*3*4	Status of the Preheat request. The recommended source value for this command is Logical 0.
Protection Override *1*2*3*4*5*6	Status of the Engine protection override request. The recommended source value for this command is Logical 0.
Start Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
Operator Inducement Severity	The severity of operator inducement for anomalies with the SCR system, such as tampering, low DEF quality, and DEF tank level. Higher numerical levels indicate more severe levels of inducement. Level 1 is tge least severe.
EngOil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Fuel Temp	Temperature of fuel entering injectors.
Oil Temp	Temperature of the engine lubricant.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.

Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Idle engine speed	The calibrated idle speed of the engine.
Maximum engine speed	The maximum engine speed.
ECU analog inputs (controller's outputs)	
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
Accelerator Pedal Position *1*2*3*4*5*6	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.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Accelerator Pedal Position settings for InteliGen^{NT} or InteliSys^{NT}	
Source	Speed request
Convert	No
Accelerator Pedal Position settings for InteliDrive DCU, InteliDrive Mobile	
Source	Speed Request
Convert	Yes

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.

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	?	1	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	?	2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	4	N/A
Battery - (negative)	?	3	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
Stop Request	?	6	Any binary output configured as **inverted** ECU Comm error

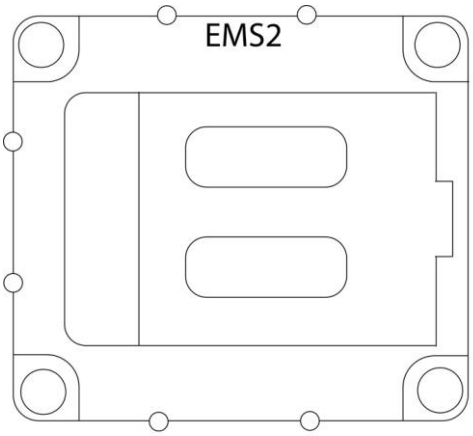
Diagnostic connector layout is on page 16 or here.

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

WARNING!
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.

EDC3 (EMS1) or EMS2 (allspeed engines only)



ECU selection in PC software:

Volvo EMSI Allspeed

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Approaching Shutdown	Status signal which indicates that engine shutdown is imminent. This engine protection signal can be a result of different systems failing, i.e., engine overheating.
Shutdown Engine	Status signal which indicates whether or not the engine protection system has shutdown the engine.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Boost Temperature	Status of the (virtual) boost temperature alarm switch.
Coolant Level Alarm	The status of the coolant level alarm switch.
Coolant Temperature	Temperature of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
EngOil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
Exhaust Temperature	Temperature of combustion exhausts leaving the engine.
Fresh Water Pressure	Status of the (virtual) fresh water pressure alarm switch.
Fuel Pressure Alarm	The status of the Fuel pressure alarm.
Charge Alarm	The status of the (virtual) charge alarm switch.
Oil Level Alarm	The status of the oil level alarm switch.
Oil Pressure Alarm	Gage pressure of oil in engine lubrication system as provided by oil pump.
Oil Temperature Alarm	The status of the (virtual) oil temprature alarm switch.
Overspeed Alarm	Status of the (virtual) overspeed alarm switch.
Piston Cooling Pressure	Status of the pistion cooling pressure alarm switch.
Running Indication	The running status of the engine.
Sea Water Pressure	Status of the (virtual) sea water pressure alarm switch.
Water in Fuel Alarm	The status of the water in fuel alarm switch.
Water in Fuel	Signal which indicates the presence of water in the fuel.
ECU binary inputs (controller's outputs - commands)	

Current Gear	For more information about this commands, please contact local Volvo representative.
Crank Request *1*2*3*4*5*6	The command used for engine running. The recommended source value for this command is Starter.
Stop Request *1*2*3*4*5*6	The command for normal stopping of the engine. The recommended source value for this command is Stop pulse.
ECU analog outputs (controller's inputs)	
DEF Tank 1 Level	Ratio of volume of diesel exhaust fluid to the total volume of diesel exhaust fluid storage container
DEF Tank 1 Low Level Indicator	The desired illumination of the driver's warning indicator for diesel exhaust fluid (DEF) tank low level.
Operator Inducement Severity	The severity of operator inducement for anomalies with the SCR system, such as tampering, low DEF quality, and DEF tank level. Higher numerical levels indicate more severe levels of inducement. Level 1 is tge least severe.
EngOil Filter Diff.Press	Change in engine oil pressure, measured across the filter, due to the filter and any accumulation of solid or semisolid material on or in the filter.
Actual Torque	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.
Demand Torque	The requested torque output of the engine by the driver.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Accelerator Pedal Position	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. For on-highway vehicles, this will typically be the operator's accelerator pedal. In marine applications, this will typically be the operator's throttle lever.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Coolant Level	Ratio of volume of liquid found in engine cooling system to total cooling system volume. Typical monitoring location is in the coolant expansion tank.
Coolant Pressure	Gage pressure of liquid found in engine cooling system.
Crankcase Pressure	Gage pressure inside engine crankcase.
Engine Oil Level	Ratio of current volume of engine sump oil to maximum required volume.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Fuel Delivery Pressure	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Fuel Temp	Temperature of fuel entering injectors.
Oil Temp	Temperature of the engine lubricant.
Air Intake Pressure	Absolute air pressure at inlet to intake manifold or air box.
Boost Pressure	Gage pressure of air measured downstream on the compressor discharge side of the turbocharger.
Exhaust Gas Temp	Temperature of combustion exhausts leaving the engine.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Fuel Rate	Amount of fuel consumed by engine per unit of time.
Battery Potential	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Sea Water Pressure	The sea water pressure.
Idle engine speed	The calibrated idle speed of the engine.
Maximum engine speed	The maximum engine speed.
ECU analog inputs (controller's outputs)	
Requested speed	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
Throttle Position *1*2*3*4*5*6	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.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano
Available list of texts of fault codes is here.

Controller's analog output for speed control configuration

Accelerator Pedal Position settings for InteliGen^{NT} or InteliSys^{NT}	
Source	Speed request
Convert	No
Accelerator Pedal Position settings for InteliDrive DCU, InteliDrive Mobile	
Source	Speed Request
Convert	No

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.

Recommended wiring

Function	ECU connector	8pin diagnostic connector	Controller
CAN H	?	1	CAN1 (extension modules/J1939) – CAN H
CAN COM	?	N/A	CAN1 (extension modules/J1939) – CAN COM
CAN L	?	2	CAN1 (extension modules/J1939) – CAN L
Battery + (positive)	?	4	N/A
Battery - (negative)	?	3	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
Stop Request	?	6	Any binary output configured as **inverted** ECU Comm error

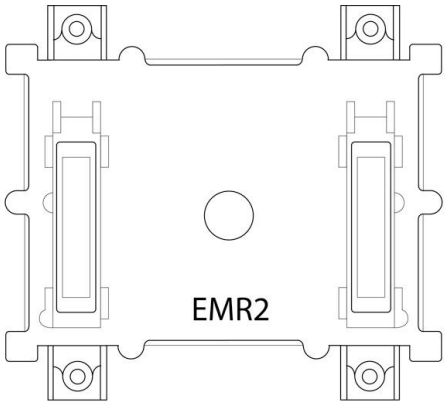
Diagnostic connector layout is on page 16 or here.

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

WARNING!
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.

EDC4 (EMR2)



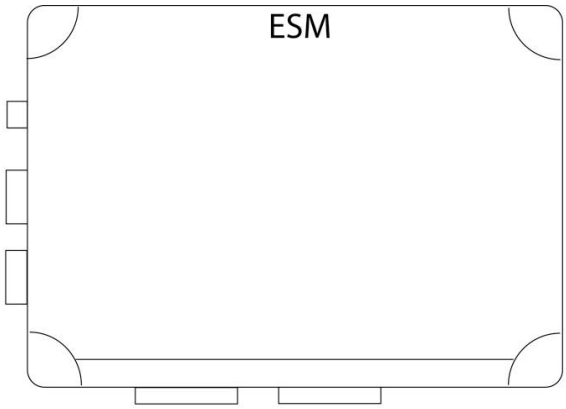
For more informarion follow Deutz EMR2 chapter (page 61).

Waukesha

ECU Types

ECU Type	Engine Type
ESM	VHP & APG engine family

ESM



ECU selection in PC software:

Waukesha ESM

Available signals

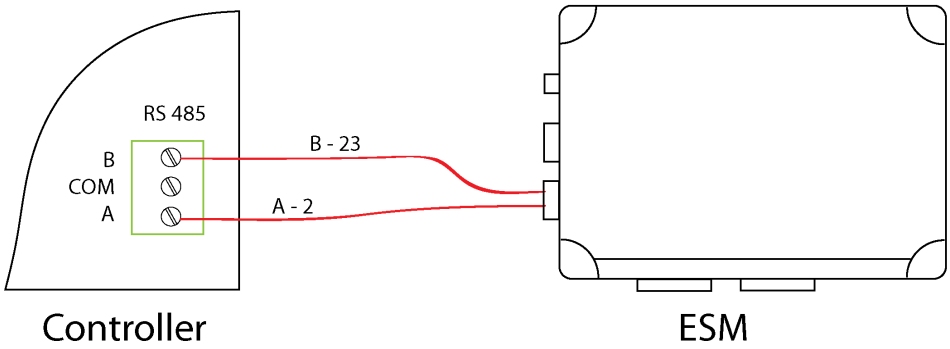
ECU binary outputs (controller's inputs)	
Main Fuel Valve	Status of the main fuel valve.
Pre-chamber Fuel Valve	Status of the pre-chamber fuel valve (if applicable).
Engine Running	Whether the engine is running or not running.
Starter Motor	Whether the starter motor is engaged or not.
Pre/Post Lube	Whether the pre/post lube pump is running.
Yellow Warning Lamp	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	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Engine Knocking	Whether the engine is in uncontrollable knock.
Start Engine Signal	Whether the start engine signal is active.
Normal Shutdown	Whether the normal shutdown signal is active.
Emergency Shutdown	Whether the emergency shutdown signal is active.
Remote rpm Select	Whether the remote rpm analog input is active or inactive.
Run High Idle	Whether the run high idle digital input is active.
Load Coming	Whether the load coming digital input is active.
Alter Dynamics/Synchr Mode	Whether the alternate governor dynamics is active.
Lockout Button/Ignit Module	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)	
ECU analog outputs (controller's inputs)	

Engine Speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Intake Manifold Press	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	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	Temperature of liquid found in engine cooling system.
Battery Voltage	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Intake Manifold Temp	Temperature of pre-combustion air found in intake manifold of engine air supply system.
Engine Oil Temp	Temperature of the engine lubricant.
First exhaust temperature	For more information about this commands, please contact local Waukesha representative.
Second exhaust temperature	For more information about this commands, please contact local Waukesha representative.
ECU analog inputs (controller's outputs)	

Controller's analog output for speed control configuration

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

Recommended wiring



WARNING!
Check that RS485 bus terminating resistors or appropriate jumpers are connected.

Recommended wiring

Function	ECU 47pin connector	9pin diagnostic connector	Controller
RS485 A	2	N/A	RS485 – RS485 A
RS485 COM	N/A	N/A	RS485 – RS485 COM
RS485 B	23	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
Analog Speed Control	28	N/A	SG OUT
Analog Speed Control	29	N/A	SG COM

*Analog Speed Control range - 2.5VDC to + 2.5VDC

Controller recommended setting (Setpoints/Comms settings group)

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

*3 external RS232-485 converter is required

Available list of texts of fault codes is here.

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+**.

RS-485 networking needs termination resistors if long wire runs are used. Termination resistors of 120Ω are placed across the RS-485 A- and B+ wires at each device and at the MODBUS master (INTELIGEN-NT, INTELISYS-NTcontrollers 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

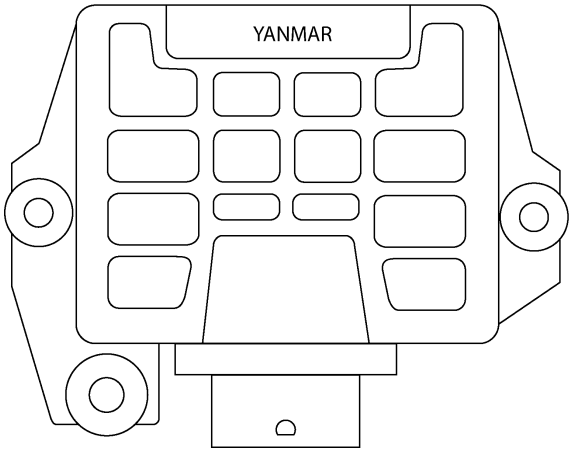
It is possible to configure Yellow Warning Lamp and Red Shutdown Lamp as binary inputs. Displaying of fault codes in the alarm list is conditioned by configuration of these inputs. Once they are not configured the alarms are blocked and not displayed.

Yanmar

ECU Types

ECU Type	Engine Type
TNV	All TNV Common Rail Series

TNV



ECU selection in PC software:

Yanmar TNV

Available signals

ECU binary outputs (controller's inputs)	
Amber Warning Lamp	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.
Malfunction Lamp	This lamp is used to relay only emissions-related trouble code information. This lamp is only illuminated when there is an emission-related trouble code active.
Protect Lamp	This lamp is used to relay trouble code information that is reporting a problem with a engine system that is most probably not electronic subsystem related.
Red Stop Lamp	This lamp is used to relay trouble code information that is of a severe enough condition that it warrants stopping the engine.
Preheat	The status of the preheat relay.
AP low idle switch	Switch signal which indicates the state of the accelerator pedal 1 low idle switch.
Wait To Start Lamp	This lamp indicates that the engine is too cold to start and the operator should wait until the signal becomes inactive (turns off).
ECU binary inputs (controller's outputs - commands)	
Shutdown Requests	For more information about this signal contact local Yanmar representative.
ECU analog outputs (controller's inputs)	
Air Inlet Temperature	Temperature of air entering air induction system.
Barometric Pressure	Absolute air pressure of the atmosphere.
Engine speed	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
Starter mode	0 - start not requested 1 - starter active, gear not engaged 2 - starter active, gear engaged 3 - start finished 4 - starter inhibited due to engine already running

	5 - starter inhibited due to engine not ready for start 6 - starter inhibited due to driveline engaged or other transmission inhibit 7 - starter inhibited due to active immobilizer 8 - starter inhibited due to starter over-temp 9 -11 - reserved 12 - starter inhibited 13,14 - error (legacy implementation only, use 1110) 15 - not available
AP Position	The ratio of actual position of the analog engine speed/torque request input device (such as an accelerator pedal or throttle lever) to the maximum position of the input device. This parameter is intended for the primary accelerator control in an application.
Percent Load	The ratio of actual engine percent torque (indicated) to maximum indicated torque available at the current engine speed, clipped to zero torque during engine braking.
Desired Operating Speed	An indication by the engine of the optimal operating speed of the engine for the current existing conditions. These conditions may include the torque generated to accommodate powertrain demands from the operator. Dynamic commands from functions such as smoke control or shift control are excluded from this calculation.
Engine Oil Pressure	Gage pressure of oil in engine lubrication system as provided by oil pump.
Coolant Temp	Temperature of liquid found in engine cooling system.
Oil Temp	Temperature of the engine lubricant.
ECU Temperature	Temperature of the engine electronic control unit.
Battery Potential (Voltage)	Electrical potential measured at the input of the electronic control unit supplied through a switching device.
Electrical Potential	Measured electrical potential of the battery.
ECU analog inputs (controller's outputs)	
Requested speed123456	This is the engine speed which the engine is expected to operate at if the speed control mode is active or the engine speed which the engine is not expected to exceed if the speed limit mode is active.
Accelerator Pedal Position	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.

Supported parameter by the controllers configured by NanoEdit, DriveEdit or LiteEdit PC software:
*1 – InteliLite^{NT} *3 – InteliDrive Lite *4 – InteliCompact^{NT} *5 – InteliNano *6 –InteliDrive Nano

Controller's analog output for speed control configuration

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)

Diagnostic connector layout is on page 16 or here. Available list of texts of fault codes is here.

Recommended wiring

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

Diagnostic connector layout is on page 16 or here.

List of Texts of ECU Fault Codes

Agco Power 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	EngDerateSwtch
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

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	EngDerateSwtch
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	RExthaustTemp
2434	LExthaustTemp
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	BattChargFail
4004	GCB Closed
4005	MCB Closed
4006	hidden
4007	hidden
4008	Engine Sd
4193	CoolantPumpTmp

hidden – the fault code is not displayed in the controller's alarm and history list

Caterpillar ADEM

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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Cummins 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

hidden – the fault code is not displayed in the controller's alarm and history list

Cummins 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

Cummins 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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Cummins 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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Cummins 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	EngDerateSwtch
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

hidden – the fault code is not displayed in the controller's alarm and history list

Cummins PGI 1.1 interface (CM850 or CM2150 or CM2250)

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	ECMIdentificat
1632	LowOilLevel
1634	CVN Error
1800	BatteryTemp
2433	RExthaustTemp

2434	LExthaustTemp
2623	AccelPedalPos
2630	ChargeAirTemp
2789	SysDiagCode#1
2791	EGR Actuator
2797	InjectorBank
3050	AftertreatDOC
3058	EngineEGR
3241	AftExhGasTmp#1
3242	DPFIntakGasTmp
3245	AftExhGasTmp#3
3246	DPFOutltGasTmp
3249	AftExhGasTmp#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

hidden – the fault code is not displayed in the controller's alarm and history list

Cummins CM2250 industrial

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	FuelInletMeter
627	PowerLost
629	EEPROMChecksum
633	FuelActuator
639	hidden
641	VGT Actuator
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
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

hidden – the fault code is not displayed in the controller's alarm and history list

Cummins 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	CoolTSenShortH
145	CoolTSenShortL
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	CoolantLvlLow
212	OilTempSensorH
213	OilTempSensorL
214	OilTmpCritHigh
219	EngOilLevelLow
221	BarPressSensH
222	BarPressSensL
223	OilBurnValvSol
228	CoolPresCritLo
231	CoolPressSensH
232	CoolPressSensL
234	EngSpeedHigh
235	CoolLvlCritLow
253	OilLvlCritLow
254	FuelShutoffVal
261	FuelTempHigh
263	FuelTmpSenShrH
265	FuelTmpSenShrL
266	FuelTmpCritHig
343	ECM-IntHWFail
415	OilPresCritLow
421	OilTempHigh
422	CoolLvlSensor
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	EngOilLvlSenSH
499	EngOilLvlSenSL
514	FuelCtrlValve
554	FuelPresSenErr
555	EnginBlowbyWrn
556	EngineBlowbySD
611	EngHotShutdown

649	ChangeLubrOil
688	EngOilLvl1High
689	EngSpeedSenErr
719	BlowbyPrSensSH
729	BlowbyPrSensSL
1419	FuelRailError
1421	TimingRailDrv1
1422	TimingRailDrv2

1423	FuelPumpDiagEr
1436	HPI-PTFuelSyst
2111	EngCoolTmp2SSH
2112	EngCoolTmp2SSL
2113	EngCoolTmp2Wrn
2114	EngCoolTemp2SD

Daimler Chrysler 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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Daimler Chrysler 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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Detroit Diesel Engines DDEC IV/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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Deutz 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

hidden – the fault code is not displayed in the controller's alarm and history list

Deutz EMR3-E and 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	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	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

Deutz 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	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

Ford 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	CrankSignalFl
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	OverrdCtrlMode
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	GasFuelTempVFl
520241	Knock2
520250	FPP1
520251	TPS2 voltage
520252	IACwiring
520260	MegaJector
520270	Gov1/2/3Fail
520401	FuelImpurityH
520800	InCam/DistFl
520801	ExhtCamPosErr
520803	MegaJectorFl
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	GasFuelTempVFl
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

GM MEFI4B, 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	Depspwr 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

GM MEFI6

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	FuelSelInput
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

GM 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

GM 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	CrankSignalFl
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	OverrdCtrlMode
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	GasFuelTempVFl
520241	Knock2
520250	FPP1
520251	TPS2 voltage
520252	IACwiring
520260	MegaJector
520270	Gov1/2/3Fail
520401	FuelImpurityH
520800	InCam/DistFl
520801	ExhtCamPosErr
520803	MegaJectorFl
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	GasFuelTempVFl
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

GM 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

Isuzu 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	InjICcheckSum
10051	InjectComm
10046	Sw-IC1Int
10048	Sw-IC1Comm
10045	ADIC
697	5V SupplyFail3
10033	RAM malfuncion
10032	QR code

hidden – the fault code is not displayed in the controller's alarm and history list

Iveco 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	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	EngDerateSwtch
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	Cyl 2 error
0x10053	Cyl 3 error
0x10054	Cyl 4 error
0x10055	Cyl 5 error
0x10056	Cyl 6 error
0x10059	PWM Powerstage
0x1005A	AD-Channel
0x1005B	High pressure
0x10061	Cyl 1 ShortCir
0x10062	Cyl 2 ShortCir
0x10063	Cyl 3 ShortCir
0x10064	Cyl 4 ShortCir
0x10065	Cyl 5 ShortCir
0x10066	Cyl 6 ShortCir
0x10067	Cyl 1 OpenLoad
0x10068	Cyl 2 OpenLoad
0x10069	Cyl 3 OpenLoad
0x1006A	Cyl 4 OpenLoad
0x1006B	Cyl 5 OpenLoad
0x1006C	Cyl 6 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	Cyl 2 Timing
0x30096	Cyl 3 Timing
0x40096	Cyl 4 Timing
0x10097	Cyl 1 Calibr
0x20097	Cyl 2 Calibr
0x30097	Cyl 3 Calibr
0x40097	Cyl 4 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	InnerCtrlTemp
0x1009E	OuterCtrlTemp
0x1009F	EGSys-NOxEstIv
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

hidden – the fault code is not displayed in the controller's alarm and history list

Iveco EDC Tier3

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	EngDerateSwtch
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	Cyl 2 error
0x10053	Cyl 3 error
0x10054	Cyl 4 error
0x10055	Cyl 5 error
0x10056	Cyl 6 error
0x10059	PWM Powerstage
0x1005A	AD-Channel
0x1005B	High pressure
0x10061	Cyl 1 ShortCir
0x10062	Cyl 2 ShortCir
0x10063	Cyl 3 ShortCir
0x10064	Cyl 4 ShortCir
0x10065	Cyl 5 ShortCir
0x10066	Cyl 6 ShortCir
0x10067	Cyl 1 OpenLoad
0x10068	Cyl 2 OpenLoad
0x10069	Cyl 3 OpenLoad
0x1006A	Cyl 4 OpenLoad
0x1006B	Cyl 5 OpenLoad
0x1006C	Cyl 6 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	Cyl 2 Timing
0x30096	Cyl 3 Timing
0x40096	Cyl 4 Timing
0x10097	Cyl 1 Calibr
0x20097	Cyl 2 Calibr
0x30097	Cyl 3 Calibr
0x40097	Cyl 4 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	InnerCtrlTemp
0x1009E	OuterCtrlTemp
0x1009F	EGSys-NOxEstIv
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

hidden – the fault code is not displayed in the controller's alarm and history list

Iveco Vector

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

JCB 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
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	EngDerateSwtch
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

John Deere 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	EngDerateSwtch
1076	FuInPuFCtrlVlv
1077	FuelInPumpCtrl
1078	FuelInPumpSens
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

MAN 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

MTU ADEC (ECU7) & SAM

Fault Code (SPN)	Text
003	HI T-Fuel
004	SS T-Fuel
005	HI T-ChargeAir
006	SS T-ChargeAir
009	HI T-CoolInter
010	SS T-CoolInter
015	LO P-Lube Oil
016	SS P-Lube Oil
019	HI T-ExhaustA
020	SS T-ExhaustA
021	HI T-ExhaustB
022	SS T-ExhaustB
023	LO CoolLevel
024	SS CoolLevel
025	HI P-Diff Oil
026	SS P-Diff Oil
030	SS Overspeed
031	HI ETC1Overspd
032	SS ETC1Overspd
033	HI P-DiffFuel
034	SS P-DiffFuel
036	HI ETC2Overspd
037	SS ETC2Overspd
044	LO CoolLvlInt
051	HI T-Lube Oil
052	SS T-Lube Oil
057	LO P-coolant
058	SS P-Coolant
059	SS T-CoolantL3
060	SS T-CoolantL4
065	LO P-Fuel
066	SS P-Fuel
067	HI T-Coolant
068	SS T-Coolant
081	AL RailLeakage
082	HI P-Fuel
083	LO P-Fuel
089	SS Speed Low
090	SS IdleNtReach
091	SS ReleaseSpd
092	SS StarterSpd
093	SS T-Preheat
094	LO T-Preheat
095	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 TimingClA1
302	AL TimingClA2
303	AL TimingClA3
304	AL TimingClA4
305	AL TimingClA5
306	AL TimingClA6
307	AL TimingClA7
308	AL TimingClA8
309	AL TimingClA9
310	AL TimingClA10
311	AL TimingClB1
312	AL TimingClB2

313	AL TimingClB3
314	AL TimingClB4
315	AL TimingClB5
316	AL TimingClB6
317	AL TimingClB7
318	AL TimingClB8
319	AL TimingClB9
320	AL TimingClB10
321	AL WiringClA1
322	AL WiringClA2
323	AL WiringClA3
324	AL WiringClA4
325	AL WiringClA5
326	AL WiringClA6
327	AL WiringClA7
328	AL WiringClA8
329	AL WiringClA9
330	AL WiringClA10
331	AL WiringClB1
332	AL WiringClB2
333	AL WiringClB3
334	AL WiringClB4
335	AL WiringClB5
336	AL WiringClB6
337	AL WiringClB7
338	AL WiringClB8
339	AL WiringClB9
340	AL WiringClB10
341	AL OpenLdClA1
342	AL OpenLdClA2
343	AL OpenLdClA3
344	AL OpenLdClA4
345	AL OpenLdClA5
346	AL OpenLdClA6
347	AL OpenLdClA7
348	AL OpenLdClA8
349	AL OpenLdClA9
350	AL OpenLdClA10
351	AL OpenLdClB1
352	AL OpenLdClB2
353	AL OpenLdClB3
354	AL OpenLdClB4
355	AL OpenLdClB5
356	AL OpenLdClB6
357	AL OpenLdClB7
358	AL OpenLdClB8
359	AL OpenLdClB9
360	AL OpenLdClB10
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 PwrInterupt
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

hidden – the fault code is not displayed in the controller's alarm and history list

MTU ADEC (ECU7) & SAM – P-engines

The ECU does not support a diagnostic fault code.

MTU DDEC10

There is no text for fault codes for this ECU in this version of ECU list.

MTU ECU8 and SMARTConnect

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

Perkins ECM

Fault Code (SPN)	Text
1	InjectorCyl#1
2	InjectorCyl#2
3	InjectorCyl#3
4	InjectorCyl#4
5	InjectorCyl#5
6	InjectorCyl#6
41	8VSensPwrSupp
51	ThrottlePos
91	AccelPedalPos
92	PercentLoad
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	FuelRailPress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
183	Fuel Rate
189	RatedEngSpeed
190	EngineSpeed
228	TimingCalibr
231	J1939 Datalink
234	Incorrect FW
237	VIN
247	TotalEngHours
248	DataLinkComm
253	CheckSysParams
254	ECM Fault
261	TimingCalibr
262	5VSensPwrSupp
268	CheckPrgParams
273	TurboOutltPres
274	AtmospherPress
281	ActionAlrtLamp
282	EngOverspdLamp
285	EnCoolTempLamp
286	LubOilPresLamp
323	EnShutdownLamp
324	EngWarningLamp
342	EngSpeedSens2
443	CrankTermRelay
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
678	ECM 8DC supply
695	OverrdCtrlMode
723	SecSpeedSens
799	Service Tool
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwtch
1108	CritOverrideEn
1109	EngSdApproach
1110	Engine Sd
1111	CheckCfgParams
1266	DiagnosticLamp
1485	ECU MainRelay
1690	AnlgThrottlSig

Perkins 1300

Fault Code (SPN)	Text
1	InjectorCyl#1
2	InjectorCyl#2
3	InjectorCyl#3
4	InjectorCyl#4
5	InjectorCyl#5
6	InjectorCyl#6
41	8VSensPwrSupp
51	ThrottlePos
91	AccelPedalPos
92	PercentLoad
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	FuelRailPress
158	BattPotential
168	BatteryVoltage
172	AirInlet Temp
174	Fuel Temp
175	EngOil Temp
183	Fuel Rate
189	RatedEngSpeed
190	EngineSpeed
228	TimingCalibr
231	J1939 Datalink
234	Incorrect FW
237	VIN
247	TotalEngHours
248	DataLinkComm
253	CheckSysParams
254	ECM Fault
261	TimingCalibr
262	5VSensPwrSupp
268	CheckPrgParams
273	TurboOutltPres
274	AtmospherPress
281	ActionAlrtLamp
282	EngOverspdLamp
285	EnCoolTempLamp
286	LubOilPresLamp
323	EnShutdownLamp
324	EngWarningLamp
342	EngSpeedSens2
443	CrankTermRelay
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
678	ECM 8DC supply
695	OverrdCtrlMode
723	SecSpeedSens
799	Service Tool
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwtch
1108	CritOverrideEn
1109	EngSdApproach
1110	Engine Sd
1111	CheckCfgParams
1266	DiagnosticLamp
1485	ECU MainRelay
1690	AnlgThrottlSig

Scania S6 Single speed

Fault Code (SPN)	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

Scania S6 Single speed from ver.1794335

Fault Code (SPN)	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

Scania S6 Allspeed

Fault Code (SPN)	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

*Scania S6 Allspeed from **ver.1794335***

Fault Code (SPN)	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

Scania S8 Singlespeed

Fault Code (SPN)	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
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

Scania S8 Singlespeed

Fault Code (SPN)	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
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

Sisu EEM2/EEM3 Gen-set

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	EngDerateSwtch
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	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

Sisu EEM2/EEM3 Propulsion

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	EngDerateSwtch
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	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

VM Industrial

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	FMTCNonMonoMap
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	EngMCaS1
767	GearbxRgear
835	OPSCDLmp
859	FlFCDHtg
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwtch
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

VM Marine

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
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
620	5V SupplyFail
624	DiagnosticLamp
626	PrehActuator
627	HWEMonUMin
628	EMSProgFailure
629	EEPROMChecksum
630	CalibrMemFail
633	PCVCD
636	Crank Sensor
637	TimingSensor
639	J1939 CAN Bus
641	PCRGvnrDvt
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
679	RailPCV5
723	EngMCaS1
835	OPSCDLmp
898	RequestedSpeed
970	AuxEngSdSwitch
971	EngDerateSwtch
976	FrmMngTOPTO
1079	SSpMon
1109	EngSdApproach
1110	Engine Sd
1347	MeUnCD
1485	ECU MainRelay
1680	AOHtCDHt1

Volvo EDC3 (EMS1) or EMS2 (singlespeed engines 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
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

Volvo EDC3 (EMS1) or EMS2 (allspeed engines 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
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
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

Waukesha ESM

Fault Code (SPN)	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

Yanmar 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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

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	EngDerateSwtch
1109	EngSdApproach
1110	Engine Sd
1485	ECU MainRelay

Notes