Automatic Genset Controller, AGC-4

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1. General information

1.1 Warnings, legal information and safety

1.1.1 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

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

1.1.2 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.

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.

1.1.3 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.

1.1.4 Electrostatic discharge awareness
Sufficient care must be taken to protect the terminal against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.
1.1.5 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.

1.2 About the Quick Start Guide

1.2.1 General purpose
This Quick Start Guide mainly includes general product information, mounting instructions and wiring descriptions.

The general purpose of this document is to help the user with the first steps of installing and using the Multi-line 2 system.

Please make sure that you also read the Installation Instructions before starting to work with the Multi-line 2 unit and the genset to be controlled. Failure to do this could result in human injury or damage to the equipment.

1.2.2 Intended users
This Quick Start Guide is mainly intended for the panel builder in charge. On the basis of this document, the panel builder designer will give the electrician the information he needs in order to get started with the installation. For detailed electrical drawings, please see the Installation Instructions.

1.2.3 Contents and overall structure
This document is divided into chapters, and in order to make the structure simple and easy to use, each chapter will begin from the top of a new page.
2. What's in the delivery?

2.1 Standard delivery

The main unit

Installation Instructions

- Mounting
- Board slot positions
- Terminal strip overview
- I/O lists
- Wiring

Document no.: 4189340432F  SW version 3.4X.X or later

Standard display, DU-2

2.2 Optional delivery

Display cable (option J1/J2/J6)  
PC cable for utility software (option J7)
Additional standard display, DU-2 (option X2)

Additional Operator's Panel, AOP-1 (option X3)

Additional Operator's Panel, AOP-2 (option X4)

For connection description of the optional deliveries, please refer to the option X manual.
3. Getting started

3.1 Connecting the devices

3.1.1 Connecting the display with the main unit
Connect the SUB-D display cable to the main unit and the display unit as shown in the picture below.

No use of tools or brute force when tightening finger-screws on display cable.
4. The first steps

4.1 Switching on the first time

The drawings below show the wiring of the most important signals. Once all connections to the main units are done, the units are ready to be switched on.

4.1.1 AGC single application

The most important connections are marked with an arrow.

| 30 | Reserved for options. See Data Sheet! | 07 |
| 35 | Reserved for options. See Data Sheet! | 56 |
| 34 | | 65 |
| 33 | | 94 |
| 32 | | 90 |
| 31 | | 02 |
| 30 | | 21 |
| 29 | | 61 |

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4.1.2 AGC island
4.1.3 AGC mains
For further information regarding the installation, please follow the Installation Instructions.

4.2 Getting started with the DEIF utility software (USW)

4.2.1 Downloading the software
1. Go to www.deif.com
2. Select Software in the top menu bar
3. Scroll to the Software downloads list
4. Select Multi-line 2 Utility Software v.3.x in the list
5. Fill in your email address and click “Submit”
You will then receive an email with a link. Click the link and follow the instructions.

The USW is now installed on your computer.

### 4.2.2 Installation of USB drivers

On Windows Vista machines, the USB drivers are installed automatically.

This is the procedure on Windows XP machines:

When you connect the DEIF product, Windows XP will launch two "Hardware Wizards". Two drivers are installed, so please let Windows execute both "Found new Hardware Wizard"s.

We recommend letting the Hardware Wizard install the software automatically by choosing the "Recommended" option. If the "Advanced" option is chosen, the needed files are available from the USW3 installation folder (default: C:\Program Files\DEIF\USW3) in the "USB driver files/source PreInstaller" folder.

Select "Continue Anyway" if a "Hardware Installation" warning (see screenshot below) appears during the installation.

![Hardware Installation Warning](image)

### 4.2.3 Getting connected

Connect the service port to the USB on the computer (option J7 or option J3).

Click the Utility Software 3 icon on the desktop or in the Windows Start menu.
Quick launch and Start menu icon:

The below window appears.

Open the application settings by clicking this icon.

Open "Windows device manager".

Check the COM port used for communication, and make sure the settings correspond to the application settings.

Click the "Connect" icon.

You are now online with the unit.
4.2.4 Read parameters from the device

Open the "Parameters" list.

After retrieving all the parameters, the device is ready to be configured.

4.2.5 Basic configuration of a device using the utility software

When the parameters have been uploaded, the options below will be available.

The parameters can be configured as follows:

Click a parameter and the dialogue box below will appear.
Click this or use the bar to adjust the set point, then click “Write” and “OK”.

The parameter set point has now been changed and downloaded to the device.

For further information, see the “General Guidelines for Commissioning”.
5. Display push-buttons and LEDs

5.1 Push-button functions

The display unit holds a number of push-button functions which are described below:

1. Shifts the first line displaying in the setup menus. Push two seconds to switch to master display in case more than one display is connected.
2. Moves the cursor left for manoeuvring in the menus.
3. Increases the value of the selected set point (in the setup menu). In the daily use display, this button function is used for scrolling the second line displaying of generator values.
4. Selects the underscored entry in the fourth line of the display.
5. Moves the cursor right for manoeuvring in the menus.
6. Decreases the value of the selected set point (in the setup menu). In the daily use display, this button function is used for scrolling the second line displaying of generator values.
7. Changes the menu line (line four) in the display to mode selection.
8. Jumps one step backwards in the menu (to previous display or to the entry window).
9. Shifts the display three lower lines to show the event and alarm list. The list holds 150 events. These events are deleted when the AGC is switched off.
10. Manual activation of close breaker and open breaker sequence if "SEMI-AUTO" is selected.
11. Manual activation of close breaker and open breaker sequence if "SEMI-AUTO" is selected.
12. Stop of the genset if "SEMI-AUTO" or "MANUAL" is selected.
13. Start of the genset if "SEMI-AUTO" or "MANUAL" is selected.
14. Enters a specific menu number selection. All settings have a specific number attached to them. The JUMP button enables the user to select and display any setting without having to navigate through the menus (see later).
15. Shifts the display three lower lines to show the alarm list.
5.2 LED functions

5.2.1 LED functions
The display unit holds 10 LED functions. The colour is green or red or a combination in different situations. The display LEDs are indicating as follows:

1. LED indicates that the auxiliary supply is switched on.
2. LED indicates that the unit is OK.
3. LED indicates that an alarm is inhibited, it could, for example, be low frequency when the genset is stopped.
4. LED indicates that auto mode is selected.
5. LED is green if the mains is present and OK. LED is red at a measured mains failure. LED is flashing green when the mains returns during the "mains OK delay" time.
6. LED indicates that the mains breaker is closed. LED is flashing yellow if the "MB spring loaded" signal from the breaker is missing or the MB load time has not expired.
7. LED green light indicates that the generator breaker is closed. LED yellow light indicates that the generator breaker has received a command to close on a black bus, but the breaker is not yet closed due to interlocking of the GB. LED is flashing yellow if the "enable GB black close" or the "GB spring loaded" signal is missing or the GB load time has not expired.
8. LED green light indicates that the voltage/frequency is present and OK.
9. LED indicates that the generator is running.
10. LED flashing indicates that unacknowledged alarms are present. LED fixed light indicates that ALL alarms are acknowledged, but some are still present.
5.2.2 Display navigation

Setup structure

Set up example
The following example illustrates how a specific setting is changed in the setup menu. In this case, nominal voltage "Nom. U 1" is the selected parameter.

For further information, please refer to the Designer’s Reference Handbook.
5.3 Controller setup

5.3.1 Controllers available
Governor (std.)
1. Synchronisation (static and dynamic sync.)
2. Phase angle (static sync.)
3. Frequency
4. Power
5. Load sharing

AVR (option D1)
1. Voltage
2. Reactive power
3. Reactive load sharing

5.3.2 Controller output types
Analogue (option E1, E2, EF2 or EF4)
Transducer output 66 or 71

Relays (std.)
Normally relays 65, 67, 69 and 71, but any configurable relay can be used
Setup of a controller with analogue option and AVR option

For further information, please refer to the General Guidelines for Commissioning.
Setup of a controller with relay and AVR option

Sequence

2781 Select relay for GOV
2783 Select relay for AVR
2723 Select Incr. Relay for AVR
2724 Select Decr. relay for AVR

2603 Select Incr. relay for GOV
2604 Select Decr. relay for GOV

Start the DG in MAN Mode

Is the freq. the same as nom.
Yes
Adjust the frequency on the Speed gov.
No

Is the volt. the same as nom.
Yes
Adjust the voltage on the AVR
No

2740 Adjust the time in this parameter
2601 Decrease GOV on time to minimum
2720 Decrease AVR on time to minimum
Switch to Semi Auto mode

2570 Adjust Kp
Copy the setting from 2570 to 2580, 2590, 2050
2690 Adjust Kp

Copy the setting from 2690 to 2700, 2710

End

For further information, please refer to the General Guidelines for Commissioning.
Setup of a controller with EIC for GOV control and analogue for AVR control

1. Start
2. 2781 Select EIC for GOV
3. 2783 Select analogue for AVR
4. 5990 Select transducer 66 or 71
5. Start the DG in MAN Mode
6. Is the HZ the same as nom? (No)
7. 2550 Increase or decrease
8. Is the U the same as nom? (No)
9. 2670 Increase or decrease
10. 2740 Adjust the time in this parameter
11. Switch to SEMI-auto mode
12. 2510 Adjust Kp and Ti
13. Copy the settings from 2510 to 2530, 2540 and 2040
14. 2640 Adjust Kp and Ti
15. Copy the settings from 2640 to 2650 and 2660
16. End

For further information, please check the following literature:

AGC Designer’s Reference Handbook
AGC Installation Instructions
AGC Operator’s Manual