# AGC-4 Mk II

4189341281C

Configurable I/O extension cards, 4 multi-inputs (4-20 mA/0-5 V/Pt100)

**Option M16.x**

DEIF Improve Tomorrow

# 1. Delimitation

## 1.1 Scope of option M16

This description of option covers AGC-4 Mk II, SW version 6.00.0 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**

**DANGER!**

**This shows dangerous situations.**

If the guidelines are not followed, these situations will result in death, serious personal injury, and equipment damage or destruction.

**Notes**

**NOTE** 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.

**NOTE** 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.

The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

### 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.

**DANGER!**

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 unit is delivered from the factory with default settings. These are not necessarily correct for the engine/generator set. Check all the settings before running the engine/generator set.

# 3. Description of option

## 3.1 Option M16.x

Option M16.x is a hardware option and therefore a separate PCB is installed in addition to the standard-installed hardware.

### 3.1.1 Terminal description, M16.6

| Term. | Function | Technical data | Description |
|---|---|---|---|
| 90 | Multi-input 91 | Common | Multi-input configurable: 4-20 mA/0-5 V/Pt100 |
| 91 | Multi-input 91 | Analogue in | |
| 92 | Multi-input 93 | Common | Multi-input configurable: 4-20 mA/0-5 V/Pt100 |
| 93 | Multi-input 93 | Analogue in | |
| 94 | Multi-input 95 | Common | Multi-input configurable: 4-20 mA/0-5 V/Pt100 |
| 95 | Multi-input 95 | Analogue in | |
| 96 | Multi-input 97 | Common | Multi-input configurable: 4-20 mA/0-5 V/Pt100 |
| 97 | Multi-input 97 | Analogue in | |

### 3.1.2 Terminal description, M16.8

| Term. | Function | Technical data | Description |
|---|---|---|---|
| 126 | Multi-input 127 | Common | Configurable: 4-20 mA/0-5 V/Pt100 |
| 127 | Multi-input 127 | Analog in | |
| 128 | Multi-input 129 | Common | Configurable: 4-20 mA/0-5 V/Pt100 |
| 129 | Multi-input 129 | Analog in | |
| 130 | Multi-input 131 | Common | Configurable: 4-20 mA/0-5 V/Pt100 |
| 131 | Multi-input 131 | Analog in | |
| 132 | Multi-input 133 | Common | Configurable: 4-20 mA/0-5 V/Pt100 |
| 133 | Multi-input 133 | Analog in | |

**More information**
See the **Installation Instructions** for wiring of the different types of sensors.

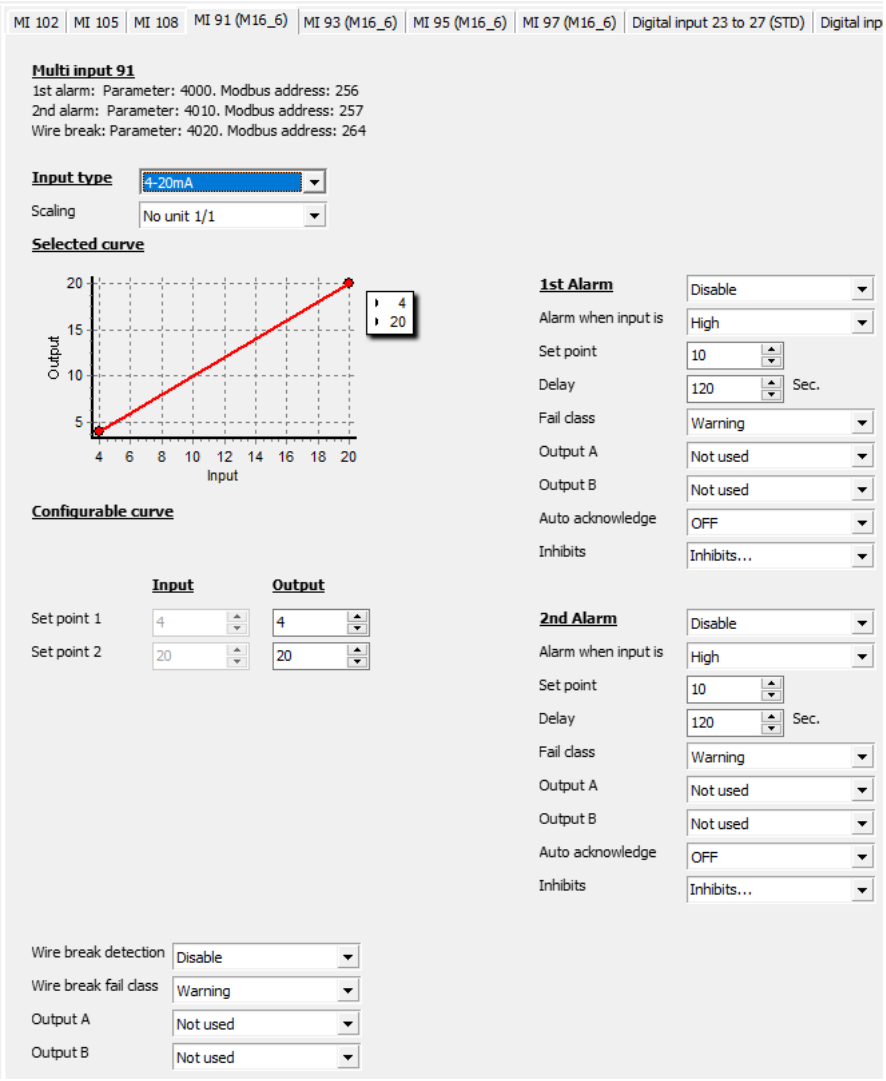
# 4. Function description

## 4.1 Analogue input configuration

Option M16 has four multi-inputs. You can select the following three input types:

1. 4-20 mA
2. 0-5V DC
3. Pt100

Configure each multi-input in the PC utility software, on the *I/O setup* page. See the example below.




### Setting up alarms and wire break detection using parameters

As the example above shows, the alarms and wire break detection can also be set up using parameters. Changes to the parameters (that are written to the controller) change the values shown under *I/O setup*, and vice versa.

### 4.1.1 4-20 mA configuration

#### Configuration using the utility software

Each analogue input can be configured as a **4-20mA** input on the *I/O setup* page, as shown above.

**Configure the curve**: Select the *Output* values for *Set point 1* and *Set point 2*. For an inverse proportional curve, *Set point 1* has the higher output value.

### Viewing the 4-20 mA input value

In the DU-2 display, the readings of the 4-20 mA input can be shown. The readings are found in the second line of the setup menu or, if configured, in the view menu system.

**More information**
See the **Operator's manual** for information on the menu system and configuration of user views.

### Changing the measurement text and unit

The utility software enables you to change the text and unit of the measurement. The text and units can be changed on the *Translations* page of the utility software. If the text of the input is changed, you will see the changed text. For example, instead of "4-20mA 91.1 ##mA", this could be "Oil press. ##bar".

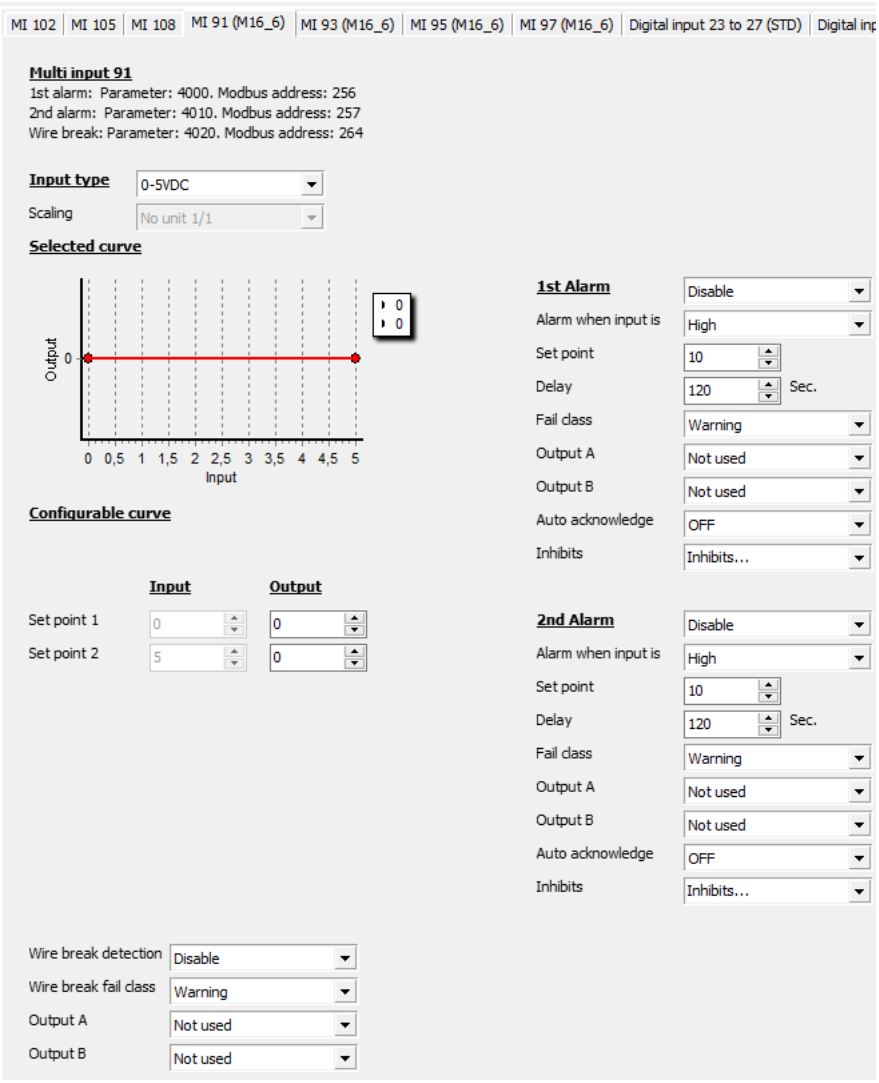
### Selecting the decimals to display

Before configuring the curve, on the *I/O setup* page, under *Scaling*, select **No unit 1/1** to show no decimals, **No unit 1/10** to show 1 decimal, and **No unit 1/100** to show two decimals.

## 4.1.2 0-5V DC

### Configuration using the utility software

On the *I/O setup* page, select **0-5VDC** for sensors which give a 0-5V DC output, as shown below.



**Configure the curve**: Select the *Output* values for *Set point 1* and *Set point 2*. For an inverse proportional curve, *Set point 1* has the higher output value.

### Changing the measurement text and unit

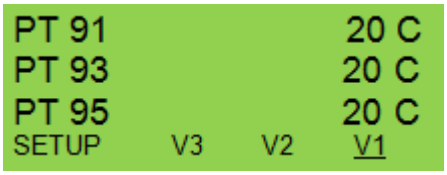
The utility software enables you to change the text and unit of the measurement. The text and units can be changed on the *Translations* page of the utility software. If the text of the input is changed, you will see the changed text.

## 4.1.3 Pt100

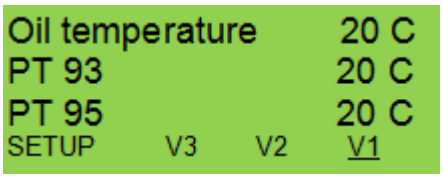
This input type can be used for a temperature sensor, for example, cooling water temperature. The unit of the measured value can be changed from Celsius to Fahrenheit in the PC utility software in menu 10970. This changes the reading in the DU-2 display.

Pt100 uses the IEC0.00385 standard to define the relationship between resistance and temperature. It is possible to measure in the range -40 to 250 degrees Celsius, or -49 to 482 degrees Fahrenheit.

The display will show the actual Pt100 measurement:




It is also possible to make a translation of the text in the display: For example, the translation can show that the measured value is oil temperature. Translations can be done using the PC utility software.




# 4.2 Differential measurement

The controller can use the option M16 inputs for differential measurements between two analogue input values. The differential measurement setup and function are described in the **Designer's Handbook**.

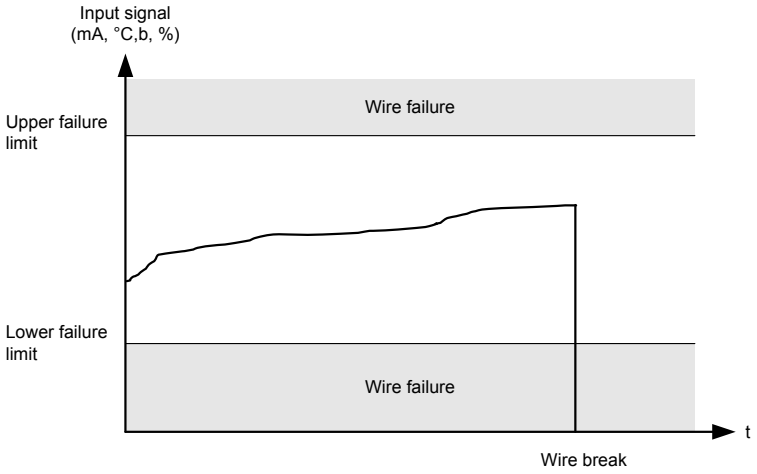
# 4.3 Wire failure detection

If it is necessary to supervise the sensors/wires connected to the multi-inputs, then it is possible to enable the wire break function for each 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. An alarm with a configurable fail class will be activated.

| Input | Wire failure area | Normal range | Wire failure area |
|---|---|---|---|
| 4-20 mA | < 3 mA | 4-20 mA | > 21 mA |
| 0-5V DC | ≤ 0V DC | - | N/A |
| Pt100 | < 82.3 ohm | - | > 194.1 ohm |

### 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.


Input signal
(mA, °C,b, %)
Wire failure
Upper failure
limit
Lower failure
limit
Wire failure
t
Wire break