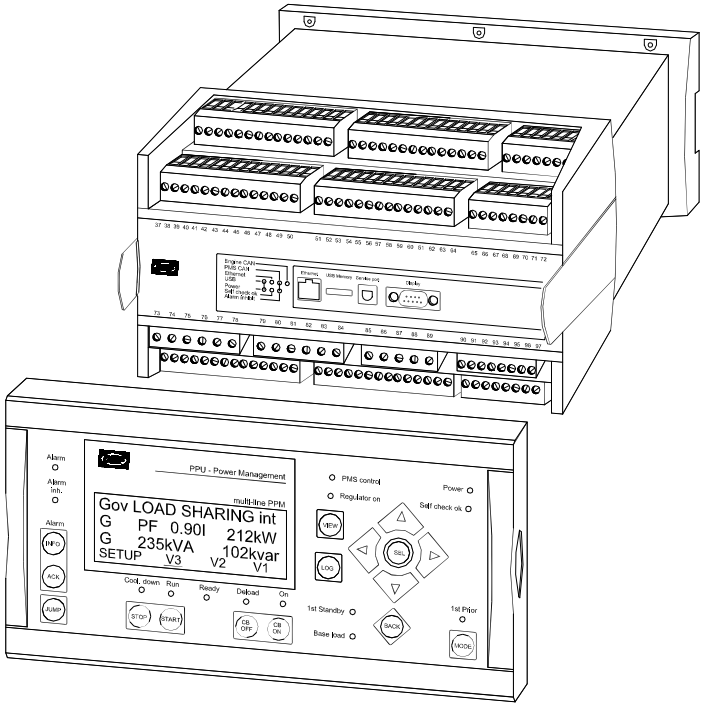
DEIF A/S

Quick Start Guide

PPU Power Management (PPM)

4189340480D (UK)



- *What's in the delivery?*
- *Getting started*
- *The first steps*
- *Using the PPM*

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1. About this document

General purpose

This document is the Quick Start Guide for DEIF's PPU Power Management, the PPM. The document mainly includes general product information, mounting instructions and wiring descriptions.

The general purpose of this Quick Start Guide is to help the user with the first steps of installing and using the PPM system.

Please make sure that you also read the installation instructions before starting to work with the Multi-line 2 controller and the gen-set to be controlled. Failure to do this could result in damage to the equipment or, even worse, injury of personnel.

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 to install the PPM. For detailed electrical drawings the installation instructions must be used.

Contents/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. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes and warnings, which will be used throughout this handbook, are presented.

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 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 of the unit should only be carried out by authorised personnel who understand the risks involved in the 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 with helpful user information will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

Note symbol

The notes provide general information which will be helpful for the reader to bear in mind.

Warnings

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

3. What's in the delivery?

The main unit with display

*The AOP-2 (**A**dditional **O**perator **P**anel)*

The display cable

The DC/DC converter

The display/AOP-2 CAN cables

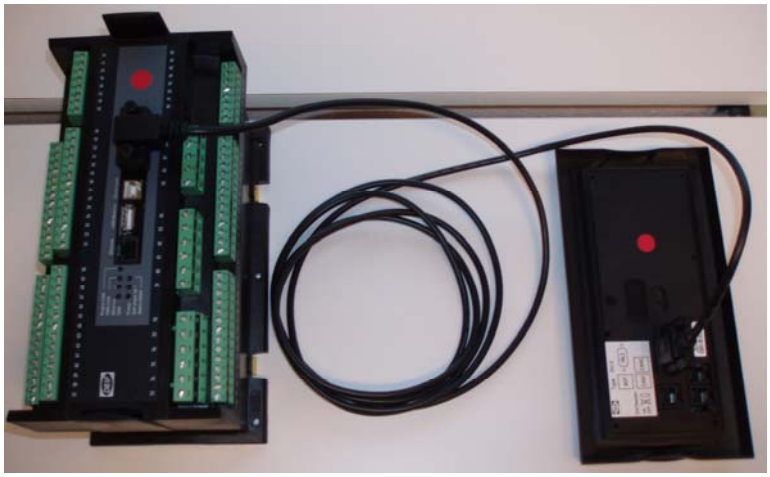
Two CAN resistors 120 Ohm

4. Getting started

Connecting the devices

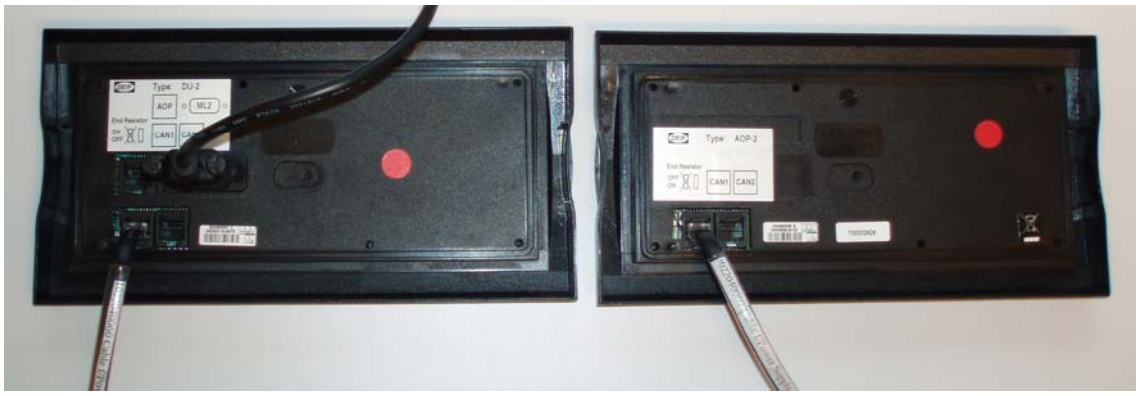
Connecting the display with the main unit

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



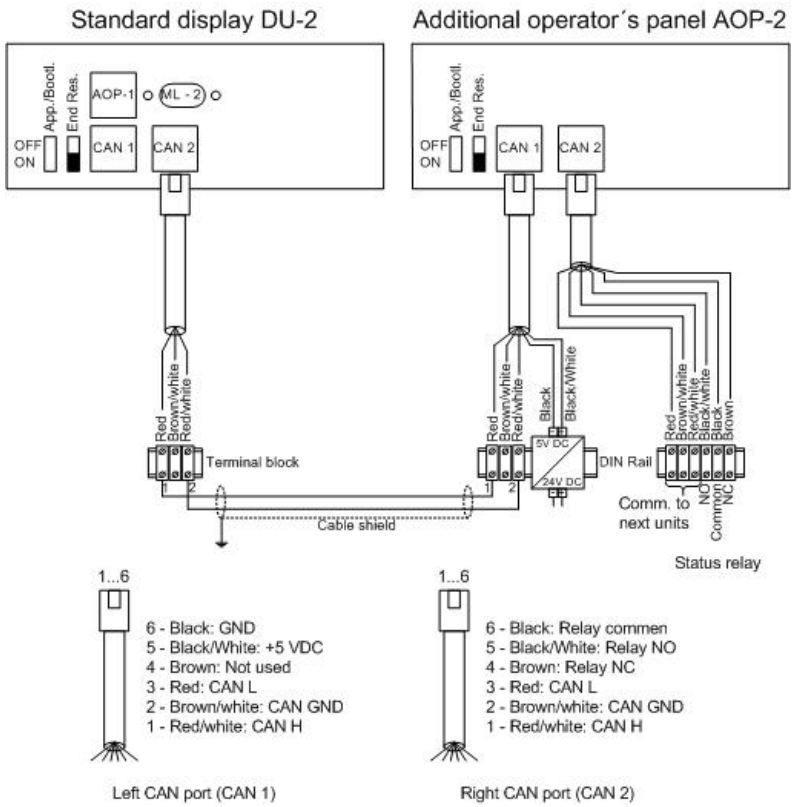
Connecting the AOP-2 with the display unit

The CAN cable for the CANbus communication between the display unit of main unit no.1 and the AOP-2 has to be connected to the CAN port (CAN 1 or CAN 2) of the display unit (DU-2) and the AOP-2 as shown in below picture.



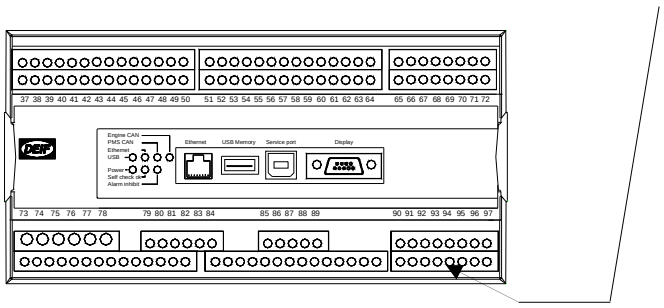
The AOP-2 can be placed up to 200 m from the main display. The AOP-2 requires a separate power supply unit, while the display receives the power supply through the display cable from the main unit.

The following drawing shows the connection of the DC/DC converter to the AOP-2 and the CANbus cables to each other.

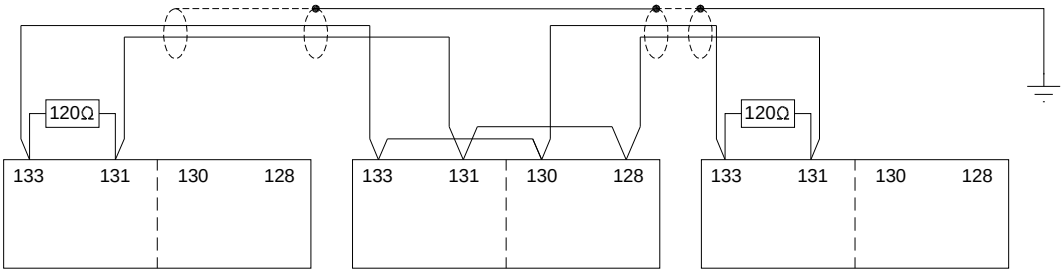


Connecting the CANbus communication between the main units

The internal CANbus wiring has to be connected to the terminals 128…133 in SLOT #8.



The wiring for the internal CANbus communication between units is indicated in the illustration below.

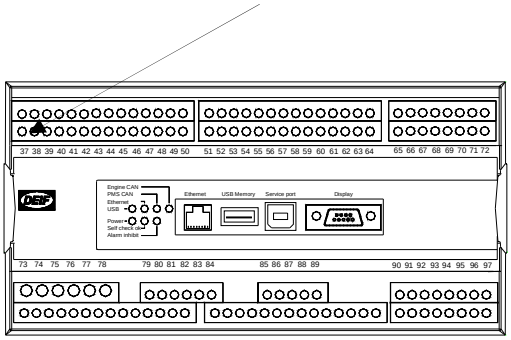


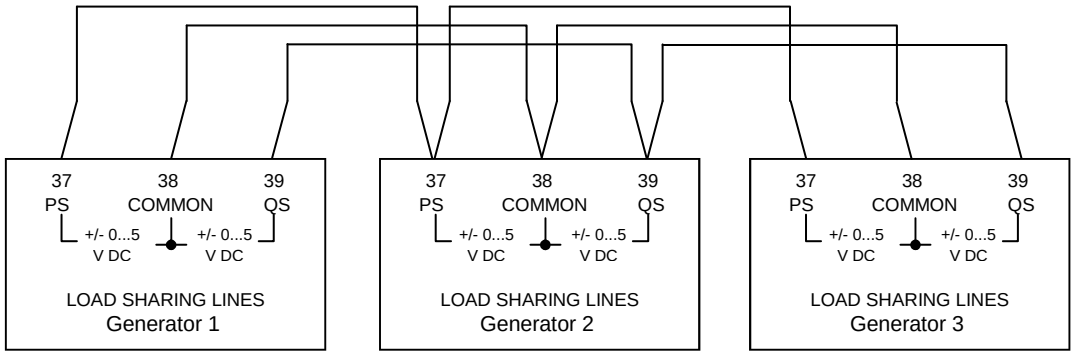
CAN resistor R = 120 Ohm.

Connecting the load share line between the main units

To connect the load share line between the units, a screened, twisted cable is recommended to prevent disturbances.

The load share lines have to be connected to the terminals 37...39 in SLOT # 3.





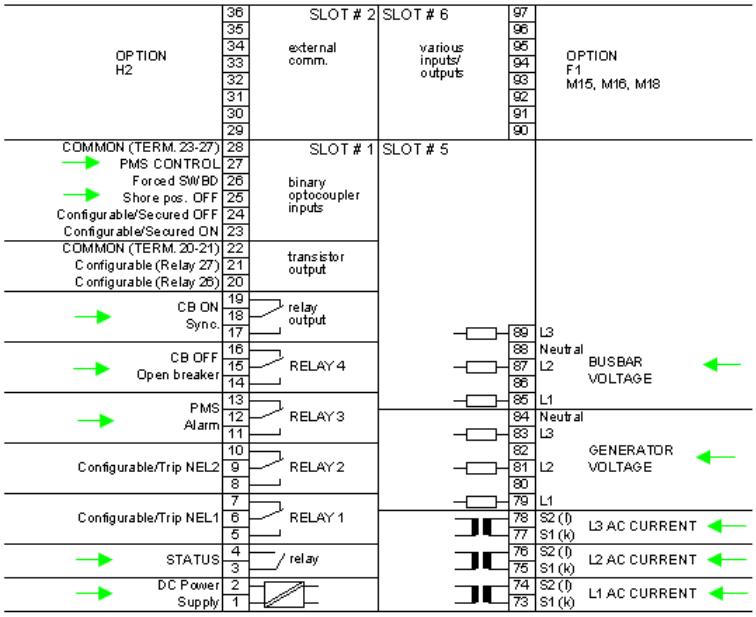
For further information regarding the installation of AC connections and other inputs and outputs, please refer to the installation instructions.

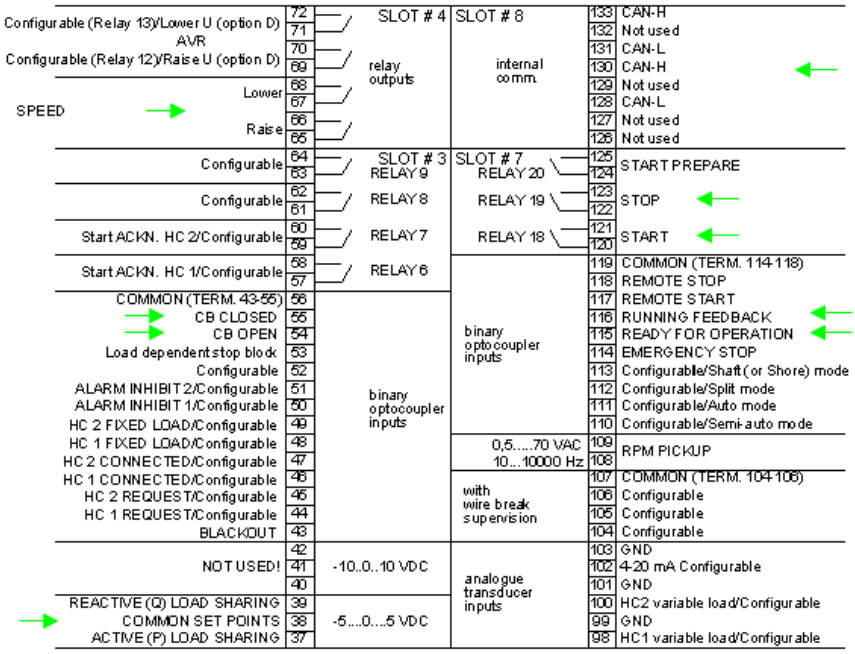
5. The first steps

Switching on the first time

The below drawings 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.

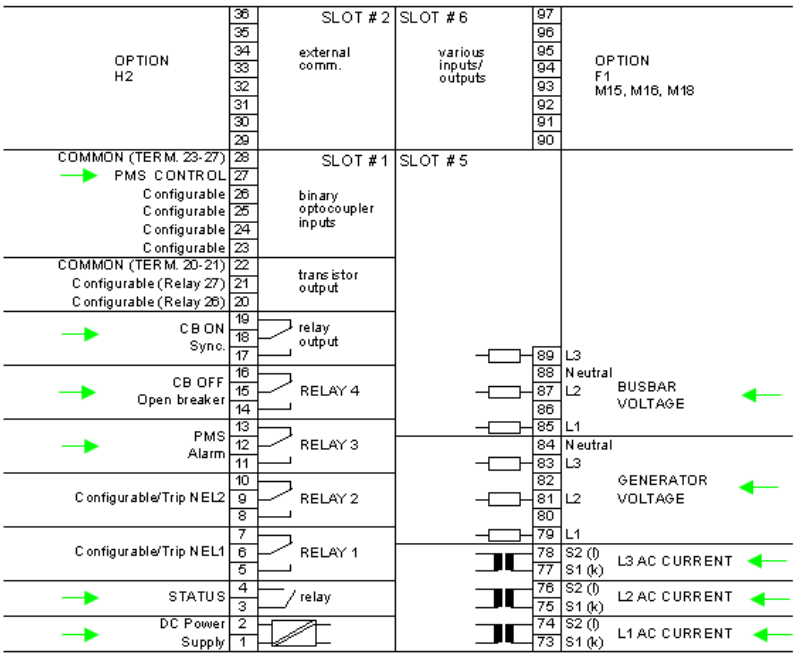
DGM

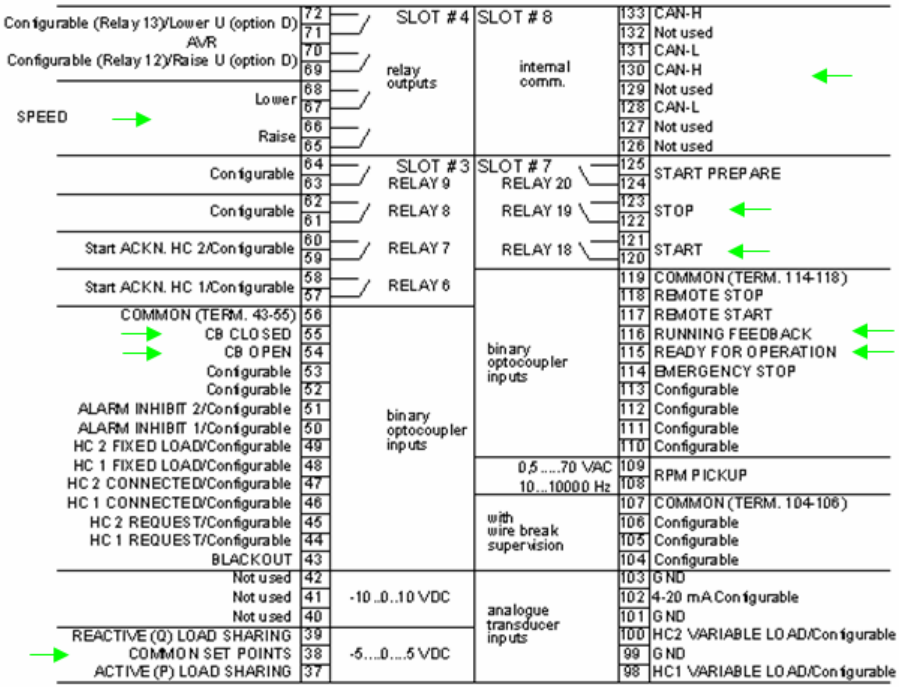




The most important connections are marked with a green arrow.

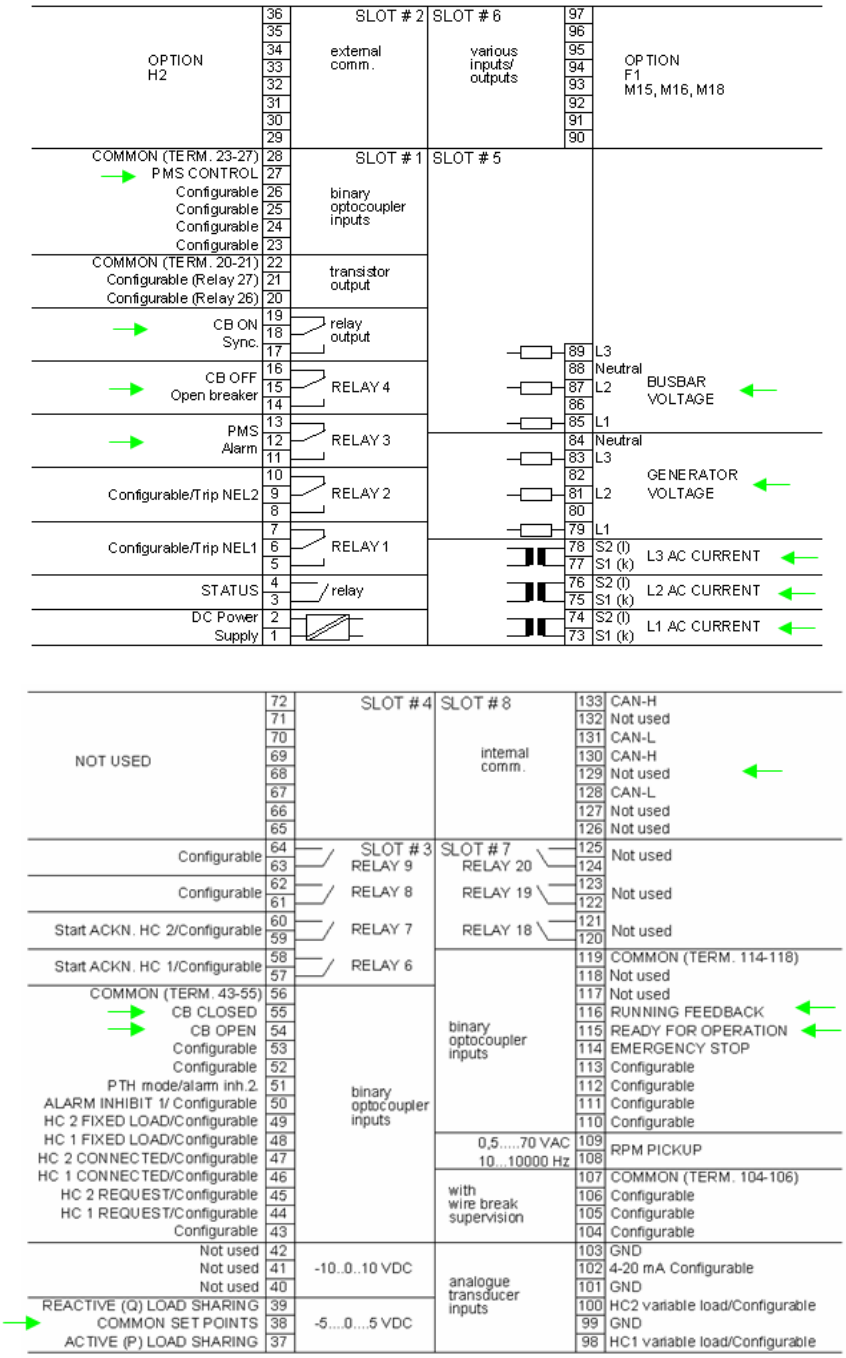
DG





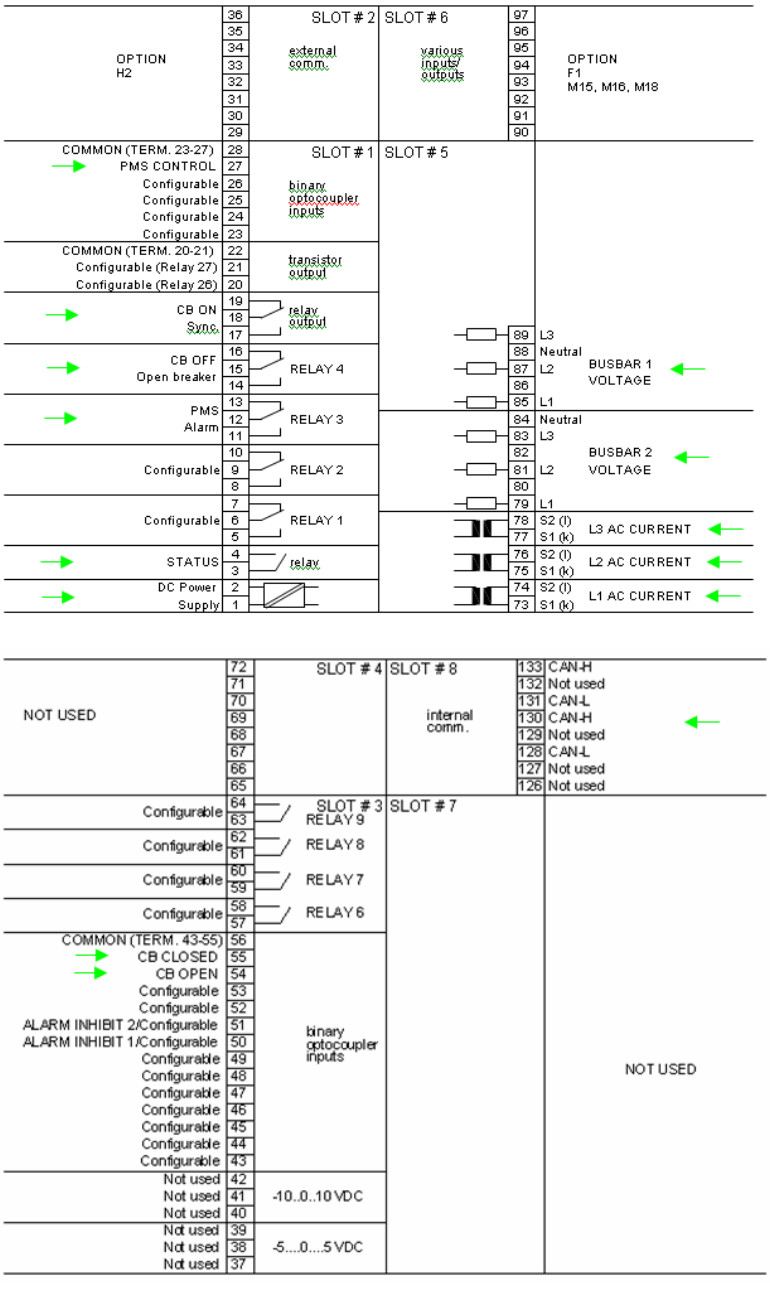
The most important connections are marked with a green arrow.

SG/SC



The most important connections are marked with a green arrow.

TB



The most important connections are marked with a green arrow.

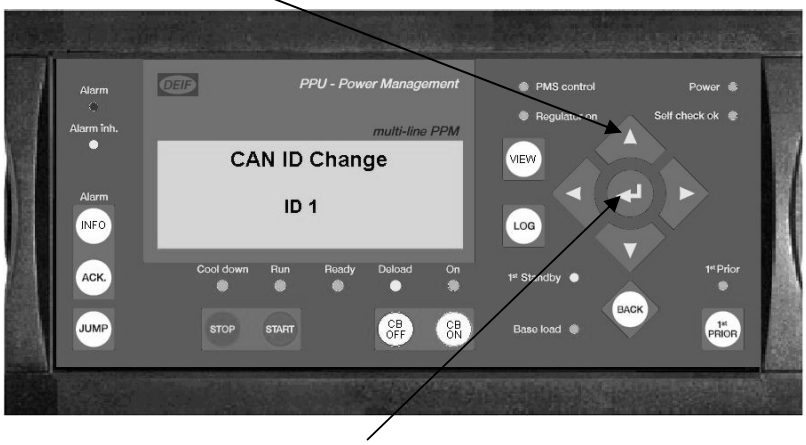
For further information regarding the installation, please follow the installation instructions.

Setting up

The CAN ID no. for the display

The CANbus ID no. for the display unit of generator 1 (Master) has to be changed from ID no. 0 (default) to ID no. 1. To do this, press the three buttons left, up and right **at the same time**.

Then press the up button to change the ID no. from 0 to 1.



Acknowledge by pressing ENTER. The display will then automatically reset.

The CAN ID no. for the main unit

As default, all units are set to the ID number 1. Each unit must have a different ID number to be able to communicate via the internal CANbus line. The following table shows the selection of ID number in connection to the main unit number:

DG number	ID number
DG 1	ID 1
DG 2..8	ID 2..8
TB	ID 9
SG	ID 10

The next steps will explain how to change the ID number for the diesel generator unit number two.

After switching on the device, the following alarm message will be shown on the display:

G 0 0 0 V
Duplicate CAN ID'S
UN-ACK. 1 2 Alarm(s)
<u>ACK</u> FIRST LAST

Press the "BACK"  push-button on the display unit, and the following text will appear:

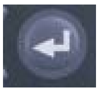
SWBD Control
G-L1 0.0HZ 0 V
G PF 0.00I 0kW
SETUP <u>V3</u> V2 V1

Press the left cursor button  to highlight "<u>SETUP</u>" and press "ENTER" 

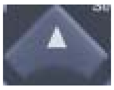
Now press the right cursor button  to highlight the system setup.

The following display text will appear:

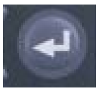
G 0 0 0 V
f-L1 0.00Hz
SYSTEM SETUP
PROT CTRL I/O <u>SYST</u>

Press the “ENTER” push-button  to enter the system setup and select the communication setup:

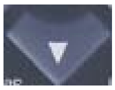
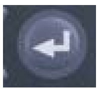
G 0 0 0 V
SYSTEM SETUP
COMMUNICATION SETUP
GEN COMM PM

Use the “UP” push-button  to display the following text:

G 0 0 0 V
7530 Int. Comm. ID
ID 1
ID

Press “ENTER”  and the password can be adjusted (default is 2000).

G 0 0 0 V
ENTER PASSWORD: 1999
ENTER

Use the cursor “UP” or “DOWN” push-button   to adjust the password and press “ENTER” 

G 0 0 0 V
7531 Int. Comm. ID
1 … 2 … 10
RESET SAVE

Change the ID number by using the “UP” push-button, highlight the “SAVE” function and press “ENTER”. Now, the setpoint is adjusted. Press the “BACK” push-button several times to return to the main menu.

6. Operating the PPM

Adjusting essential parameters

This chapter guides you through the most essential parameters, which have to be adjusted before the PPM can be taken in operation.

The setpoints can either be adjusted from the display unit or by using the DEIF utility software. The following examples will show how to adjust the parameters from the display unit.

```
S W B D   C o n t r o l
G - L 1      0 . 0 H Z                0 V
G    P F   0. . 0 0 I             0 k W
S E T U P    V 3          V 2         V 1
```

Use the “ENTER” push-button to select the system setup.

```
G                0                0 V
                 f - L 1          0 . 0 0 H z
S Y S T E M   S E T U P
P R O T   C T R L   I / O   S Y S T
```

Press “ENTER” and select the general setup.

```
G                0                0 V
S Y S T E M   S E T U P
G E N E R A L   S E T U P
G E N                C O M M   P M
```

Press “ENTER” and the nominal settings are indicated. Use the left or right cursor button to toggle between the settings.

```
G                0                0 V
6 0 0 0   N o m .   s e t t i n g s
F r e q u e n c y          5 0 . 0 H z
F          P          I          U
```

Highlight **F** in the bottom line to get to the frequency settings and press “ENTER”. After adjusting the password and pressing “ENTER”, the following will be displayed:

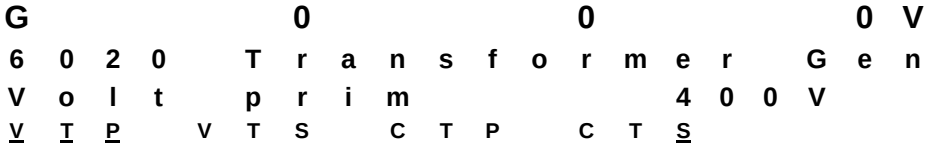
```
G                0                0 V
6 0 0 1   N o m .   F r e q u e n c y
  4 8 . 0 …   5 0 . 0 …   6 2 . 0 H z
R E S E T                  S A V E
```

Adjust the frequency to the correct level, highlight “SAVE” and press “ENTER”. Now, the value is saved. Use the right cursor to adjust P, I and U.

Generator nominal settings

Channel number	Setpoint	Minimum setting	Factory setting	Maximum setting
6001	Nominal frequency	48.0 Hz	50.0 Hz	62.0 Hz
6002	Nominal power	10 kW	1000 kW	20000 kW
6003	Nominal current	0 A	1904 A	9000 A
6004	Nominal voltage	100 V	400 V	25000 V

To adjust the transformer settings, use the “UP” or “DOWN” push-button to get to the transformer page:



Press “ENTER” and use the cursor buttons to adjust the values. Press “ENTER” to save.

VT and CT settings

Channel number	Setpoint	Minimum setting	Factory setting	Maximum setting
6021	Volt. prim. GEN	100 V	400 V	25000 V
6022	Volt. sec. GEN	100 V	400 V	690 V
6023	Current prim.	5 A	2000 A	9000 A
6024	Current sec.	1 A	1 A	5 A
6031	Volt prim. BUS	100 V	400 V	25000 V
6032	Volt sec. BUS	100 V	400 V	690 V

To adjust the power management settings, go back to the system setup menu and highlight the power management setup:

Press “ENTER” to adjust the number of diesel generators in the system and the application type (system 1, 2 or 3).

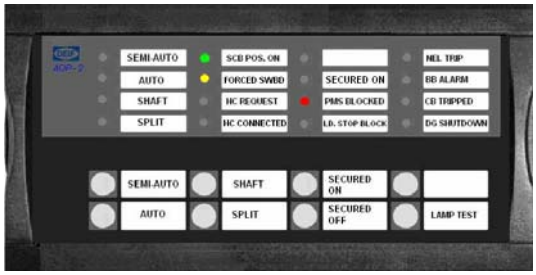
PM settings

Channel number	Setpoint	Minimum setting	Factory setting	Maximum setting
8001	Number of DGs	2	3	8
8002	System type	1	1	3

For further information about adjusting parameters, please follow the instructions in the operator's manual.

Alarm messages on AOP-2

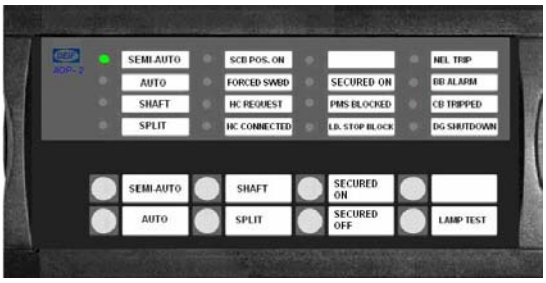
This chapter provides some information about the alarm indications on the AOP-2 and the possible causes.



PMS blocked LED is ON:

- The shore connection breaker is in position ON
- The "FORCED SWBD" input is set
- The generators are in switchboard control
- The actual number of diesel generator units is not set correct in the PMS menu

When the power management system is ready for use, the PMS blocked LED is switched OFF.



When the AOP-2 looks like the above picture, the plant modes can be changed by using the push-buttons for SEMI-AUTO or AUTO. Depending on the application type, the plant modes SHAFT or SPLIT can be selected when a shaft generator is available.

For further information, please check:
PPM Designer's Reference Handbook
PPM Installation Instructions
PPM Operator's Manual