DEIF

-power in control

CE

OPERATOR'S MANUAL

Genset controller, AGC 100

- Push-buttons
- LEDs
- Display and menu structure
- Display readings
- Alarm handling and log list

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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

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.

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 operator's manual

1.2.1 General purpose

This Operator's Manual mainly includes general product information, display readings, push-button and LED functions, alarm handling descriptions and presentation of the log list.

The general purpose of this document is to give the operator important information to be used in the daily operation of the unit.

Please make sure to read this document before starting to work with the Multi-line 2 unit and the generator set to be controlled. Failure to do this could result in human injury or damage to the equipment.

1.2.2 Intended users

This Operator's Manual is mainly intended for the daily user. On the basis of this document, the operator will be able to carry out simple procedures such as start/stop and control of the generator set.

1.2.3 Contents and overall structure

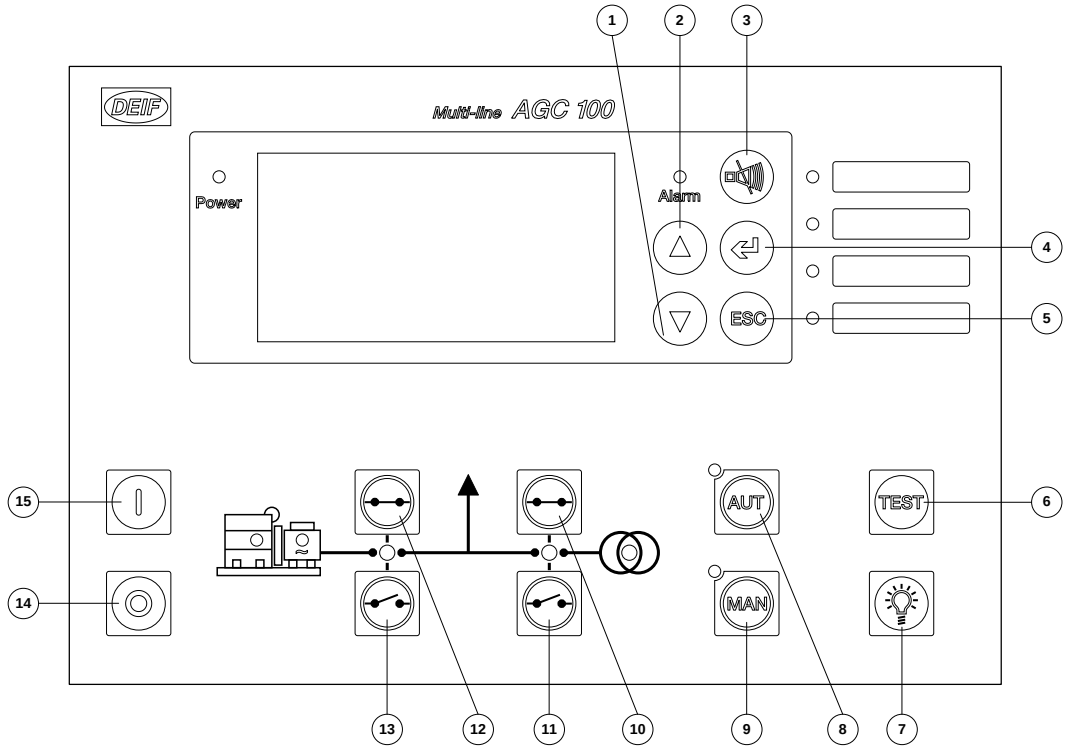
This document is divided into chapters, and in order to make the structure simple and easy to use, each chapter will begin from the top of a new page.

2. Push-buttons and LED's

2.1 Unit

2.1.1 Push-button functions

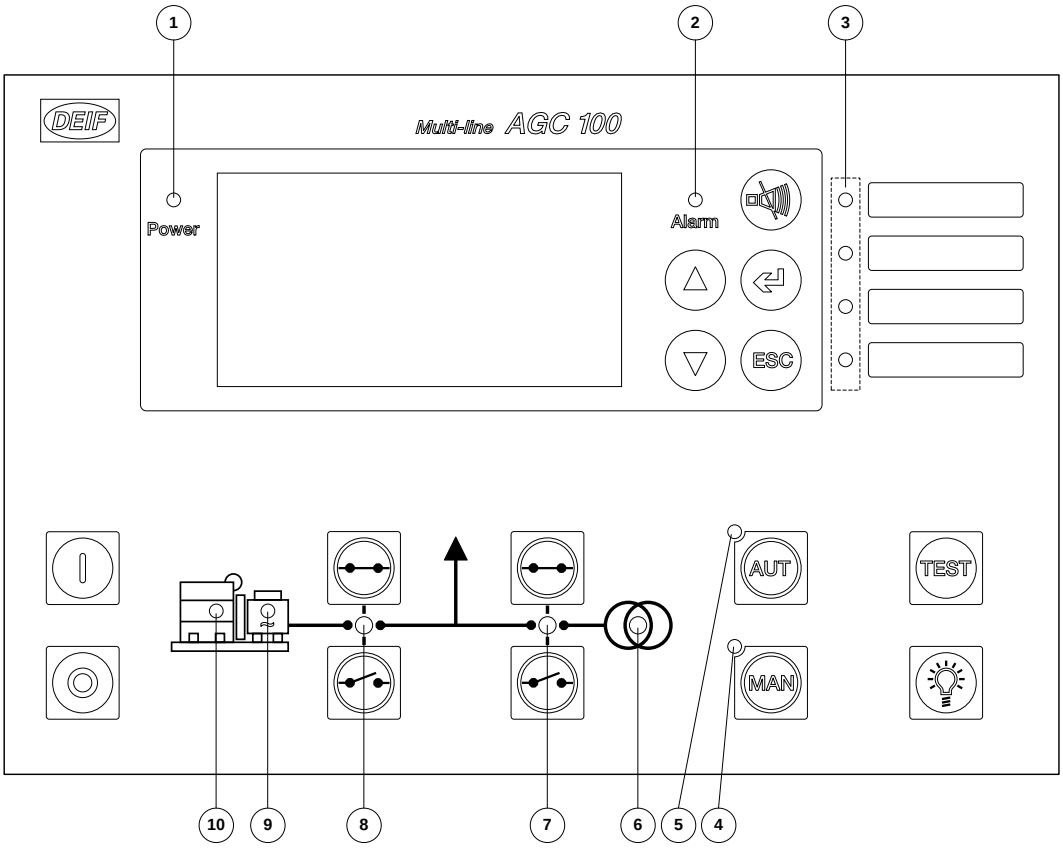
The push-buttons on the unit have the following functions:



No.	Function	No.	Secondary functionality
1:	Scroll the display down once	**1:**	Programming: Decrease setpoint value
2:	Scroll the display up once	**2:**	Programming: Increase setpoint value
3:	Reset horn relay	**3:**	Press and hold for 2 seconds to see alarm list
4:	Enter menus/enter value/acknowledges alarm		
5:	Jumps from parameter settings to display	**5:**	Remove pop-up messages
6:	Initiates the test sequence		
7:	Lamp test		
8:	AUTO/Semi-auto running mode selector	**8:**	Press AUT twice to activate semi-auto mode
9:	Manual/Block running mode selector	**9:**	Press MAN twice to activate Block mode
10:	Close mains breaker		
11:	Open mains breaker		
12:	Close generator breaker		
13:	Open generator breaker		
14:	Stop engine (local (not auto) running mode)		
15:	Start engine (local (not auto) running mode)		

2.1.2 LED functions

The display unit holds 10 LED functions. Dependent on the situation, the colour of the LEDs is green, red or a combination. The table below describes the functionality of the LEDs on the AGC 100:



LED no.		LED function
1:	Power	LED indicates that the auxiliary supply is switched on. If it is green, the AGC 100 is operational. If it is red, the self-check has failed.
2:	Alarm	LED steady light indicates that all alarms are acknowledged, but some are still present. LED flashing indicates that unacknowledged alarms are present.
3:	4xLED	4 x LEDs with selectable indication function. Selection is made in M-Logic.
4:	MAN	LED steady light indicates that Manual mode is active. LED flashing indicates that Block mode is active.
5:	AUT	LED indicates that Auto mode is active.
4+5:	SEMI-auto	When both LED 4 and 5 are **off**, SEMI-auto mode is active.

6: Mains OK LED is green if the mains is present and OK.
LED is red at a mains failure.
LED is flashing green when the mains returns during the "mains OK delay" time.

7: MB on LED Indicates that the mains breaker is closed

8: GB on LED Indicates that the generator breaker is closed.

9: Hz/V ok LED Indicates that voltage/frequency is present and OK.

10: Run LED indicates that running feedback is present.

3. Display and menu structure

3.1 Menu

3.1.1 Menu system

The display includes the menu systems listed below which can be used/viewed without password entry:

View menu system:
This is the commonly used menu system, which contains displaying of the measured values.

Log menu:
This menu contains event, alarm and battery logs.

Setup menu (not commonly used by the operator):
This menu is used for setting up the unit, and if the operator needs detailed information that is not available in the view menu system.
Changing of parameter settings is password-protected.

Alarm list:
This list shows active acknowledged and unacknowledged alarms. It is also in this list that alarms can be acknowledged by pressing 

Service menu:
This menu contains input-, output-, M-Logic status and data about the unit.

3.1.2 View menu

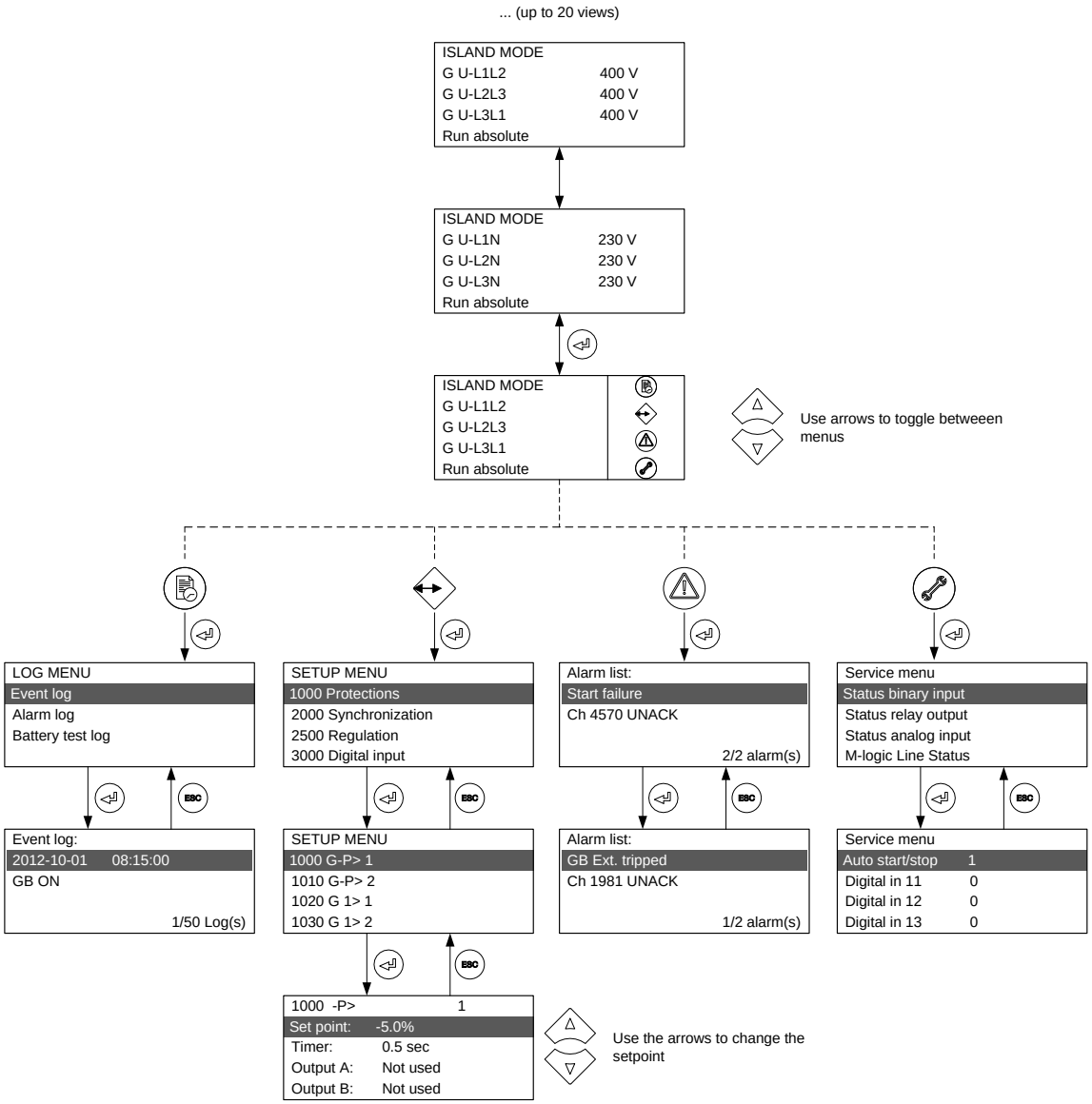
The view menus are the daily use menus for the operator. There are 20 configurable display views, with up to three configurable display lines in each view. View configuration is done through the PC utility software (USW).

In the view menus, various measured values are on the display.

AMF MAN G P 0 kW G Q 0 kVAr G S 0 kVA Run absolute 0 hrs	First display line: Genset mode and running mode Second display line: Measurements relating to operational status Third display line: Measurements relating to operational status Fourth display line: Measurements relating to operational status Fifth display line: Running hours

3.1.3 Menu structure example

The figure below is an example of how the menu structure is arranged, and it also shows the meaning of the entry symbols.



3.2 Display functions

3.2.1 Functional examples

The display indicates both readings and alarms.
The examples below are with icons and English language.

View examples

Service menu	
Appl. Ver.:	9.90.0
Appl. Rev.:	0
Boot Ver.:	9.99.1
Boot Rev.:	0

The software version can be found in the Service menu

AMF	MAN
G P	0 kW
G Q	0 kVAr
G S	0 kVA
Run absolute	0 hrs

Status, Generator P, Q and S. Run hours.

AMF		MAN
Serv1	1 d	0 h
Serv2	1 d	0 h
Run absolute		0 hrs

Service timer 1 and 2.
Run hours.

Alarm acknowledge

ISLAND MODE	
G U-L1L2	
G U-L2L3	
G U-L3L1	
G f-L1	

Press  to enter the list of active alarms.

Alarm list:		
BB U>	1	
Ch 1270	UNACK	
		1/1 alarm(s)

The alarm list shows the active alarms. Press  to ackowledge alarms

Parameter settings

ISLAND MODE	
G U-L1L2	
G U-L2L3	
G U-L3L1	
G f-L1	

Press  to enter the parameter setting.

SETUP MENU
1000 Protections
2000 Synchronization
2500 Regulation
3000 Digital input

Select menu group with  to edit.

1000 -P>	1
Set point:	-5.0%
Timer:	0.5 sec
Output A:	Not used
Output B:	Not used

Edit value with ▲ or ▼ arrows and save the value by pressing ⏎

The available parameters depend on the set options. Some parameters can only be changed using the PC utility software (USW) for AGC 100. The parameter list will automatically be abandoned, if no button is pressed during a 30 sec. period.

For detailed information about changing parameters and setup, please see the Designer's Reference Handbook.

4. Status line text

4.1 Status line text

4.1.1 Standard texts

Condition	Comment	
BLOCK	Block mode is activated	
SIMPLE TEST	Test mode is activated	
FULL TEST		
SIMPLE TEST ###.#min	Test mode activated and test timer counting down	
FULL TEST ###.#min		
ISLAND MAN	Genset stopped or running and no other action taking place	
ISLAND SEMI		
READY ISLAND AUTO	Genset stopped in Auto	
ISLAND ACTIVE	Genset running in Auto	
AMF MAN	Genset stopped or running and no other action taking place	
AMF SEMI		
READY AMF AUTO	Genset stopped in Auto	
AMF ACTIVE	Genset running in Auto	
LOAD TAKEOVER MAN	Genset stopped or running and no other action taking place	
LOAD TAKEOVER SEMI		
READY LTO AUTO	Genset stopped in Auto	
LTO ACTIVE	Genset running in Auto	
DG BLOCKED FOR START	Generator stopped and active alarm(s) on the generator	*Relevant for all variants, except for AGC 110.
BLOCKED FOR START	Engine stopped and active alarm(s) on the engine	*Only for AGC 110.
GB ON BLOCKED	Generator running, GB open and an active "Trip GB" alarm	
SHUTDOWN OVERRIDE	The configurable input is active	
ACCESS LOCK	The configurable input is activated, and the operator tries to activate one of the blocked keys	
GB TRIP EXTERNALLY	Some external equipment has tripped the breaker	An external trip is logged in the event log
MB TRIP EXTERNALLY	Some external equipment has tripped the breaker	An external trip is logged in the event log
IDLE RUN	The "Idle run" function is active. The genset will not stop until a timer has expired	

Condition	Comment	
IDLE RUN ###.#min	The timer in the "Idle run"' function is active	
Aux. test ##.#V ####s	Battery test activated	
START PREPARE	The start prepare relay is activated	
START RELAY ON	The start relay is activated	
START RELAY OFF	The start relay is deactivated during the start sequence	
MAINS FAILURE	Mains failure and mains failure timer expired	
MAINS FAILURE IN ###s	Frequency or voltage measurement is outside the limits	The timer shown is the Mains failure delay.Text in mains units
MAINS U OK DEL ####s	Mains voltage is OK after a mains failure	The timer shown is the Mains OK delay
MAINS f OK DEL ####s	Mains frequency is OK after a mains failure	The timer shown is the Mains OK delay
Hz/V OK IN ###s	The voltage and frequency on the genset is OK	When the timer runs out it is allowed to operate the generator breaker
COOLING DOWN ###s	Cooling-down period is activated	
COOLING DOWN	Cooling-down period is activated and infinite	Cooling down timer is set to 0.0 s
GENSET STOPPING	This info is shown when cooling down has finished	
EXT. STOP TIME ###s		
EXT. START ORDER	A planned AMF sequence is activated	There is no failure on the mains during this sequence
UNEXPECTED GB ON BB	Another generator breaker is closed onto the busbar (due to a GB position failure) while no voltage is present on the busbar	This indicates that other breakers cannot close to the busbar because of position failure on one or more GBs

4.2 Power management-related text

4.2.1 Texts only related to power management (AGC 14x)

Status text	Condition	Comment
Mains unit		
UNIT STANDBY	If redundant mains units are present, this message is shown on the redundant unit.	
TB TRIP EXTERNALLY	Some external equipment has tripped the breaker.	An external trip is logged in the event log.
MOUNT CAN CONNECTOR	Connect the power management CAN line	
ADAPT IN PROGRESS	The AGC is receiving the application that it has just been connected to	
SETUP IN PROGRESS	The new AGC is being added to the existing application	
SETUP COMPLETED	Successful update of the application in all AGC units	
REMOVE CAN CONNECTOR	Remove the power management CAN lines.	
All units		
BROADCASTING APPL. #	Broadcast an application through the CAN line.	Broadcasts one of the four applications from one unit to the rest of the AGCs in the power management system.
RECEIVING APPL. #	AGC receiving an application.	
BROADCAST COMPLETED	Successful broadcast of an application.	
RECEIVE COMPLETED	Application received successfully.	
BROADCAST ABORTED	Broadcast terminated.	
RECEIVE ERROR	Application is not received correctly.	

5. Running modes

5.1 Running mode overview

The unit has four different running modes and one block mode. The different running modes are selected via the display or the PC utility software. For detailed information please see Designer's Reference Handbook.

Auto
In auto mode, the unit will operate automatically, and the operator cannot initiate any sequences manually.

Semi-auto
Semi-auto has the same function as manual mode in systems without power management.
In power management systems (AGC 145/146), the function is used to put all units into semi-auto.

Test
The test sequence will start when the test mode is selected.

Manual
Manual means that the unit will not initiate any sequences automatically, as is the case with the auto mode. It will only initiate sequences, if external signals are given.

Block
When the block mode is selected, the unit is not able to initiate any sequences, e.g. the start sequence.

Block mode must be selected when maintenance work is carried out on the genset.

The genset will shut down if block mode is selected while the genset is running.

6. Alarm handling and log list

6.1 Alarm handling

When an alarm occurs, the unit will automatically go to the alarm list for display of the alarm.

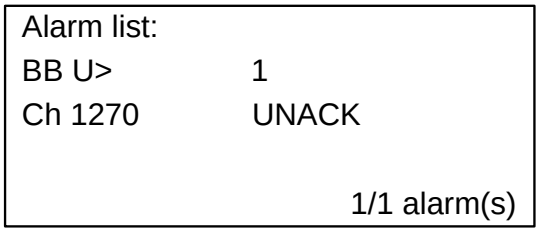
If reading of the alarms is not desired, use the ESC push-button to exit the alarm list.

If you decide to enter the alarm list later, press the HORN push-button for 2 seconds to jump directly to the alarm list reading.

The alarm list contains both acknowledged and unacknowledged alarms provided that they are still active (i.e. the alarm condition is still present). Once an alarm is acknowledged and the condition has disappeared, the alarm will no longer be displayed in the alarm list.

This means that if there are no alarms, the alarm list will be empty.

This display example below indicates an unacknowledged alarm. The display can show only one alarm at a time. Therefore, all other alarms are hidden.



To see the other alarms, use the ▲ and ▼ push-buttons to scroll in the display.

To acknowledge an alarm press ⏎.

6.2 Log list

The log is divided into three different lists:

1. Event log
2. Alarm log
3. Battery test log

The log list contains up to 50 events, the alarm list contains up to 50 historical alarms, and the battery test list contains up to 50 historical battery tests.

An event is e.g. closing of breaker and starting of engine. An alarm is e.g. overcurrent or high cooling water temperature. A battery test is e.g. test OK or test failed.

To enter the log list:
1. Enter the LOG TYPE SELECT from the setup menu

2. Select the list which is needed with the ▲ and ▼ arrows and choose with the ⏎ push-button.
3. To scroll up and down in the list, use the ▲ and ▼ push-buttons.