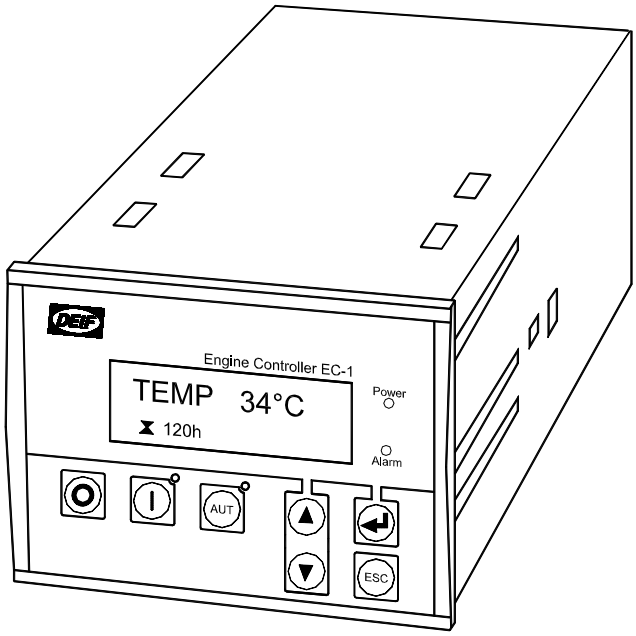
DEIF A/S

Description of options

Option H5,
CAN bus J1939
Engine Controller EC-1/EC-1M,
Generator Controller GC-1/GC-1M

4189340400B
SW 1.0X.X



- *Description of option*
- *Functional descriptions*
- *Parameter list*

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1. Warnings and legal information

Legal information and responsibility

DEIF takes no responsibility for installation or operation of the engine set. If there is any doubt about how to install or operate the engine controlled by the unit, the company responsible for the installation or the operation of the set must be contacted.

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

Safety issues

Installing the unit implies work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

Factory settings

The unit is delivered with certain factory settings. Given the fact that these settings are based on average values, they are not necessarily the correct settings for matching the individual engine. Thus precautions must be taken to check the settings before running the engine.

Definitions

Throughout this document a number of notes and warnings will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

Notes

The notes provide general information, which will be helpful for the reader to bear in mind.

Warning

The warnings indicate a potentially dangerous situation, which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

2. Description of option

Option H5

Option H5 is a software and hardware option. If option M17 is already installed, then only the software needs to be installed. Option H5 contains a communication slot with the possibility of connecting the unit to a variety of CAN bus engine communication systems.

Option H5 extracts information from the Electronic Control Module (ECM) of an engine equipped with a CAN bus interface from one of the following engine manufacturers:

- Detroit Diesel (DDEC communication)
- Deutz (EMR CAN bus communication)
- John Deere (JDEC communication)
- Volvo (Volvo Penta D12 AUX communication)
- Scania (Scania EMS communication)

The controller unit needs to be set up for the engine communication type required in the individual application. This is done in parameter menu 4771 via the PC utility software.

All these protocols are based on the CAN bus communication system. The Baud rate is fixed by the engine manufacturer at:

DDEC	EMR	JDEC	Volvo Penta	Scania EMS
250kBit/s	250kBit/s	250kBit/s	250kBit/s	250kBit/s

When the unit is equipped with option H5, it will be able to dedicate some relay outputs controlled by the level detection or binary information of selected information:

- Communication error
- EIC shutdown (Engine Interface Communication)
- Overspeed
- Coolant temperature (2 levels)
- Oil pressure (2 levels)

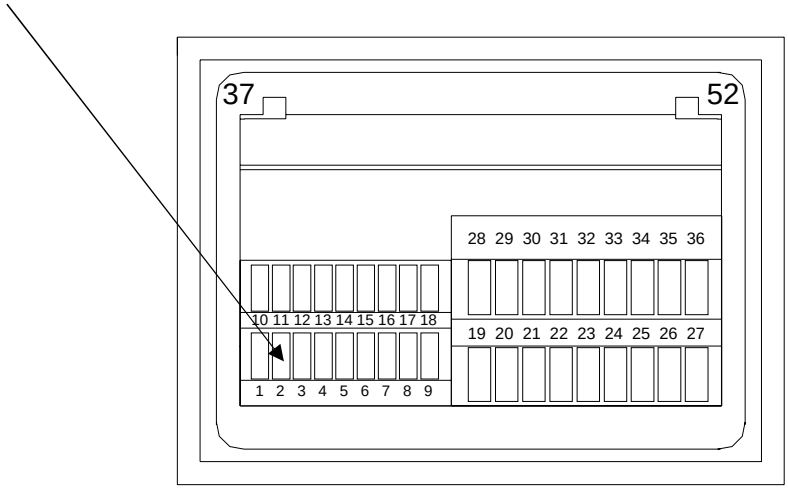
Hardware

The EIC (Engine Interface Communication) is performed via terminals 1, 2 and 3:

Terminal	Description
1	CAN-L
2	CAN common
3	CAN-H

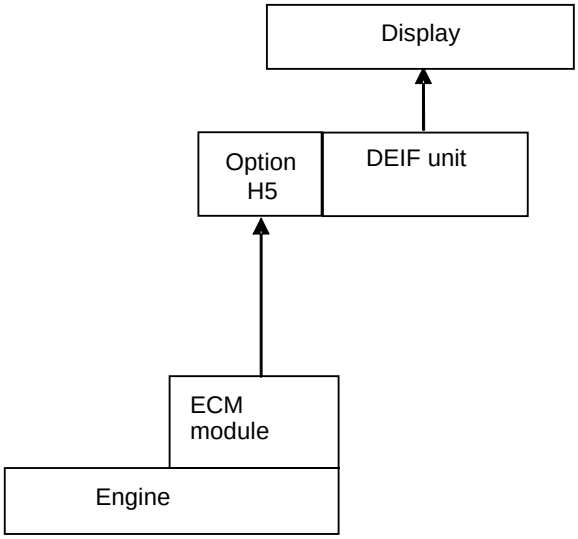
An overview of the terminals can be seen below. The slots are positioned in the unit as follows (rear of the unit):

Terminal 1: CAN-L
Terminal 2: CAN common
Terminal 3: CAN-H

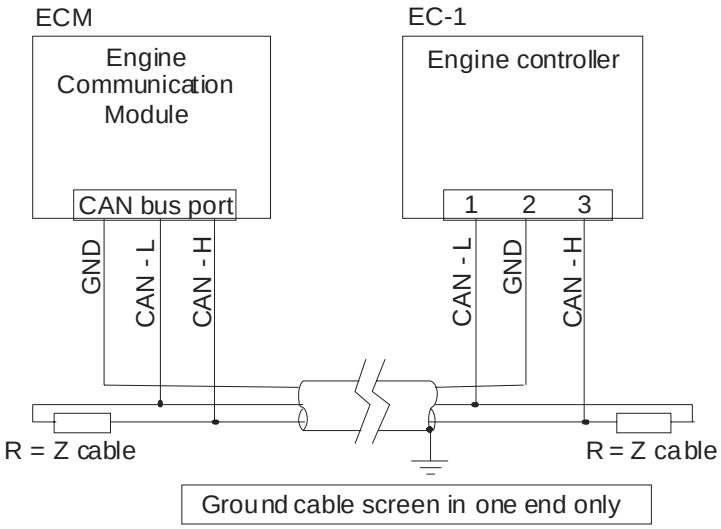


Wirings

Principle diagram:



Connection diagram:



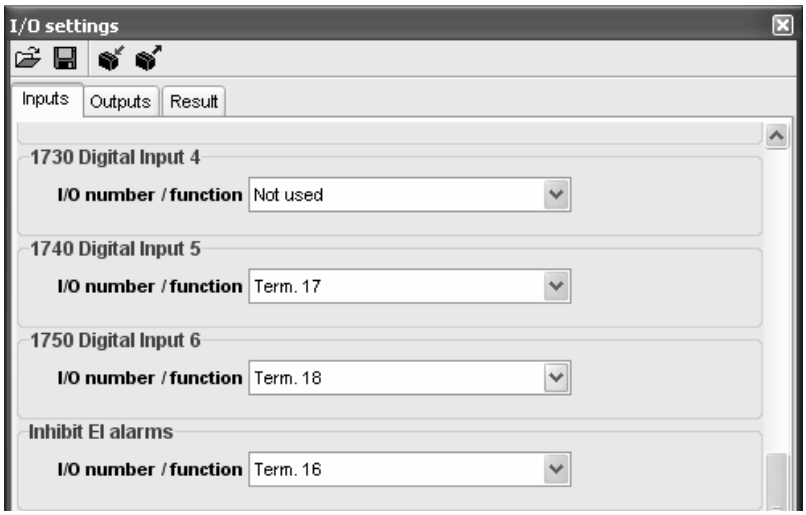
3. Functional descriptions

Alarm enabling/disabling

Refer to the Installation Instructions and Reference Handbook, chapter Utility software configuration.

If an alarm is enabled, it can be inhibited. The configuration of this inhibit function is selectable by means of the utility software in the menu line Settings/Inhibits.

The illustration below shows the inhibit EI alarms located in the I/O settings.



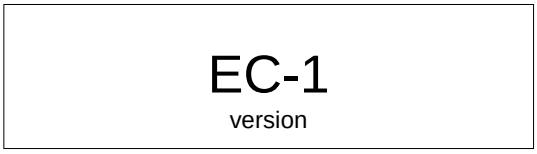
Views available on the display

Object	DDEC	EMR	JDEC	Volvo Penta	Scania EMS
Speed	Available	Available	Available	Available	Available
Coolant temp.	Available	Available	Available	Available	Available
Oil pressure	Available	Available	Available	Available	Available
EIC: Faults	N. A.	Available	N. A.	N. A.	N. A.
EIC: Oil temp.	Available	N. A.	N. A.	Available	Available
EIC: Fuel temp.	Available	N. A.	Available	N. A.	N. A.
EIC: Boost pressure	Available	N. A.	N. A.	Available	Available
EIC: Air inlet temp.	Available	N. A.	N. A.	N. A.	N. A.
EIC: Coolant level	Available	N. A.	N. A.	Available	Available
EIC: Fuel rate	Available	N. A.	Available	Available	Available
EIC: Charge air pressure	N. A.	N. A.	N. A.	N. A.	N. A.
EIC: Charge air temp.	N. A.	N. A.	Available	Available	Available
EIC: Air inlet pressure	N. A.	N. A.	N. A.	Available	N. A.
EIC: Exhaust gas temp.	N. A.	N. A.	N. A.	Available	N. A.
EIC: Engine hours	N. A.	N. A.	N. A.	Available	N. A.
EIC: Oil f. diff. press.	N. A.	N. A.	N. A.	Available	N. A.
EIC: Battery voltage	N. A.	N. A.	N. A.	Available	N. A.
EIC: Fuel del. press.	N. A.	N. A.	N. A.	Available	N. A.
EIC: Oil level	N. A.	N. A.	N. A.	Available	N. A.
EIC: Crankcase press.	N. A.	N. A.	N. A.	Available	N. A.
EIC: Coolant pressure	N. A.	N. A.	N. A.	Available	N. A.
EIC: Water in. fuel	N. A.	N. A.	N. A.	Available	N. A.

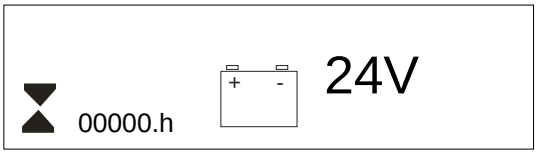
- **All the display values corresponding to this option H5 have a description beginning by 'EIC'.**
- **If a view line is not available, it will not be shown.**
- **If the value for an available view line is not available due to some type of error in the sensor, sub-system or module, '--' is shown.**
- **If the value for an available view line is not available (e.g. due to a communication error), the value field is exchanged with '—'.**
- **The menu 6001 (Engine I. Comm.) is affecting the shown value on the display.**

Display functions

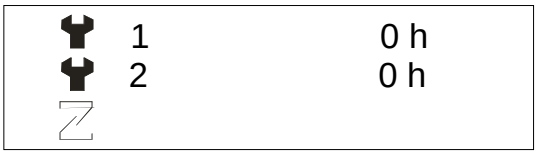
The display indicates both readings and alarms. Illustrated below are examples with icons and English language.



Type and software version

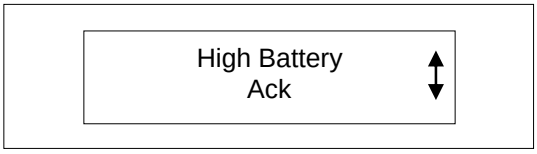


Battery voltage and running hours counter.



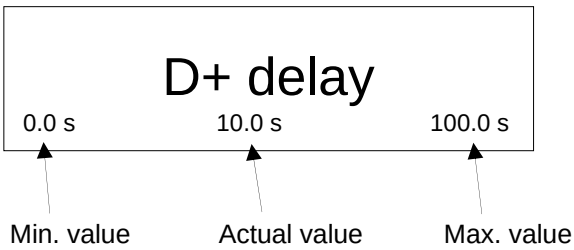
Service timer ½.

Press ↵ to enter the list of active alarms.



Active alarm list. The alarm list automatically pops up, when an alarm appears. When the arrow is present, more alarms are active. Press ∆ to scroll through the list. Exit the list by pressing ESC.

Press ↵ to enter the parameter setting.

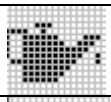
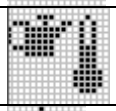
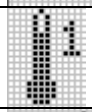
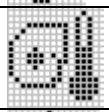
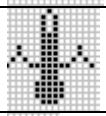
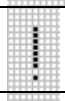
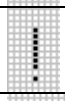
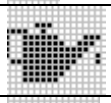
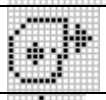
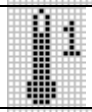
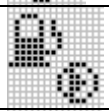
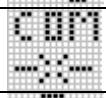
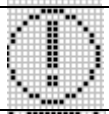
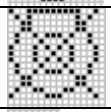
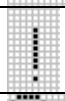
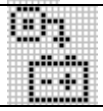


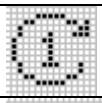
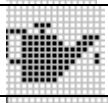
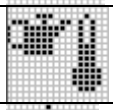
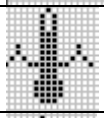
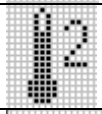
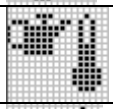
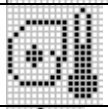
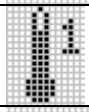
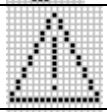
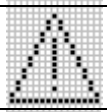
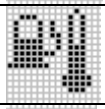
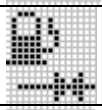
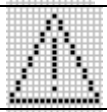
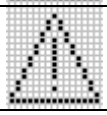
Parameter example: D+ delay setting. Use ▲ or ▼ to scroll through the settings list. If change of settings is necessary, press ↵ and enter the password. Then use ▲or▼ to change values. Use ESC to leave settings.

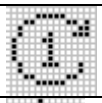
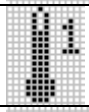
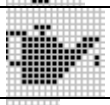
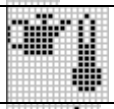
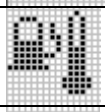
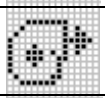
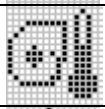
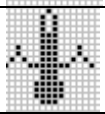
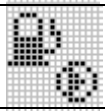
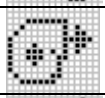
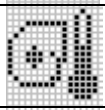
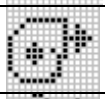
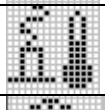
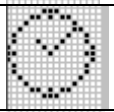
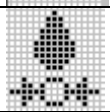
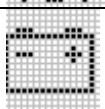
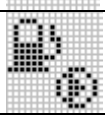
The available parameters depend on the set options. Some parameters can only be changed using the PC utility software (USW) for EC-1/GC-1. The parameter list will automatically be abandoned, if no button is pressed during a 30 sec. period.

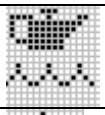
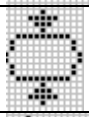
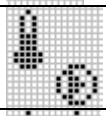
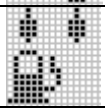
Icon list

The list covers all available icons including those not related to the engine communication.

	Warning list	Icon
1	Low oil pressure warning	
2	EIC temp. lube oil	
3	High coolant temp. warning	
4	High intercooler temp.	
5	Defect coolant level switch	
6	EMR warning	
7	JDEC warning	
8	Oil pressure	
9	Intake manifold	
10	Coolant temperature	
11	Fuel injection pump	
12	EI Comm. error	
13	EIC warning	
14	Stop limit exceeded	
15	EMS warning	
16	Charge 61	

	Shutdown list	Icon
17	Overspeed shutdown	
18	Low oil pressure shutdown	
19	EIC temp. lube oil	
20	Low coolant level shutdown	
21	High coolant temp. shutdown	
22	High oil temp. shutdown	
23	High charge air temp. shutdown	
24	High coolant temp. shutdown	
25	EMR shutdown	
26	JDEC shutdown	
27	Fuel temperature	
28	Fuel control valve	
29	ECU failure	
30	EIC shutdown	
31	EMS shutdown	

	Analogue readings	Icon
32	EIC speed	
33	EIC coolant temp.	
34	EIC oil pressure	
35	EIC faults	
36	EIC oil temp.	
37	EIC fuel temp.	
38	EIC boost pressure	
39	EIC air inlet temp.	
40	EIC coolant level	
41	EIC fuel rate	
42	EIC charge air pressure	
43	EIC charge air temp.	
44	EIC air inlet pressure	
45	EIC exhaust gas temp.	
46	EIC engine hours	
47	EIC oil f. diff. press.	
48	EIC battery voltage	
49	EIC fuel del. press.	

50	EIC oil level	
51	EIC crankcase press.	
52	EIC coolant pressure	
53	EIC water in. fuel	

Running detection

During a start sequence the start relay is deactivated, if:

- the speed exceeds the RPM running setting (option M17)
- the running feedback input is ON, or
- the measured frequency of the generator is above 30Hz (option B2/G6), or
- the speed information given by the EIC communication is above the limit given by the 6010 EIC overspeed menu

During a stop sequence the generator is considered to be stopped, if:

- the speed is below the running setting (option M17)
- the running feedback input is OFF, or
- the measured frequency of the generator is below 30Hz (option B2/G6), or
- the speed information given by the EIC communication is below the limit given by the 6010 EIC overspeed

4. Parameter list

The engine communication setup is performed through the display or the PC utility software.

Please notice that only the engine type can be set on the display, other possible settings can only be set via the PC utility software.

Parameter table description

The table consists of the following possible adjustments:

Set point: The alarm set point is adjusted in the set point menu. The setting is a percentage of the nominal values.

Timer: The timer setting is the time that must expire from the alarm level is reached until the alarm occurs.

Relay output A: A relay can be activated by output A.

Relay output B: A relay can be activated by output B.

Enable: The alarm can be activated or deactivated. ON means always activated, RUN means that the alarm has run status. This means it is activated, when the running signal is present.

Fail class: When the alarm occurs, the unit will react depending on the selected fail class.

Small differences due to the character of the parameters may exist between the individual tables.

Overview table

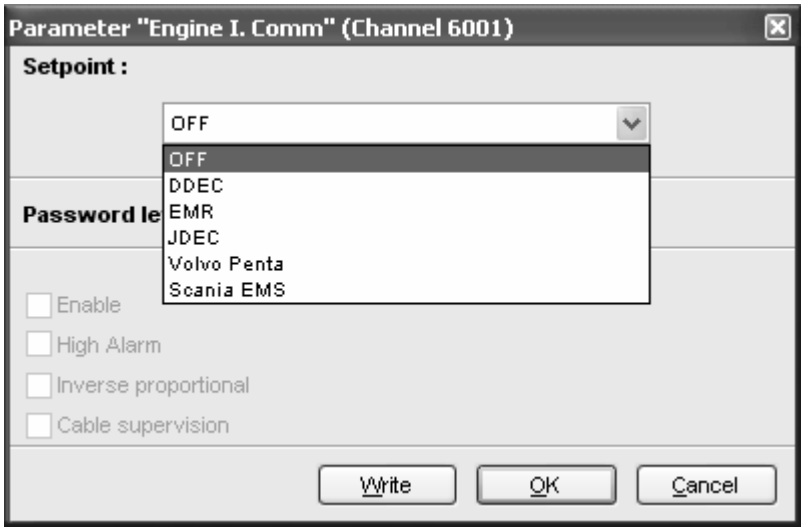
6000 Engine communications	6060 EIC temp. lube 1
6010 EIC overspeed	6070 EIC temp. lube 2
6020 EIC coolant t. 1	6080 EI communication error
6030 EIC coolant t. 2	6090 EIC shutdown
6040 EIC oil pressure 1	6190 EIC warning
6050 EIC oil pressure 2	

Parameter tables

6000 Engine communications

6001	Engine comm.	OFF	DDEC	EMR	JDEC	Volvo Penta	Scania EMS

The illustration below shows **6000 Engine communications** in the PC utility software.



The engine communication collects data from the engine. Some of that data can be used as alarm inputs.

6010 EIC overspeed

No.	Setting		Min. setting	Max. setting	Factory setting
6011	EIC overspeed	Set point	0 RPM	2000 RPM	1600 RPM
6012	EIC overspeed	Delay	0.0 s	100.0 s	2.0 s
6013	EIC overspeed	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6014	EIC overspeed	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6015	EIC overspeed	Enable	OFF	RUN	OFF
6016	EIC overspeed	Fail class	See description of fail classes		Warning

6020 EIC coolant temp. 1

No.	Setting		Min. setting	Max. setting	Factory setting
6021	EIC cool w. t. 1	Set point	-40 deg.	210 deg.	100 deg.
6022	EIC cool w. t. 1	Delay	0.0 s	100.0 s	5.0 s
6023	EIC cool w. t. 1	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6024	EIC cool w. t. 1	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6025	EIC cool w. t. 1	Enable	OFF	RUN	OFF
6026	EIC cool w. t. 1	Fail class	See description of fail classes		Warning

6030 EIC coolant temp. 2

No.	Setting		Min. setting	Max. setting	Factory setting
6031	EIC cool w. t. 2	Set point	-40 deg.	210 deg.	110 deg.
6032	EIC cool w. t. 2	Delay	0.0 s	100.0 s	5.0 s
6033	EIC cool w. t. 2	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6034	EIC cool w. t. 2	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6035	EIC cool w. t. 2	Enable	OFF	RUN	OFF
6036	EIC cool w. t. 2	Fail class	See description of fail classes		Shutdown

6040 EIC oil pressure 1

No.	Setting		Min. setting	Max. setting	Factory setting
6041	EIC oil press. 1	Set point	0.0 bar	10.0 bar	2.0 bar
6042	EIC oil press. 1	Delay	0.0 s	100.0 s	5.0 s
6043	EIC oil press. 1	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6044	EIC oil press. 1	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6045	EIC oil press. 1	Enable	OFF	RUN	OFF
6046	EIC oil press. 1	Fail class	See description of fail classes		Warning

6050 EIC oil pressure 2

No.	Setting		Min. setting	Max. setting	Factory setting
6051	EIC oil press. 2	Set point	0.0 bar	10.0 bar	1.0 bar
6052	EIC oil press. 2	Delay	0.0 s	100.0 s	5.0 s
6053	EIC oil press. 2	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6054	EIC oil press. 2	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6055	EIC oil press. 2	Enable	OFF	RUN	OFF
6056	EIC oil press. 2	Fail class	See description of fail classes		Shutdown

6060 EIC temp. lube 1

No.	Setting		Min. setting	Max. setting	Factory setting
6061	EIC temp. lube 1	Set point	0 deg.	300 deg.	40 deg.
6062	EIC temp. lube 1	Delay	0.0 s	100.0 s	5.0 s
6063	EIC temp. lube 1	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6064	EIC temp. lube 1	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6065	EIC temp. lube 1	Enable	OFF	RUN	OFF
6066	EIC temp. lube 1	Fail class	See description of fail classes		Warning

6070 EIC temp. lube 2

No.	Setting		Min. setting	Max. setting	Factory setting
6071	EIC temp. lube 2	Set point	0 deg.	300 deg.	50 deg.
6072	EIC temp. lube 2	Delay	0.0 s	100.0 s	5.0 s
6073	EIC temp. lube 2	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6074	EIC temp. lube 2	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6075	EIC temp. lube 2	Enable	OFF	RUN	OFF
6076	EIC temp. lube 2	Fail class	See description of fail classes		Shutdown

6080 EI communication error

No.	Setting		Min. setting	Max. setting	Factory setting
6081	EI comm. error	Delay	0.0 s	100.0 s	0.0 s
6082	EI comm. error	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6083	EI comm. error	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6084	EI comm. error	Enable	OFF	RUN	OFF
6085	EI comm. error	Fail class	See description of fail classes		Warning

Below is a list of warning information that can be shown on the display depending on the engine communication type:

	Warning list	DDEC	EMR	JDEC	Volvo Penta	Scania EMS
1	Low oil pressure warning	-	-	x	-	x
2	High coolant temp. warning	-	-	x	-	x
3	EMR warning	-	x	-	-	-
4	JDEC warning	-	-	x	-	-
5	Intake manifold	-	-	x	-	-
6	Fuel injection pump	-	-	x	-	-
7	Charge 61	-	-	-	-	x
8	EMS warning	-	-	-	-	x
9	Stop limit exceeded	-	-	-	-	x

6090 EIC shutdown

No.	Setting		Min. setting	Max. setting	Factory setting
6091	EIC shutdown	Delay	0.0 s	100.0 s	0.0 s
6092	EIC shutdown	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6093	EIC shutdown	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6094	EIC shutdown	Enable	OFF	RUN	OFF
6095	EIC shutdown	Fail class	See description of fail classes		Shutdown

All shutdown alarms are grouped in this menu.

6100 EIC warning

No.	Setting		Min. setting	Max. setting	Factory setting
6101	EIC warning	Delay	0.0 s	100.0 s	0.0 s
6102	EIC warning	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
6103	EIC warning	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
6104	EIC warning	Enable	OFF	RUN	OFF
6105	EIC warning	Fail class	See description of fail classes		Warning

All warning alarms are grouped in this menu. Below is a list of the shutdown alarms included in this group depending on engine communication type:

	Shutdown list	DDEC	EMR	JDEC	Volvo Penta	Scania EMS
1	Overspeed shutdown	-	X	-	-	-
2	Low oil pressure shutdown	-	X	X	-	-
3	High coolant temp. shutdown	-	X	X	-	-
4	EMR shutdown	-	X	-	-	-
5	JDEC shutdown	-	-	X	-	-
6	Fuel temperature	-	-	X	-	-
7	Fuel control valve	-	-	X	-	-
8	ECU failure	-	-	X	-	
9	EMS shutdown	-	-	-	-	x

DEIF A/S reserves the right to change any of the above