DEIF

-power in control

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MULTI-LINE 2
DESCRIPTION OF OPTIONS

Option M15.x
Configurable I/O extension cards, four 4-20 mA inputs

- Description of option
- Functional description

1. Delimitation

1.1 Scope of option M15

This description of options covers the following products:

AGC-3	SW version 3.6x.x or later
AGC-4	SW version 4.1x.x or later
GPC/GPU Hydro	SW version 3.08.x or later
GPU/PPU	SW version 3.08.x or later
PPM	SW version 3.0x.x or later

2. General information

2.1 Warnings, legal information and safety

2.1.1 Warnings and notes

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

Warnings

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

Notes

ⓘ **Notes provide general information, which will be helpful for the reader to bear in mind.**

2.1.2 Legal information and disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator controlled by the Multi-line 2 unit, the company responsible for the installation or the operation of the set must be contacted.

⚠ **The Multi-line 2 unit is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.**

Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

2.1.3 Safety issues

Installing and operating the Multi-line 2 unit may imply 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.**

2.1.4 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.

2.1.5 Factory settings

The Multi-line 2 unit is delivered from factory with certain factory settings. These are based on average values and are not necessarily the correct settings for matching the engine/generator set in question. Precautions must be taken to check the settings before running the engine/generator set.

3. Description of option

3.1 Option M15.x

Option M15.x is a hardware option and therefore a separate PCB is installed in addition to the standard-installed hardware.

3.1.1 Terminal description, M15.6

Term.	Function	Technical data	Description
90	Analogue input 91	Common	4-20 mA input, configurable
91	Analogue input 91	4-20 mA in	
92	Analogue input 93	Common	4-20 mA input, configurable
93	Analogue input 93	4-20 mA in	
94	Analogue input 95	Common	4-20 mA input, configurable
95	Analogue input 95	4-20 mA in	
96	Analogue input 97	Common	4-20 mA input, configurable
97	Analogue input 97	4-20 mA in	

3.1.2 Terminal description, M15.8

Term.	Function	Technical data	Description
126	Analogue input 127	Common	4-20 mA input, configurable
127	Analogue input 127	4-20 mA in	
128	Analogue input 129	Common	4-20 mA input, configurable
129	Analogue input 129	4-20 mA in	
130	Analogue input 131	Common	4-20 mA input, configurable
131	Analogue input 131	4-20 mA in	
132	Analogue input 133	Common	4-20 mA input, configurable
133	Analogue input 133	4-20 mA in	

(i) **Please refer to the Installation Instructions for the wiring of active and passive transducers.**

(i) **AGC-3/PPM: The option M15 can only be installed one time for each unit, so it is not possible to have M15.6 and M15.8 at the same time.**

4. Functional description

4.1 Analogue input configuration

The analogue input can be used for protection and display of values. The configuration can be done with the ML-2 utility software or by using the display.

In the display, the readings of the 4-20 mA input can be read. The readings are found in the second line of the setup menu or, if configured, in the view menu system.

ⓘ **Refer to the Designer's Reference Handbook regarding the menu system and configuration of user views.**

The ML-2 utility software enables you to change the text, scale and unit of the measurement. The text and units can be changed in the "Translations" section of the utility software. The menus used for configuring the scale are 11010-11110. The menus available are option-dependent and can only be accessed from the ML-2 utility software.

If the text of the input is changed, you will see the changed text. This could e.g. be "Oil press. ##bar" instead of "4-20mA 91.1 ##mA".

4.1.1 Scaling

The analogue inputs configured as 4-20 mA relate to the unit and range of the measured value corresponding to 4-20 mA. These can be changed in the PC utility software in order to get the correct reading in the display. Scaling of 4-20 mA input: 11040/11050/11060/11070.

ⓘ **"Enable" selected will auto-scale associated "min." and "max." values in 4000/4010/4030/4040/4060/4070/4090/4100 with two decimals after the decimal point.**
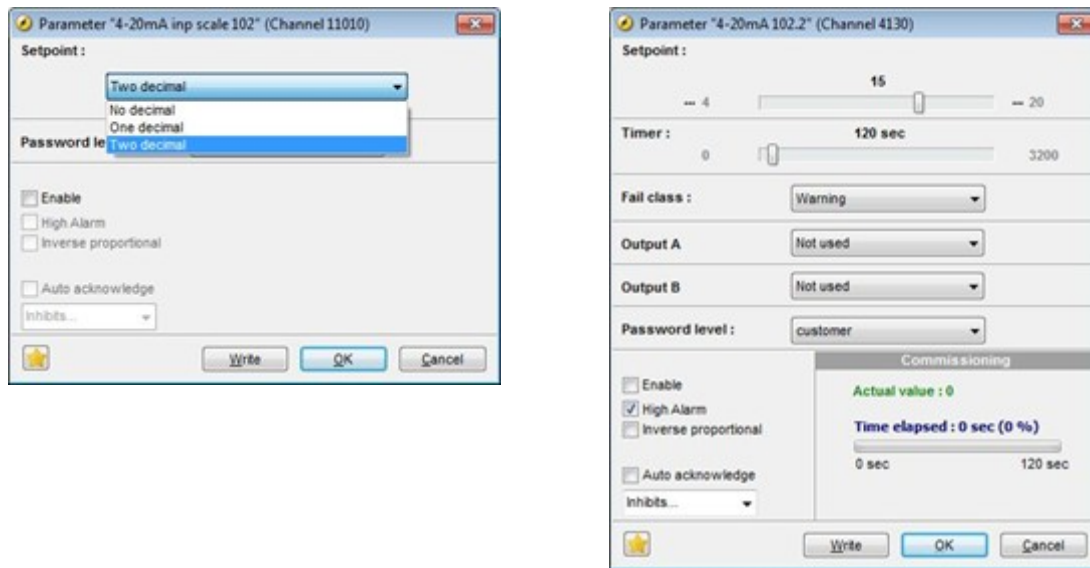
(i) **If "Enable" is deselected, then auto-scale of associated "min." and "max." values in 4000/4010/4030/4040/4060/4070/4090/4100 will have two decimals in front of the decimal point.**

(i) **"Enable" is normally only deselected if preprogrammed usw files are used. This is done to prevent unwanted auto-scaling of predefined input ranges.**

4.2 Differential measurement

The option M15 provides differential measurements between two analogue input values.

The differential measurement functionality relates to the hardware supporting configurable analogue inputs or engine communication.

Menu setup and functional description are specified in the Designer's Reference Handbook (DRH) for the respective products listed below.

Product	DRH doc. no.
GPC-3	4189340587
GPU-3	4189340584
PPU-3	4189340583

(i) **Differential measurements are available in GPC-3, GPU-3 and PPU-3 from version 3.08.0.**

4.3 Inverse proportional

In situations where the signal of the input is reversed, the "Inverse proportional" selection can be made. The selection ensures that the display reading is correct when an "inversed" signal is made.

(i) **Please refer to the Designer's Reference Handbook for a description of scaling.**

The diagram shows the characteristics of the "normal" proportional sensor and of the inversed proportional sensor.
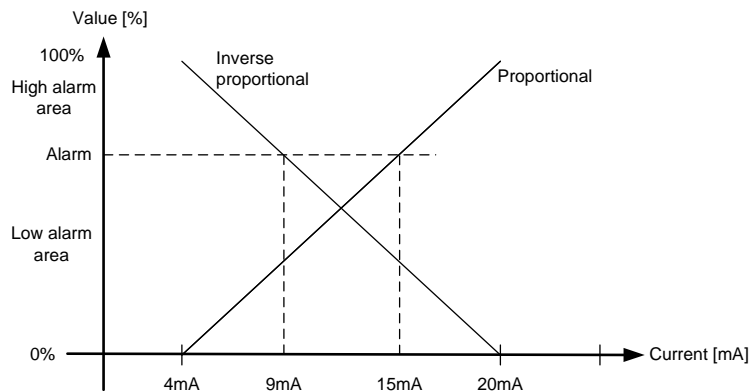
(i) **This function can only be activated by using the ML-2 utility software.**

4.4 PC utility software

The PC utility software is a Windows® based software, which can be downloaded from our website www.de-if.com. To adjust the inputs via the PC utility software, a computer must be connected to the controller unit. Furthermore, the unit parameters must be uploaded to the computer.

4.5 Wire failure detection

If it is necessary to supervise the sensors/wires connected to the analogue inputs, it is possible to activate the wire failure detection on each individual input.

If the measured value on the input is outside the normal dynamic area of the input, it will be detected as if the wire has made a short circuit or a break, and an alarm with a configurable fail class will be activated.

4.5.1 Principle
The illustration below shows that when the wire of the input breaks, the measured value will drop to zero. Then the alarm will occur.
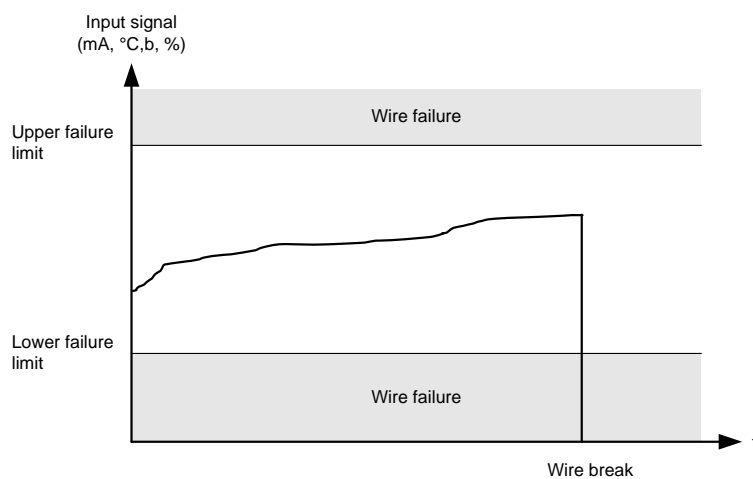
5. Parameters

5.1 Further information

The option M15 relates to the parameters 4000-4110 (M15.6) and 4800-4910 (M15.8).

For further information, please see the separate parameter list for the Multi-line unit in question:

AGC-3	Document number 4189340705
AGC-4	Document number 4189340688
PPM	Document number 4189340672
GPC-3/GPU-3 Hydro	Document number 4189340580
PPU-3/GPU-3	Document number 4189340581