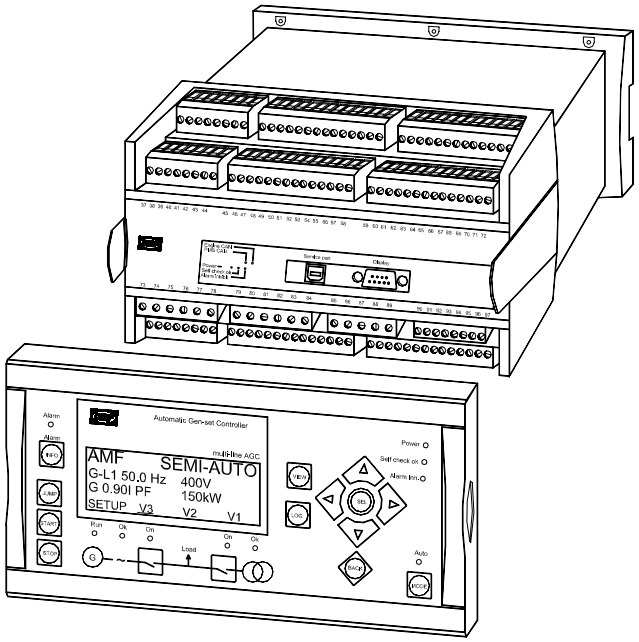
DEIF A/S

Description of options

Option X,
Additional display and operator's panel
Multi-line 2

4189340454A
SW version 3.0X.X



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

CE

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1. Warnings and legal information

Legal information and responsibility

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the generator set 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.

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

X2 option

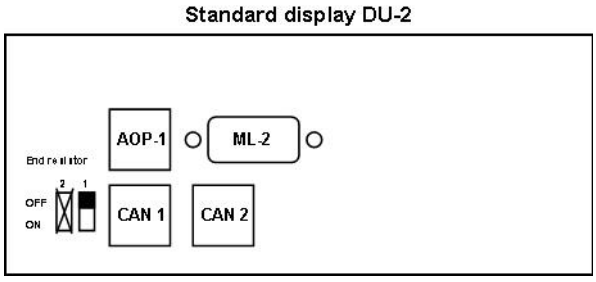
The option includes an additional standard display (DU-2) for the ML-2 unit to be connected to the original display unit via a CANbus connection.

With additional DU-2 units it is possible to operate the system from various positions, e.g. start/stop, alarm acknowledge, readings, access set points etc.

A maximum of 3 standard displays can be connected to each ML-2 unit.

The maximum length of the CANbus line is 200m.

Back side view



Connectors:

ML-2:	The serial connection to/from the display port of the ML-2 unit.
AOP-1:	The connector for the cable to an AOP-1.
CAN 1:	DC supply and CANbus communication to/from other DU-2 or AOP-2 units.
CAN 2:	CANbus communication to/from other DU-2 or AOP-2 units.
End resistor:	Dip switch for 120ohm end resistor for the CANbus communication. Dip switch no. 2 is not to be used.

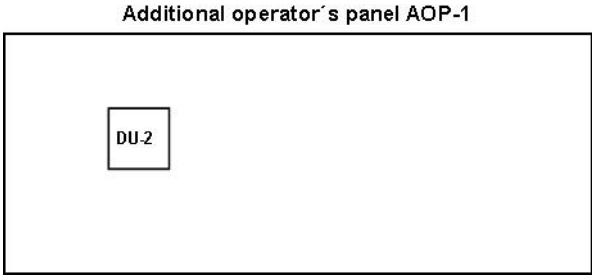
X3 option

The option includes an additional operator's panel (AOP-1) which is to be connected directly to a standard display (DU-2) via a serial communication line, and only one AOP-1 can be connected to each DU-2. The AOP-1 has 16 configurable LEDs and 8 configurable buttons, which are programmed with the PC utility software. It can be used as an interface to the ML-2 units for indication of status and alarms together with buttons for e.g. alarm acknowledge and mode selection.

Since a DU-2 is required for each AOP-1, the possible number of AOP-1 units is determined by the number of DU-2 units.

The maximum distance between the DU-2 and the AOP-1 is 0.5 metres.

Back side view



Connectors:

DU-2: DC power supply and serial communication to/from the DU-2.

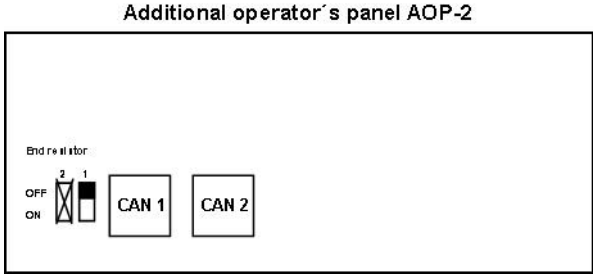
X4 option

This option includes an additional operator's panel (AOP-2) which can be connected to the standard display via a CANbus communication line. The AOP-2 has 16 configurable LEDs and 8 configurable buttons, which are programmed with the PC utility software. It can be used as an interface to the ML-2 units for indication of status and alarms together with buttons for e.g. alarm acknowledge and mode selection.

A maximum of 5 AOP-2 units can be connected to each ML-2 unit.

The maximum length of the CANbus line is 200m.

Back side view

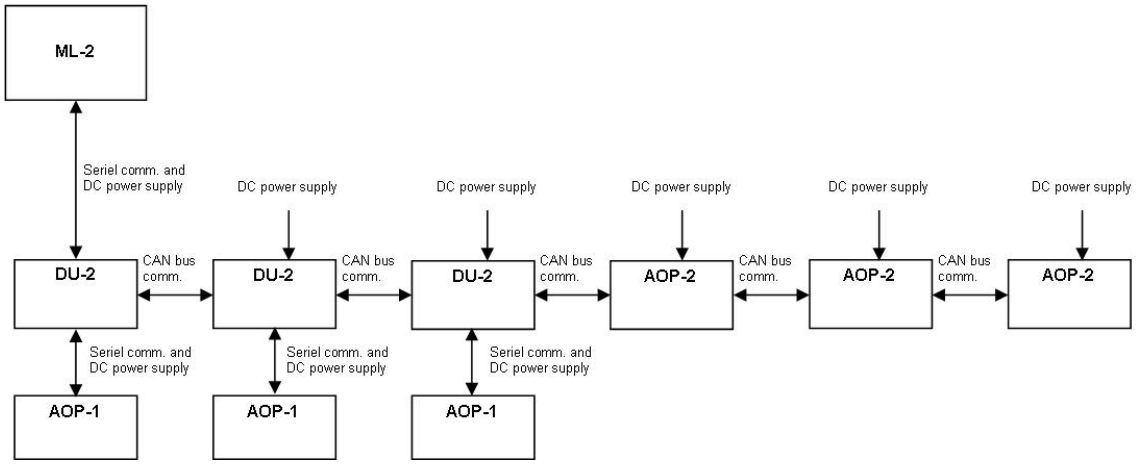


Connectors:

CAN 1: DC supply and CANbus communication to/from other DU-2 or AOP-2 units.
CAN 2: CANbus communication to/from other DU-2 or AOP-2 units and status relay output.
End resistor: Dip switch for 120ohm end resistor for the CANbus communication. Dip switch no. 2 is not to be used.

3. Functional description

Below is a principle diagram of the connection of the additional displays and operator's panels.

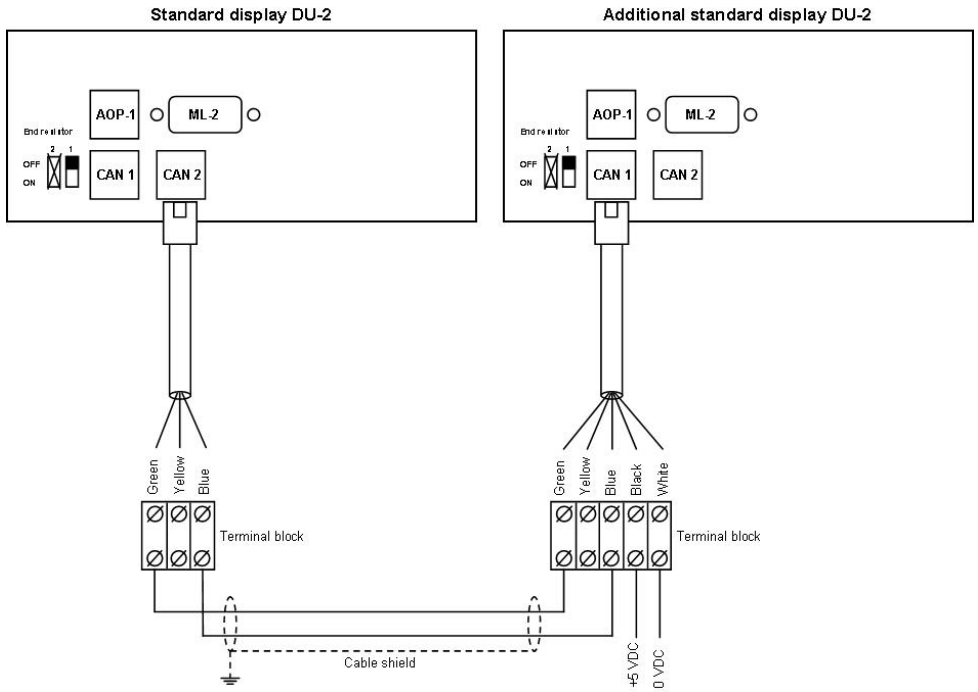


Only 3 AOP-2 units are shown in the diagram, but up to 5 units are supported.

Only one DU-2 has to be connected to the ML-2 unit. The rest of the displays and AOP units are connected to each other with communication lines (serial or CANbus) and get their information through the DU-2 unit connected to the ML-2 unit.

DU-2

Wiring



The maximum length of the CANbus line is 200m.

A DC/DC converter for the DC supply voltage and 2x1m cable with an RJ45 plug in one end and stripped wires in the other end are included in the DU-2 delivery.

End resistor:

2 units connected:	Dip switch no. 1 has to be set to ON on both units.
3 units connected:	Dip switch no. 1 has to be set to ON on unit 1 and unit 3.
More than 3 units connected:	Dip switch no. 1 has to be set to ON on the first and the last unit on the CANbus line.

CAN ID configuration

The CAN ID on the DU-2 can be set from 0 to 3. If it is set to zero, the CANbus communication is deactivated.

The CAN ID selection is done in the following way:

1. On the DU-2, press the left, up and right buttons at the same time to activate a CAN ID selection menu.
2. Select the desired CAN ID with the up and down buttons and press SEL.

The CAN ID of the DU-2 has now been selected.

The DU-2 which is connected to the ML-2 unit has to have CAN ID no. 1.

If the CANbus communication to other DU-2 or AOP-2 units are not used, the CAN ID should be set to zero.

Protocol selection

The DU-2 contains 3 protocols for the data transmission between the ML-2 unit and the display. Normally the protocol is set automatically, however if the display is used with older ML-2 units, it is necessary to choose the protocol which supports these according to the following table.

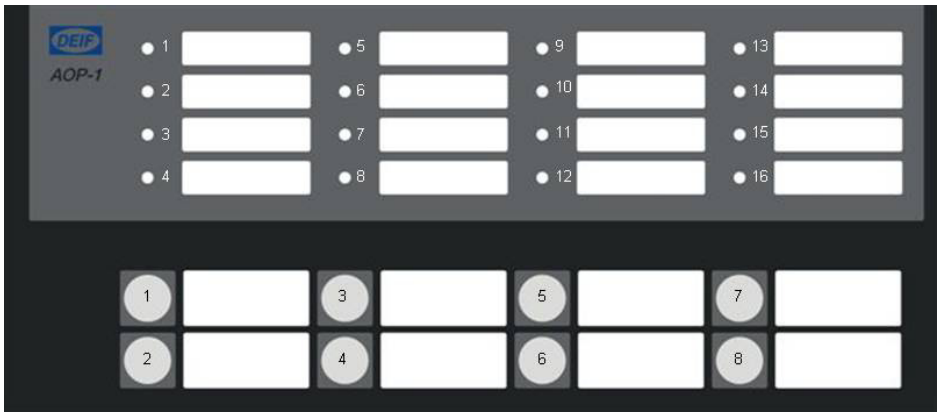
Protocol	Supports	Comment
1	Std. ML-2 with software version 1.xx.x and 2.xx.x	PPU/GPC/GPU
2	AGC units with software version 1.xx.x and 2.xx.x	
3	AGC units with software version 3.xx.x	

Change of protocol is done like this:

1. On the DU-2, press the left, SEL and right buttons at the same time to activate a protocol selection menu.
2. Select the desired protocol with the up and down buttons and press SEL.

AOP-1

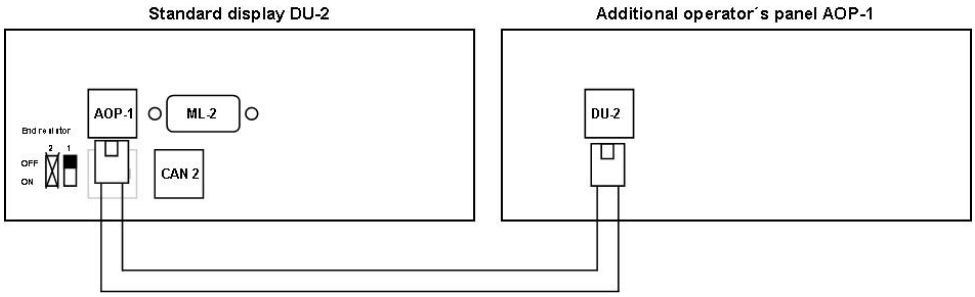
Front side view



As shown on the drawing, the configurable LEDs are named 1 to 16, and the buttons are named 1 to 8.

Wiring

The AOP-1 is connected to the connection on the DU-2 named AOP-1 by means of the enclosed cable. This connection handles the communication and power supply.



The maximum distance between the DU-2 and the AOP-1 is 0.5 metres.

The cable for connection between the AOP-1 and DU-2 are included in the AOP-1 delivery.

CAN ID configuration

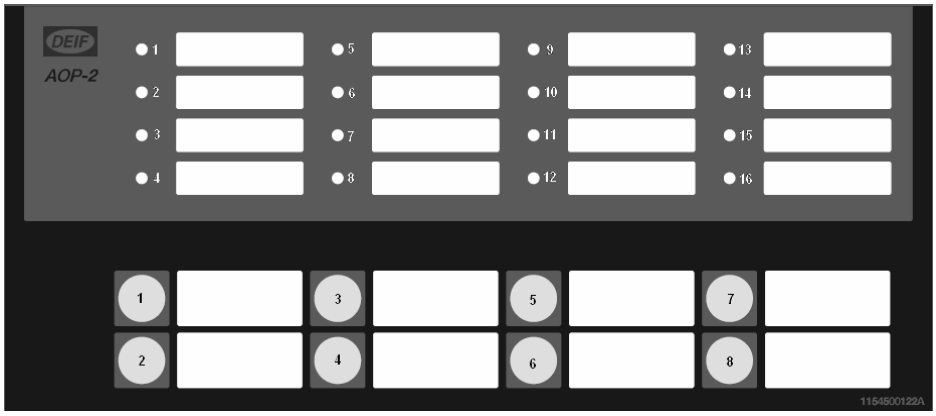
The ID of the AOP-1 is decided by the DU-2 unit to which it is connected.

Programming

The programming of the AOP-1 is made with the PC utility software, which can be downloaded from www.deif.com. Please refer to the Help function in the PC utility software for programming instructions.

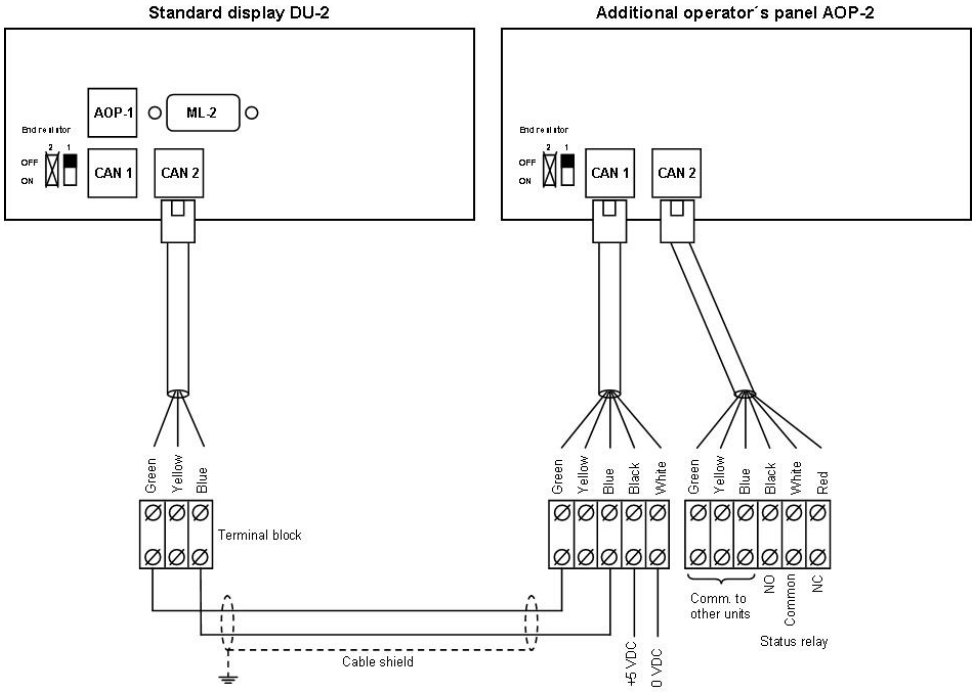
AOP-2

Front side view



As shown on the drawing, the configurable LEDs are named 1 to 16, and the buttons are named 1 to 8.

Wiring



A DC/DC converter for the DC supply voltage and 2x1m cable with an RJ12 plug in one end and stripped wires in the other end is included in the AOP-2 delivery.

The cable between the terminal blocks should be shielded twisted pair.

The maximum length of the CANbus line is 200m.

End resistor:

2 units connected:	Dip switch no. 1 on both units should be set to ON.
3 units connected:	Dip switch no. 1 on unit 1 and unit 3 should be set to ON.
More than 3 units connected:	Dip switch no. 1 on the first and the last unit on the CANbus line should be set to ON.

CAN ID configuration

The CAN ID for the AOP-2 can be changed by the following procedure:

1. Push button no. 7 and no. 8 at the same time to activate the CAN ID change menu, this will activate the LED for the present CAN ID number, and LED no. 16 will be flashing.
2. Use button no. 7 (increase) and button no. 8 (decrease) to change the CAN ID according to the table below.
3. Press button no. 6 to save the CAN ID and return to normal operation.

Selection of CAN ID:

CAN ID	Indication of CAN ID selection
0	CANbus OFF: LED 16 flashes
1	LED 1 light steady + LED 16 flashes (default value)
2	LED 2 light steady + LED 16 flashes
3	LED 3 light steady + LED 16 flashes
4	LED 4 light steady + LED 16 flashes
5	LED 5 light steady + LED 16 flashes

Status relay

The status relay will activate approximately 5 sec. after power up.

Programming

The programming of the AOP-2 is made with the PC utility software, which can be downloaded from www.deif.com. Please refer to the Help function in the PC utility software for instructions regarding the programming.

Error handling

Duplicate CAN ID

DU-2:
If two units on the CANbus have the same CAN ID, the following will be displayed:

Warning: Two displays have same CAN ID Press Enter.

When SEL is pressed, the CAN ID change menu will be displayed and another CAN ID can be selected for the unit.

AOP-2:
If two units on the CANbus have the same CAN ID, LED no. 1 to 4 will flash quickly. In this case press button no. 6 to jump into the CAN ID change menu and select another CAN ID for the unit.