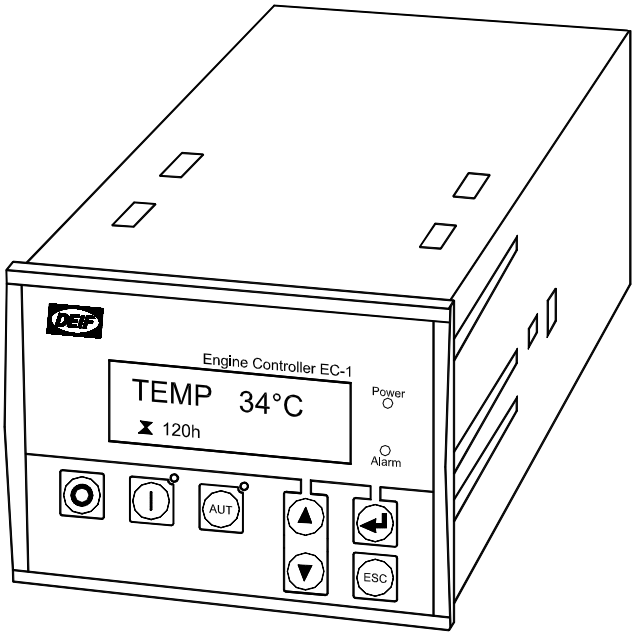
DEIF A/S

Description of options

Option M17,
Configurable inputs and RPM supervision
Engine Controller EC-1/EC-1M

4189340401D
SW 1.4X.X



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

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Table of contents

1. WARNINGS AND LEGAL INFORMATION 3

LEGAL INFORMATION AND RESPONSIBILITY 3
ELECTROSTATIC DISCHARGE AWARENESS 3
SAFETY ISSUES 3
FACTORY SETTINGS 3
DEFINITIONS 3

2. DESCRIPTION OF OPTION 4

OPTION M17 4
HARDWARE 4

3. FUNCTIONAL DESCRIPTIONS 6

ALARMS 6
VDO SENSORS 7
BINARY INPUTS WITH CABLE SUPERVISION 12
FUEL PUMP LOGIC 12
4-20MA INPUTS 14
RPM INPUTS 15

4. PARAMETER LIST 17

SETUP 17
PARAMETER GROUP 17
PARAMETER TABLE DESCRIPTION 17
OVERVIEW TABLE 18
FAIL CLASSES 19
CONFIGURABLE INPUT SELECTION 19
VDO INPUTS 19
4-20MA INPUTS 21
BINARY INPUTS WITH CABLE SUPERVISION 22
TACHO RPM INPUT 23

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 M17

Option M17 is a software and hardware option. If a standard unit is to be upgraded to have option M17, then a new unit is needed. If option H5 is already installed, then only the software is needed. Option M17 offers 3 configurable inputs. The inputs can be arranged in a mix for binary inputs with cable supervision, VDO inputs and 4…20mA inputs for connection to active transducers. When option M17 is installed, functions such as fuel pump logic and fuel fill check are possible.

In addition to the 3 configurable inputs option M17 also includes a tacho input.

Function
3 x multi-functional inputs with choice between: - VDO sensor inputs - 4-20mA inputs - Binary inputs with cable supervision
1 x RPM input, which can be used for: - Magnetic pick-up (2-wire) - W terminal on charger alternator* - NPN or PNP pick-up*

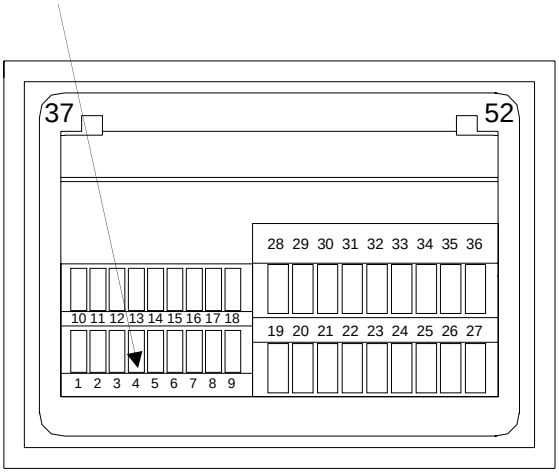
* These RPM inputs require external equipment.

For additional information about the required external equipment, please refer to chapter 3.

Hardware

Terminals

The configurable inputs are placed on terminals 4-7, and the RPM input is placed on terminals 8-9.



Unit rear view

Terminal	Technical data	Description
4	Common	Common for input 5, 6, 7
5	VDO1/4…20mA/binary input	Fuel level/configurable
6	VDO2/4…20mA/binary input	Oil pressure/configurable
7	VDO3/4…20mA/binary input	Water temp./configurable
8	Tacho - GND	Magnetic pick-up/PNP/NPN/tacho generator/charge alternator W terminal
9	Tacho - input	

3. Functional descriptions

Alarms

Alarm setting

The alarm setting relates to the selected measuring range of the alarm in question.

Alarm timer

The alarms are all based on the definite time method, i.e. if the set point is exceeded, the timer starts, and when the timer runs out, the alarm activates. If the measured value returns to normal before the timer runs out, then the timer is stopped and reset.

Alarm enabling/disabling

There are 3 choices of alarm enabling and disabling:

OFF: The alarm is OFF (not used)
ON: The alarm is always active
RUN: The alarm is only active when running status is present

Alarm fail class

There are 4 choices of alarm fail class:

Warning: Issues an alarm and activates a relay if chosen
Trip of GB: Issues an alarm, and the generator breaker is opened
Trip and stop: Issues an alarm, opens the generator breaker and activates cooling down
Shutdown: Issues an alarm and shuts the engine down immediately

VDO sensors

In the following description of the VDO inputs the order will be input 2, 3, 1. In this way we are using the same order as in the PC utility software.

There are three VDO inputs in the unit. The inputs have different functions due to the fact that the hardware design is able to cover several VDO types.

All VDO inputs have a general accuracy of 2%.

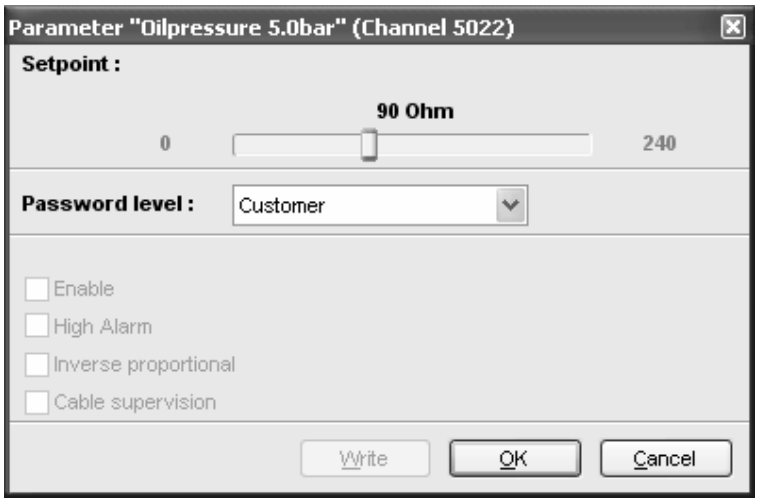
VDO input 2: Oil pressure - max. 240 Ohm
VDO input 3: Cooling water temperature - max. 2500 Ohm
VDO input 1: Fuel level sensor - max. 180 Ohm

VDO input 2, oil pressure

		VDO sensor type		
Pressure		**Type 1**	**Type 2**	**Type 3**
Bar	**Psi**	**Ω**	**Ω**	**Ω**
0	0	10.0	10.0	Configurable
0.5	7	27.2		
1.0	15	44.9		
1.5	22	62.9		
2.0	29	81.0	51.5	
2.5	36	99.2		
3.0	44	117.1	71.0	
3.5	51	134.7		
4.0	58	151.9	89.6	
4.5	65	168.3		
5.0	73	184.0	107.3	
6.0	87		124.3	
7.0	102			
8.0	116		155.7	
9.0	131			
10.0	145		184.0	

Type 3 is fully configurable with 8 points in the range 0-240 Ω. The parameter settings can be found in menu 5000.

The PC utility software setting looks like this:



8 settings are available from 0-2,5-5-6-7-8-9-10 bar.

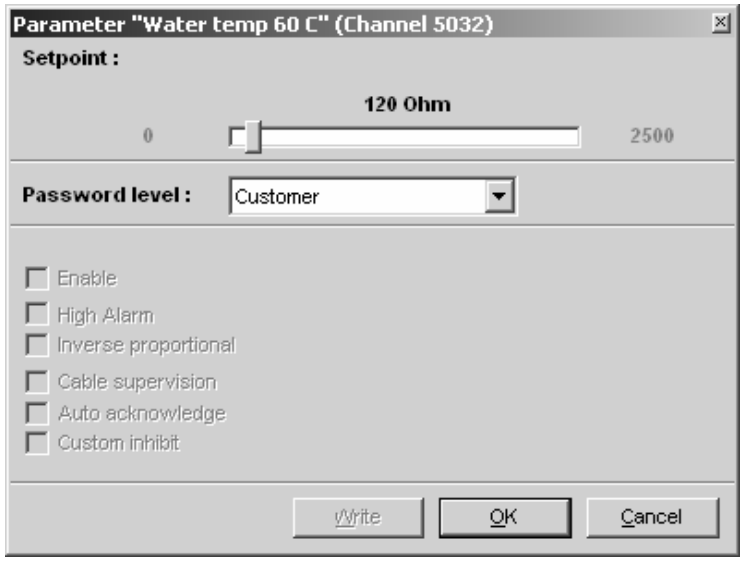
VDO input 3, cooling water temperature

		VDO sensor type			
Temperature		**Type 1**	**Type 2**	**Type 3**	**Type 4**
°C	**°F**	**Ω**	**Ω**	**Ω**	**Ω**
40	104	291.5	480.7	69.3	Configurable
50	122				
60	140	134.0	222.5	36.0	
70	158	97.1		27.9	
80	176	70.1	113.2	19.8	
90	184	51.2	83.2	15.8	
100	212	38.5	62.4	11.7	
110	230	29.1	47.6	9.5	
120	248	22.4		7.4	
130	266		28.9		
140	284				
150	302		18.2		

Type 4 is fully configurable with 8 points in the range 0-480Ω with the MK I hardware.
Type 4 is fully configurable with 8 points in the range 0-2500Ω with the MK II hardware.

The type of hardware can be identified on the label on the side of the EC-1.

The PC utility software setting looks like this:



8 settings are available from 0-40-60-80-90-100-120-150°.

VDO input 1, fuel level

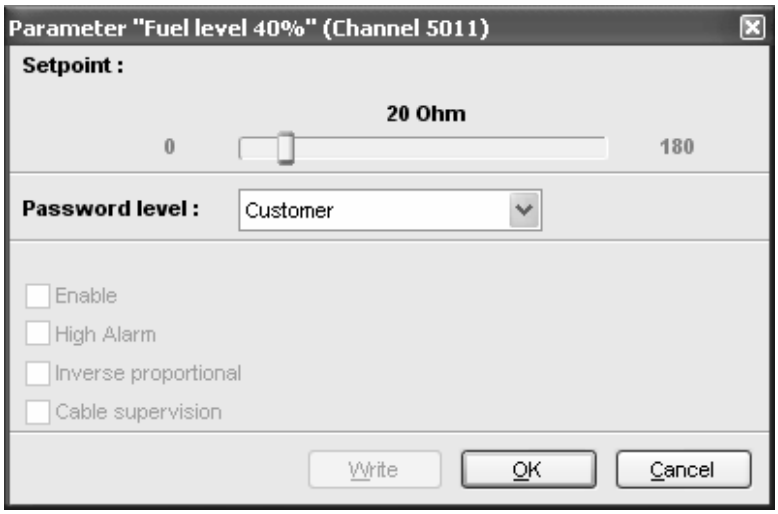
	VDO sensor type
	Type 1
Value	**Resistance**
0%	78.8Ω
100%	1.6Ω

	VDO sensor type
	Type 2
Value	**Resistance**
0%	3Ω
100%	180Ω

	VDO sensor type
Value	**Type 3**
%	**Resistance**
0	Configurable
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	

Type 3 is fully configurable with 8 points in the range 0-180Ω.

The PC utility software setting looks like this:



8 settings are available from 0-40-50-60-70-80-90-100%.

VDO usage

The VDO inputs are used as alarm inputs and can be configured in the following menus.

VDO input 2: Lubricating oil pressure - alarm settings in menus:

1350 VDO oil press. input 2.1
1360 VDO oil press. input 2.2

VDO input 3: Cooling water temperature - alarm settings in menus:

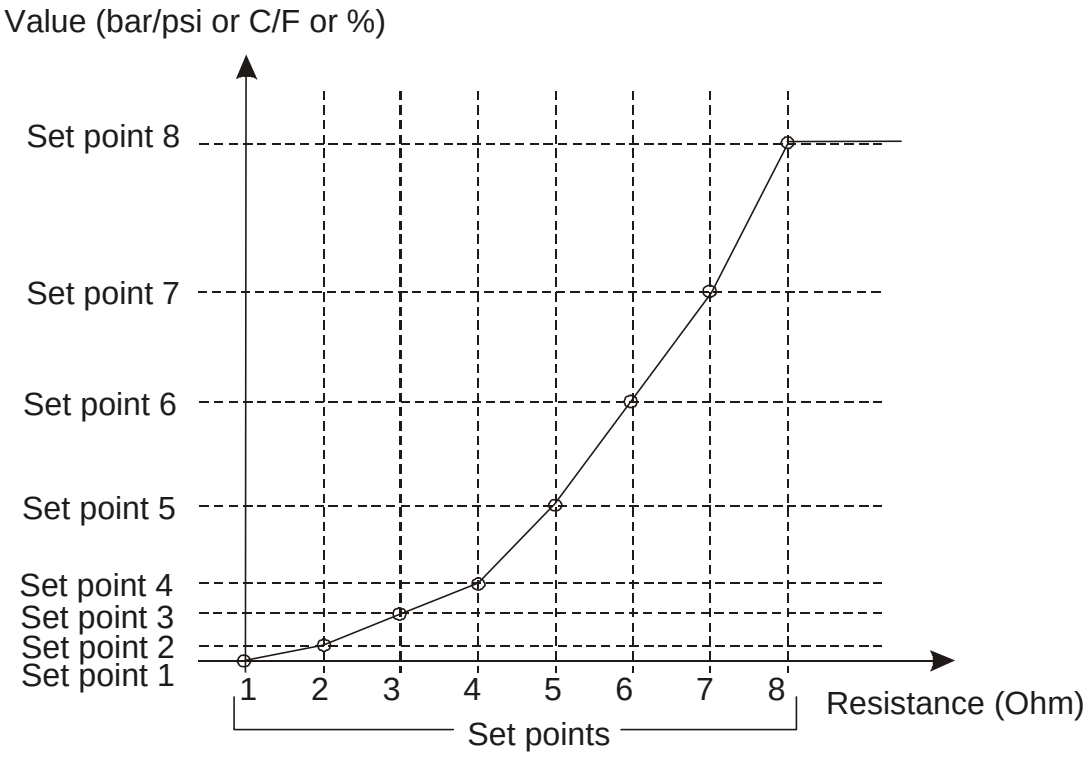
1370 VDO water temp. input 3.1
1380 VDO water temp. input 3.2

VDO input 1: Fuel level switch - alarm settings in menus:

1390 VDO fuel level input 1.1
1400 VDO fuel level input 1.2
1410 VDO fuel level input 1.3

In addition, VDO input 1 is also used for the fuel logic function.

Illustration of configurable inputs



Configuration

The 8 curve settings for the configurable VDO inputs cannot be changed in the display, but **only** in the PC utility software.

Binary inputs with cable supervision

The binary inputs are based on the VDO inputs, i.e. if a VDO input is selected, the binary input cannot be chosen, and vice versa. When selected as multi-functional inputs, the 3 VDO inputs can be changed to binary inputs with cable supervision. The cable supervision is selectable (ON/OFF) and based on the VDO inputs using a 100 Ohm resistor across the monitored switch. The resulting function is:

R < 20 Ohm =	Switch closed
30 < R < 140 Ohm =	Switch open, cable OK
150 Ohm < R =	Wire break

The setting of the alarm input is carried out in the same way as the setting of the standard binary input. So the texts are not 100% configurable but have to be chosen from a preconfigured text list.

Fuel pump logic

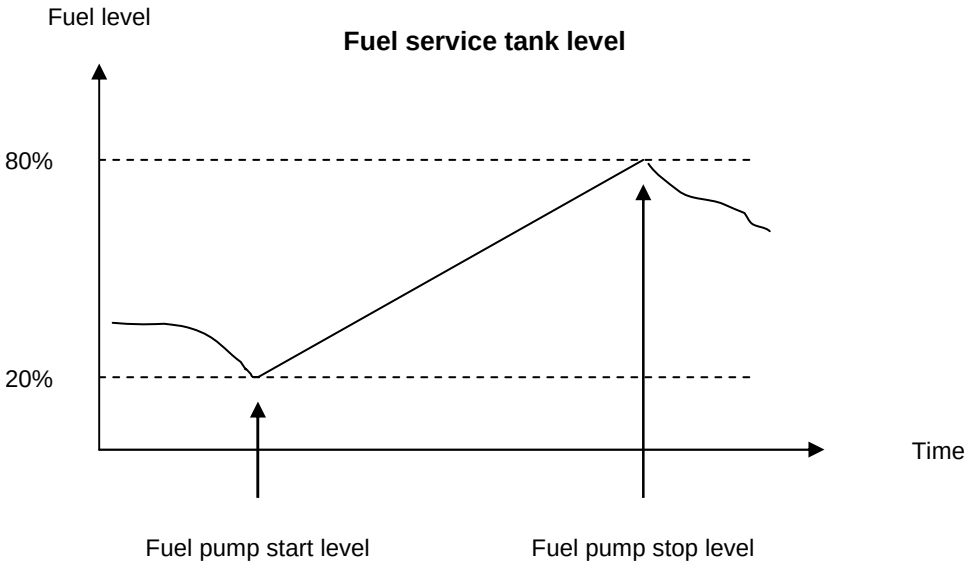
The fuel pump logic is used in order to start and stop the fuel supply pump to maintain the fuel level in the service tank at predefined levels. The start and stop limits are detected from the VDO 1 input.

Start level, factory setting at 20% (S2 - **1880 Fuel pump logic**)

Stop level, factory setting at 80% (S3 - **1882 Fuel pump logic**)

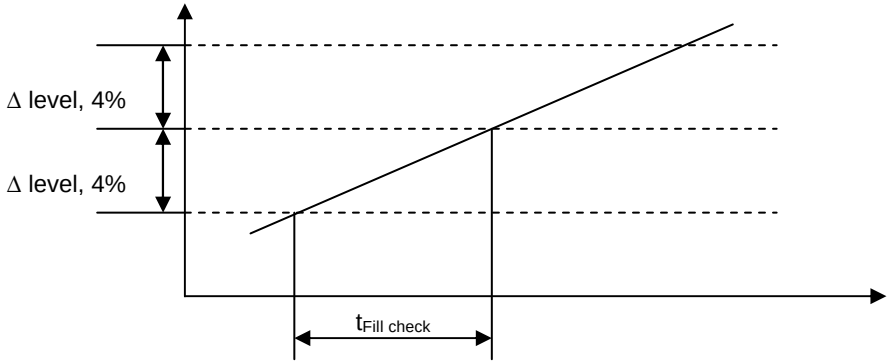
The fuel pump relay is an NO relay and is configured to relay 2 by default. This configuration cannot be changed. If other alarm functions have been configured to relay 2, and the fuel logic is activated, then a *relay channel error* alarm will occur.

- Start level, relay 2 activates
- Stop level, relay 2 deactivates



Fuel fill check
The fuel pump logic includes a *fuel fill check* function.

When the fuel pump is running, the fuel level must increase with 4% within the *fuel fill check* timer. This timer is adjusted in **1880 Fuel pump logic**, but the level of increase cannot be changed. If the fuel level does not increase at least 4% within the adjusted delay time, then the fuel pump relay will deactivate, and a *fuel fill alarm* occurs.



External heater
The external heater function can be used to turn on an external heat source, when the engine cooling water temperature gets below the limit in parameter 1890. When the engine cooling water temperature reaches the temperature set point in parameter 1900, the heater is turned off again.

A relay must be selected in the output list to turn this external heat source on/off. The relay will close to turn the heater on, or open to turn it off.

This function will only work, if the engine cooling water temperature sensor is selected to be a VDO sensor.

Engine temperature controlled GB closing
This function can be used, if it is recommendable that the engine cooling water temperature must be over a certain temperature before the engine is loaded. In the parameter 4470 it is possible to set the temperature that the cooling water temperature must exceed, before the generator breaker is closed.

The function is also enabled/disabled in parameter 4470. An engine heating message is displayed, until the engine cooling water temperature has reached the set point in parameter 4470.

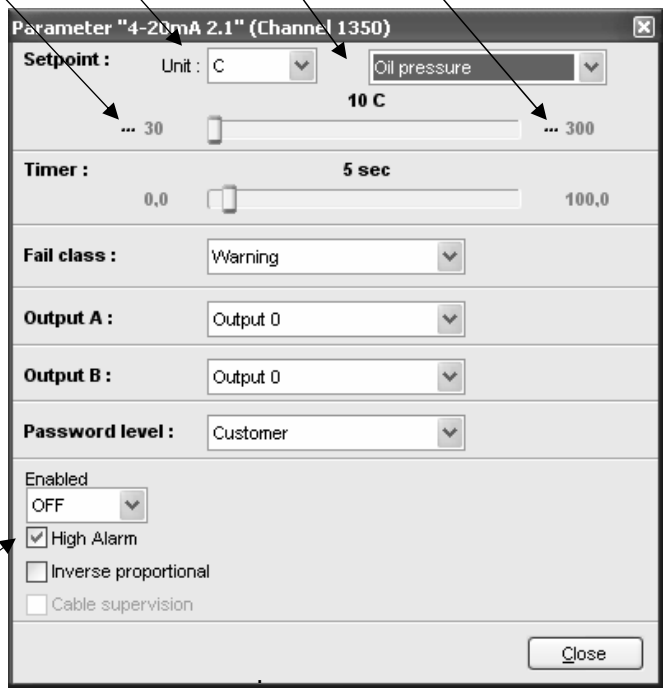
The engine cooling water temperature sensor must be selected to be a VDO sensor to make the function work. To have the GB breaker logic, option G6 must be enabled.

4-20mA inputs

The 4-20mA setting can *only* be set in the PC utility software.

Settings:

Scale top point value (click on the '...').
Name: Freely configurable (click on the '...').
UNIT: E.g. bar, mbar, C, F, %.
Scale low point value.



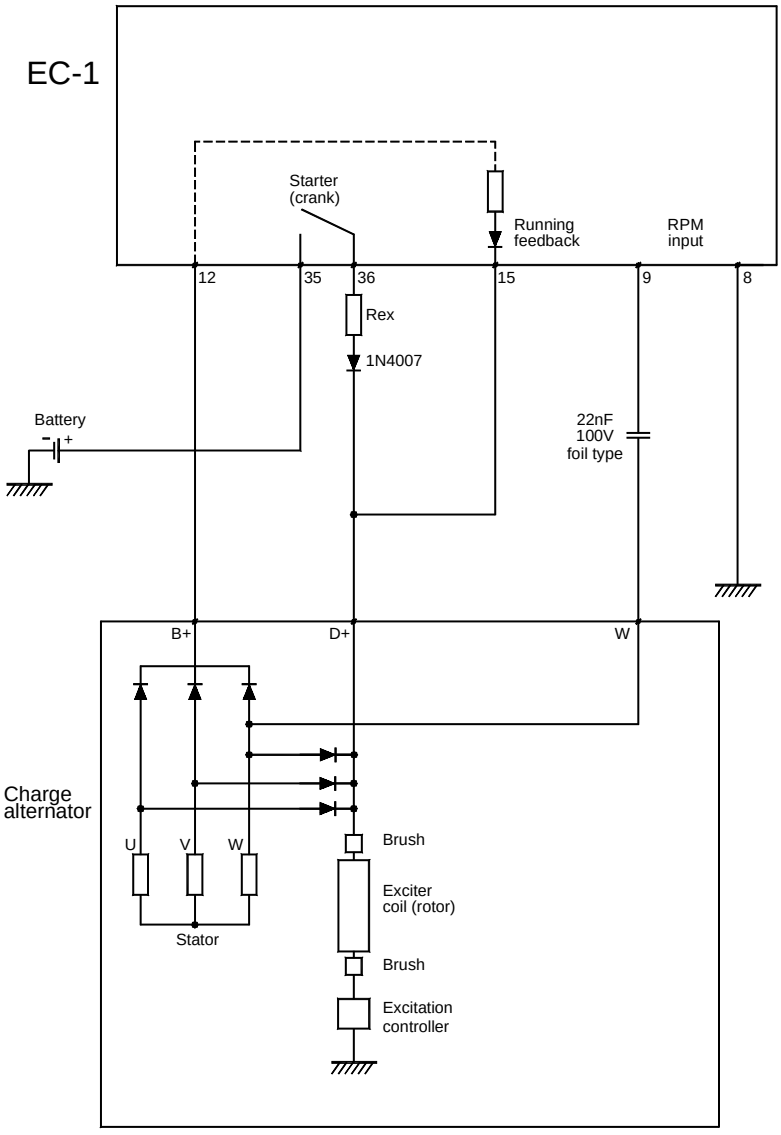
Tick boxes: Select the needed function.

RPM inputs

Charger alternator connections

This schematic diagram shows the basic way the charge alternator and the controller can cooperate.

Normally only one of the inputs *running feedback* or *RPM* is used.



Rex: Excitation resistor: 12V systems: 47 Ω 2 W
24V systems: 100 Ω 2 W

Charger alternator terminal W

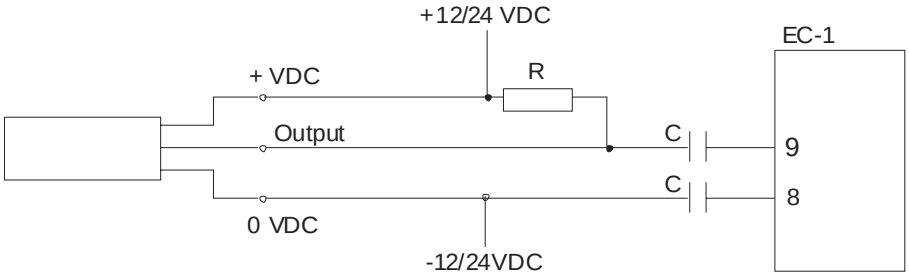
The terminal W output is an AC voltage. A 22 nF foil type capacitor must be inserted in order to eliminate the DC component.

Magnetic pick-up

The 2-wire magnetic pick-up can be connected directly to terminals 8-9.

NPN transistor output pick-up

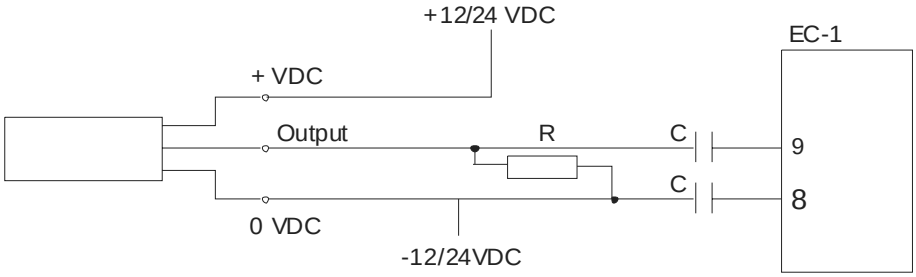
Since the NPN output is a frequency modulated DC pulse signal, a few external components are needed in order to eliminate the DC component.



C = 22 nF, 100V foil type
R = 1200 Ω (24V DC), 600 Ω (12V DC)

PNP transistor output pick-up

Since the PNP output is a frequency modulated DC pulse signal, a few external components are needed in order to eliminate the DC component.



C = 22 nF, 100V foil type
R = 1200 Ω (24V DC), 600 Ω (12V DC)

4. Parameter list

Setup

The setup of parameters is done via the PC utility software (USW). In the following the settings are presented in tables. Default settings can be changed to the relevant settings.

Parameter group

The parameter group can be enabled and disabled in the parameter 4270. If the parameter group is enabled, the parameters will be accessible from the display of the controller. To see the specific parameter, see in the parameter list. If a parameter is marked (P3), it is available from the display, if parameter group 1 is enabled. The default display parameter settings are the parameter settings that will always be present in the display parameter list. These parameters are marked with a *.

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

Protection	Protection
1340 Configurable input selection	1350 4-20mA 2.1
1350 VDO oil press. input 2.1	1360 4-20mA 2.2
1360 VDO oil press. input 2.2	1370 4-20mA 3.1
1370 VDO water temp. input 3.1	1380 4-20mA 3.2
1380 VDO water temp. input 3.2	1390 4-20mA 1.1
1390 VDO fuel level input 1.1	1400 4-20mA 1.2
1400 VDO fuel level input 1.2	1350 Binary input 2 (oil) terminal 6
1410 VDO fuel level input 1.3	1360 Binary input 3 (temp.) terminal 7
1420 Overspeed 1 (tacho input)	1370 Binary input 1 (fuel) terminal 5
1430 Overspeed 2 (tacho input)	**System**
1440 V-belt failure	1880 Fuel pump logic
1450 Charger gen.	4340 Tacho config.

Settings marked with a * can also be changed with the display/push-buttons.

Fail classes

The fail class settings for the protections have the following possibilities:

Value	Comment
0: Warning	Shown in alarm popup window and activates the chosen relays.
1: Trip	Shown in alarm popup window and activates the chosen relays. Trips the breaker (if breaker option is chosen).
2: Trip and stop	Shown in alarm popup window and activates the chosen relays. Trips the breaker (if breaker option is chosen), cools down the engine and stops it.
3: Shutdown	Shown in alarm popup window and activates the chosen relays. Trips the breaker (if breaker option is chosen) and shuts the engine down immediately.

Configurable input selection

1340 Configurable input selection

No.	Setting		Min. setting	Max. setting	Factory setting
1341	Conf. inp. 1	Set point	VDO	Binary	VDO
1342	Conf. inp. 2	Set point	VDO	Binary	VDO
1343	Conf. inp. 3	Set point	VDO	Binary	VDO

Possible selections:

- VDO
- 4...20mA
- Binary

It is possible to combine VDO inputs with binary inputs and 4…20mA inputs in a mix.

The appearance of settings 1350-1516 is dependent on selection in setting 1340. Only setting for the type selected will appear. This means for the USW that once the setting 1340, 1341, 1342 is carried out and downloaded to the unit, the parameter list must be uploaded again to get the correct functions in the parameter list.

VDO inputs

1350 VDO oil press. input 2.1

No.	Setting (D)		Min. setting	Max. setting	Factory setting
1351	VDO 2.1	Set point	0.0 bar	10.0 bar	4.0 bar
1352	VDO 2.1	Delay	0.0 s	100.0 s	5.0 s
1353	VDO 2.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1354	VDO 2.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1355	VDO 2.1	Enable	OFF	ON	OFF
1356	VDO 2.1	Fail class	See description of fail classes		

1360 VDO oil press. input 2.2

No.	Setting (D)		Min. setting	Max. setting	Factory setting
1361	VDO 2.2	Set point	0.0 bar	10.0 bar	4.0 bar
1362	VDO 2.2	Delay	0.0 s	100.0 s	5.0 s
1363	VDO 2.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1364	VDO 2.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1365	VDO 2.2	Enable	OFF	ON	OFF
1366	VDO 2.2	Fail class	See description of fail classes		

1367	VDO	Type	1	3	1

1370 VDO water temp. input 3.1

No.	Setting		Min. setting	Max. setting	Factory setting
1371	VDO 3.1	Set point	0°C	150°C	95°C
1372	VDO 3.1	Delay	0.0 s	100.0 s	5.0 s
1373	VDO 3.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1374	VDO 3.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1375	VDO 3.1	Enable	OFF	ON	OFF
1376	VDO 3.1	Fail class	See description of fail classes		

1380 VDO water temp. input 3.2

No.	Setting		Min. setting	Max. setting	Factory setting
1381	VDO 3.2	Set point	0°C	150°C	95°C
1382	VDO 3.2	Delay	0.0 s	100.0 s	5.0 s
1383	VDO 3.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1384	VDO 3.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1385	VDO 3.2	Enable	OFF	ON	OFF
1386	VDO 3.2	Fail class	See description of fail classes		

1387	VDO	Type	1	4	1

1390 VDO fuel level input 1.1

No.	Setting		Min. setting	Max. setting	Factory setting
1391	Fuel level 1.1 (P3)	Set point	0%	100%	10%
1392	Fuel level 1.1 (P3)	Delay	0.0 s	100.0 s	5.0 s
1393	Fuel level 1.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1394	Fuel level 1.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1395	Fuel level 1.1	Enable	OFF	ON	OFF
1396	Fuel level 1.1	Fail class	See description of fail classes		

1400 VDO fuel level input 1.2

No.	Setting		Min. setting	Max. setting	Factory setting
1401	Fuel level 1.2 (P3)	Set point	0%	100%	99%
1402	Fuel level 1.2 (P3)	Delay	0.0 s	100.0 s	5.0 s
1403	Fuel level 1.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1404	Fuel level 1.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1405	Fuel level 1.2	Enable	OFF	ON	OFF
1406	Fuel level 1.2	Fail class	See description of fail classes		

1410 VDO fuel level input 1.3

No.	Setting		Min. setting	Max. setting	Factory setting
1411	Fuel level 1.3 (P3)	Set point	0%	100%	80%
1412	Fuel level 1.3 (P3)	Delay	0.0 s	100.0 s	5.0 s
1413	Fuel level 1.3	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1414	Fuel level 1.3	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1415	Fuel level 1.3	Enable	OFF	ON	OFF
1416	Fuel level 1.3	Fail class	See description of fail classes		

1417	Fuel level 1	Type	1	3	1

4-20mA inputs

The scaling of the 4-20mA inputs for correct display reading can only be done via the USW. Also the selection of HIGH/LOW alarm as well as cable supervision can be carried out in the USW.

1350 4-20mA 2.1

No.	Setting		Min. setting	Max. setting	Factory setting
1351	4-20mA 2.1	Set point	4mA	20mA	10mA
1352	4-20mA 2.1	Delay	0.0 s	100.0 s	5.0 s
1353	4-20mA 2.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1354	4-20mA 2.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1355	4-20mA 2.1	Enable	OFF	ON	OFF
1356	4-20mA 2.1	Fail class	See description of fail classes		

1360 4-20mA 2.2

No.	Setting		Min. setting	Max. setting	Factory setting
1361	4-20mA 2.2	Set point	4mA	20mA	10mA
1362	4-20mA 2.2	Delay	0.0 s	100.0 s	5.0 s
1363	4-20mA 2.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1364	4-20mA 2.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1365	4-20mA 2.2	Enable	OFF	ON	OFF
1366	4-20mA 2.2	Fail class	See description of fail classes		

1370 4-20mA 3.1

No.	Setting		Min. setting	Max. setting	Factory setting
1371	4-20mA 3.1	Set point	4mA	20mA	10mA
1372	4-20mA 3.1	Delay	0.0 s	100.0 s	5.0 s
1373	4-20mA 3.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1374	4-20mA 3.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1375	4-20mA 3.1	Enable	OFF	ON	OFF
1376	4-20mA 3.1	Fail class	See description of fail classes		

1380 4-20mA 3.2

No.	Setting		Min. setting	Max. setting	Factory setting
1381	4-20mA 3.2	Set point	4mA	20mA	10mA
1382	4-20mA 3.2	Delay	0.0 s	100.0 s	5.0 s
1383	4-20mA 3.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1384	4-20mA 3.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1385	4-20mA 3.2	Enable	OFF	ON	OFF
1386	4-20mA 3.2	Fail class	See description of fail classes		

1390 4-20mA 1.1

No.	Setting		Min. setting	Max. setting	Factory setting
1391	4-20mA 1.1	Set point	4mA	20mA	10mA
1392	4-20mA 1.1	Delay	0.0 s	100.0 s	5.0 s
1393	4-20mA 1.1	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1394	4-20mA 1.1	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1395	4-20mA 1.1	Enable	OFF	ON	OFF
1396	4-20mA 1.1	Fail class	See description of fail classes		

1400 4-20mA 1.2

No.	Setting		Min. setting	Max. setting	Factory setting
1401	4-20mA 1.2	Set point	4mA	20mA	10mA
1402	4-20mA 1.2	Delay	0.0 s	100.0 s	5.0 s
1403	4-20mA 1.2	Output A	R0 (none)	R5 (relay 5)	R0 (none)
1404	4-20mA 1.2	Output B	R0 (none)	R5 (relay 5)	R0 (none)
1405	4-20mA 1.2	Enable	OFF	ON	OFF
1406	4-20mA 1.2	Fail class	See description of fail classes		

Binary inputs with cable supervision

The text for the inputs for correct display reading can only be done via the USW.

1350 Binary input 2 (oil) terminal 6

No.	Setting		Min. setting	Max. setting	Factory setting
1351	Term. 6	Delay	0.0 s	100.0 s	5.0 s
1352	Term. 6	Output A	R0 (none)	R3 (relay 3)	R0 (none)
1353	Term. 6	Output B	R0 (none)	R3 (relay 3)	R0 (none)
1354	Term. 6	Cable supervision	OFF	ON	OFF
1355	Term. 6	Enable	OFF	ON	OFF
1356	Term. 6	Fail class	See description of fail classes		

1360 Binary input 3 (temp.) terminal 7

No.	Setting		Min. setting	Max. setting	Factory setting
1361	Term. 7	Delay	0.0 s	100.0 s	5.0 s
1362	Term. 7	Output A	R0 (none)	R3 (relay 3)	R0 (none)
1363	Term. 7	Output B	R0 (none)	R3 (relay 3)	R0 (none)
1364	Term. 7	Cable supervision	OFF	ON	OFF
1365	Term. 7	Enable	OFF	ON	OFF
1366	Term. 7	Fail class	See description of fail classes		

1370 Binary input 1 (fuel) terminal 5

No.	Setting		Min. setting	Max. setting	Factory setting
1371	Term. 5	Delay	0.0 s	100.0 s	5.0 s
1372	Term. 5	Output A	R0 (none)	R3 (relay 3)	R0 (none)
1373	Term. 5	Output B	R0 (none)	R3 (relay 3)	R0 (none)
1374	Term. 5	Cable supervision	OFF	ON	OFF
1375	Term. 5	Enable	OFF	ON	OFF
1376	Term. 5	Fail class	See description of fail classes		

Tacho RPM input

1420 Overspeed 1 (tacho input)

No.	Setting		Min. setting	Max. setting	Third setting	Factory setting
1421	Overspeed	Set point	1 RPM	4000 RPM	-	1900 RPM
1422	Overspeed	Timer	0.2 s	100.0 s	-	15.0 s
1423	Overspeed	Relay output A	R0 (none)	R5 (relay 5)	-	R0 (none)
1424	Overspeed	Relay output B	R0 (none)	R5 (relay 5)	-	R0 (none)
1425	Overspeed	Enable	OFF	ON	RUN	OFF
1426	Overspeed	Fail class	See description of fail classes			

The overspeed setting 1 is disabled, if the secondary set point input is activated.

1430 Overspeed 2 (tacho input)

No.	Setting		Min. setting	Max. setting	Third setting	Factory setting
1431	Overspeed	Set point	1 RPM	4000 RPM	-	1900 RPM
1432	Overspeed	Timer	0.2 s	100.0 s	-	15.0 s
1433	Overspeed	Relay output A	R0 (none)	R5 (relay 5)	-	R0 (none)
1434	Overspeed	Relay output B	R0 (none)	R5 (relay 5)	-	R0 (none)
1435	Overspeed	Enable	OFF	ON	RUN	OFF
1436	Overspeed	Fail class	See description of fail classes			

The overspeed setting 2 is enabled, if the secondary set point input is activated.

1440 V-belt failure

No.	Setting		Min. setting	Max. setting	Factory setting
1441	V-belt (P3)	Timer	0.0 s	10.0 s	1.0 s
1442	V-belt	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
1443	V-belt	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
1444	V-belt	Enable	OFF	ON	OFF
1445	V-belt	Fail class	See description of fail classes		

The V-belt failure is used on air-cooled engines to monitor that the V-belt driven cooling fan is operating properly. This alarm requires W input to be used in parallel with another running feedback at the same time. The status of both will be compared. If they do not match, a V-belt alarm will be activated.

1450 Charger gen.

No.	Setting		Min. setting	Max. setting	Factory setting
1451	Charger gen. (P3)	Timer	0.0 s	60.0 s	0.2 s
1452	Charger gen.	Relay output A	R0 (none)	R5 (relay 5)	R0 (none)
1453	Charger gen.	Relay output B	R0 (none)	R5 (relay 5)	R0 (none)
1454	Charger gen.	Enable	OFF	ON	OFF
1455	Charger gen.	Fail class	See description of fail classes		

This alarm requires D+ or W input to be used in parallel with another running feedback at the same time (binary input, tacho, generator voltage), the status of both will be compared. If they do not match, a charger gen. alarm will be activated.

1880 Fuel pump logic

No.	Setting		Min. setting	Max. setting	Factory setting
1881	Fuel pump logic (P3)	Set point 1	0%	100%	20%
1882	Fuel pump logic (P3)	Set point 2	0%	100%	90%
1883	Fuel pump logic (P3)	Timer	0.1 s	300.0 s	60.0 s
1884	Fuel pump logic (P3)	Enable	OFF	ON	OFF

Relay 2 is dedicated to this function and must be set as NOT used in the I/O setting menu.

1341 Conf. inp. 1 must be set to VDO to activate the fuel pump logic.

1890 External heater on

No.	Setting		Min. setting	Max. setting	Factory setting
1890	External heater on	Set point	0 C/F	100 C/F	10 C/F

1900 External heater off

No.	Setting		Min. setting	Max. setting	Factory setting
1900	External heater off	Set point	0 C/F	100 C/F	20 C/F

In order to make the external heater function work, a relay must be designated to this function in the output settings.

4270 Parameter group 3

No.	Setting		Min. setting	Max. setting	Factory setting
4270	Parameter group 3	Enable	OFF	ON	OFF

If a parameter list is enabled, the parameters marked (P3) are available in the display parameter list.

4470 GB on water temp.

No.	Setting		Min. setting	Max. setting	Factory setting
4471	GB on water temp.	Set point	0 C/F	100 C/F	40 C/F
4472	GB on water temp.	Enable	OFF	ON	OFF

4480 Oil pres. run detection

No.	Setting		Min. setting	Max. setting	Factory setting
4481	Oil pres. run detection	Set point	0 bar/PSI	150 bar/PSI	1 bar/PSI
4482	Oil pres. run detection	Enable	OFF	ON	OFF

4340 Tacho config.

No.	Setting		Min. setting	Max. setting	Factory setting
4341	Tacho config.	Set point	0 RPM	4000 RPM	400 RPM
4342	Tacho config.	Number of teeth	0 teeth	500 teeth	0 teeth

The tacho config. set point is used to deactivate the start relay. The number of teeth is used to configure the tacho input. The tacho input must be configured to 0 teeth when not in use. The tacho input accepts magnetic pick-up (direct connection) or NPN/PNP/charger generator W input. Refer to functional description for information. The frequency range for the tacho input is 10Hz to 10000Hz.