



-power in control



AGC 200 Advanced Gen-set Controller OPERATOR'S MANUAL



- Display readings
- Push-button functions
- Alarm handling
- Log list



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1. About this document

General purpose

This document is the Operator's Manual for DEIF's Advanced Gen-set Controllers, the AGC 200 series. The document mainly includes general product information, display readings, push-button and LED functions, alarm handling descriptions and presentation of the log list.

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



Please make sure to read this handbook before working 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 human injury.

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.

Contents/overall structure

The 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

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.

Warnings



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

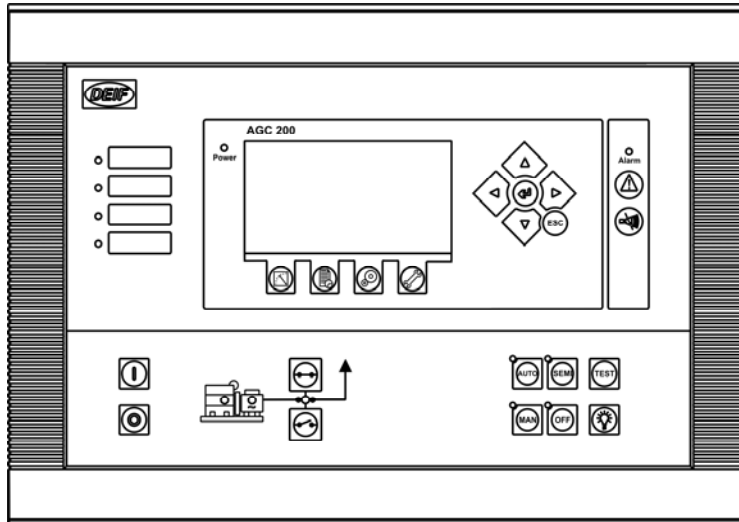
UL applications

These flat surface panel-mounted controllers are intended to be used in Listed Generator Assemblies where the suitability of the combination has been determined by Underwriters Laboratories.

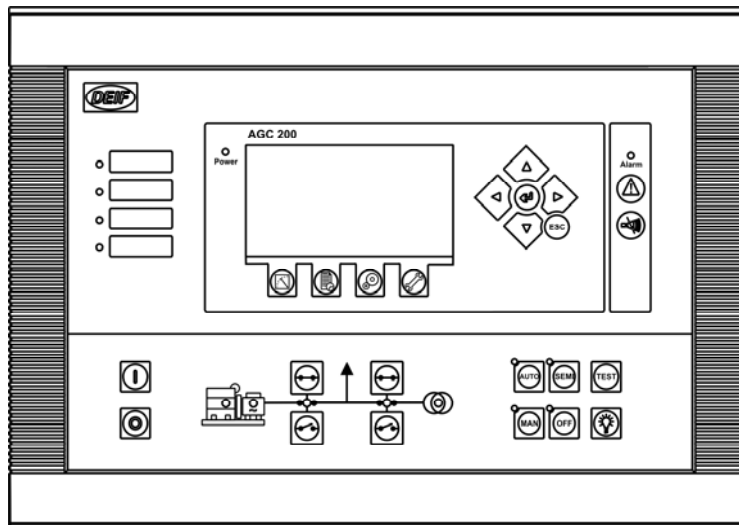
These devices have been evaluated for fire and shock only. The accuracy and/or reliability of the voltage regulating function have not been evaluated. Metering, monitoring, protection and signalling functions have not been evaluated.

3. AGC 200 variants

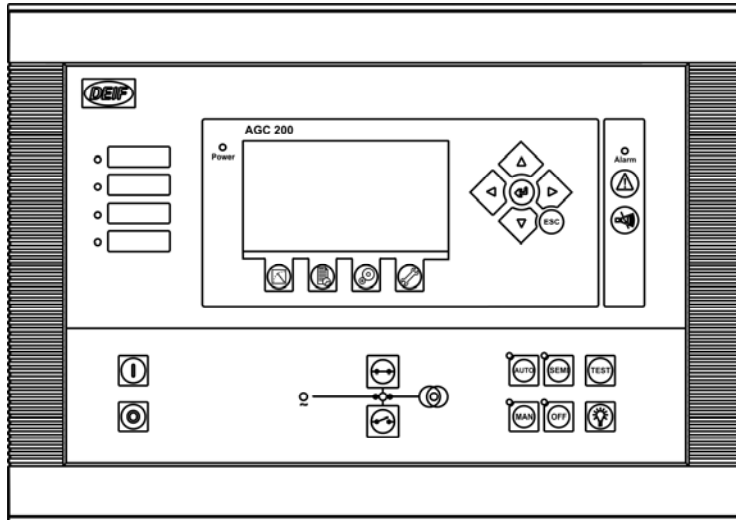
Island, AGC 212/222/232/242



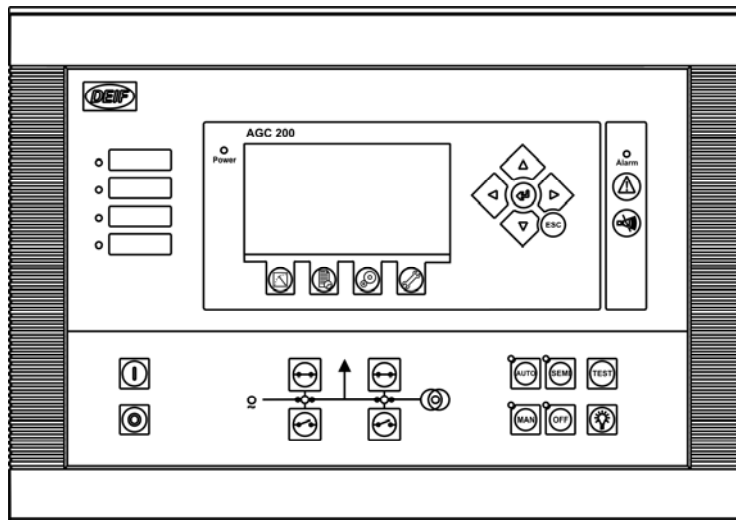
Automatic mains failure, AGC 213/233



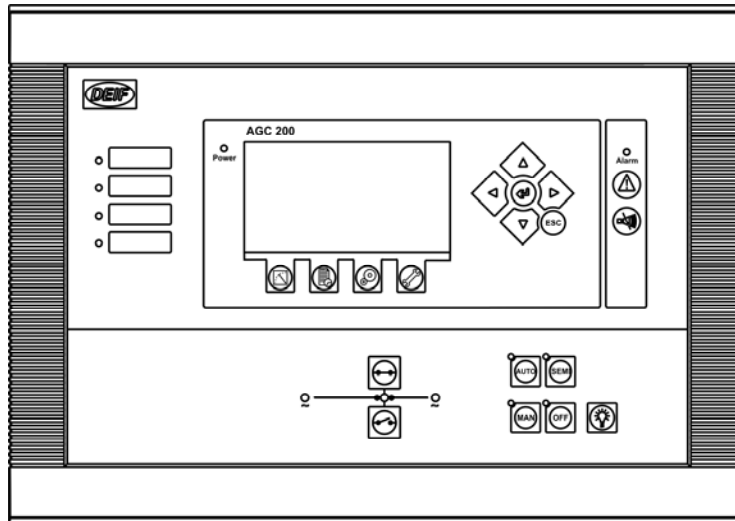
Mains, AGC 245



Mains and tie breaker, AGC 246


















Bus tie breaker, AGC 244



4. Display push-buttons and LEDs

Push-button functions

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

	Shifts the display to show the alarm list.
	Resets horn output.
	Tools. The tools are a number of windows for commissioning as well as some special settings which are not accessible via the PC utility software. Please refer to the Designer's Reference Handbook for details.
	Shifts the display to viewing of measured values. There are 20 different views. Scroll through the views using the  or  button.
	Shifts the display to show the event and alarm list. There are four lists to select from: Event log, alarm log, battery test log and engine interface alarm log (CAN J1939 engine controller interface).
	Parameter list selection.
	Moves the cursor left for manoeuvring in the menus.
	Increases the value of the selected setpoint (in the setup menu). In the daily use display, this button function is used for scrolling the displaying of generator values.
	Selects the entry in the display.
	Decreases the value of the selected setpoint (in the setup menu). In the daily use display, this button function is used for scrolling the displaying of generator values.
	Moves the cursor right for manoeuvring in the menus.
ESC	Jumps one step backwards in the menu (to previous display or to the entry window).
START	Start of the gen-set <i>if 'SEMI-AUTO' or 'MANUAL' is selected.</i>
STOP	Stop of the gen-set <i>if 'SEMI-AUTO' or 'MANUAL' is selected.</i>
	Manual activation of close breaker sequence <i>if 'SEMI-AUTO' is selected.</i>
	Manual activation of open breaker sequence <i>if 'SEMI-AUTO' is selected.</i>
AUTO	Selects AUTO running mode.
SEMI	Selects SEMI-AUTO running mode. Push-button commands are used for start/stop, etc.

MAN Selects MANUAL running mode. Like SEMI, but regulators are OFF.

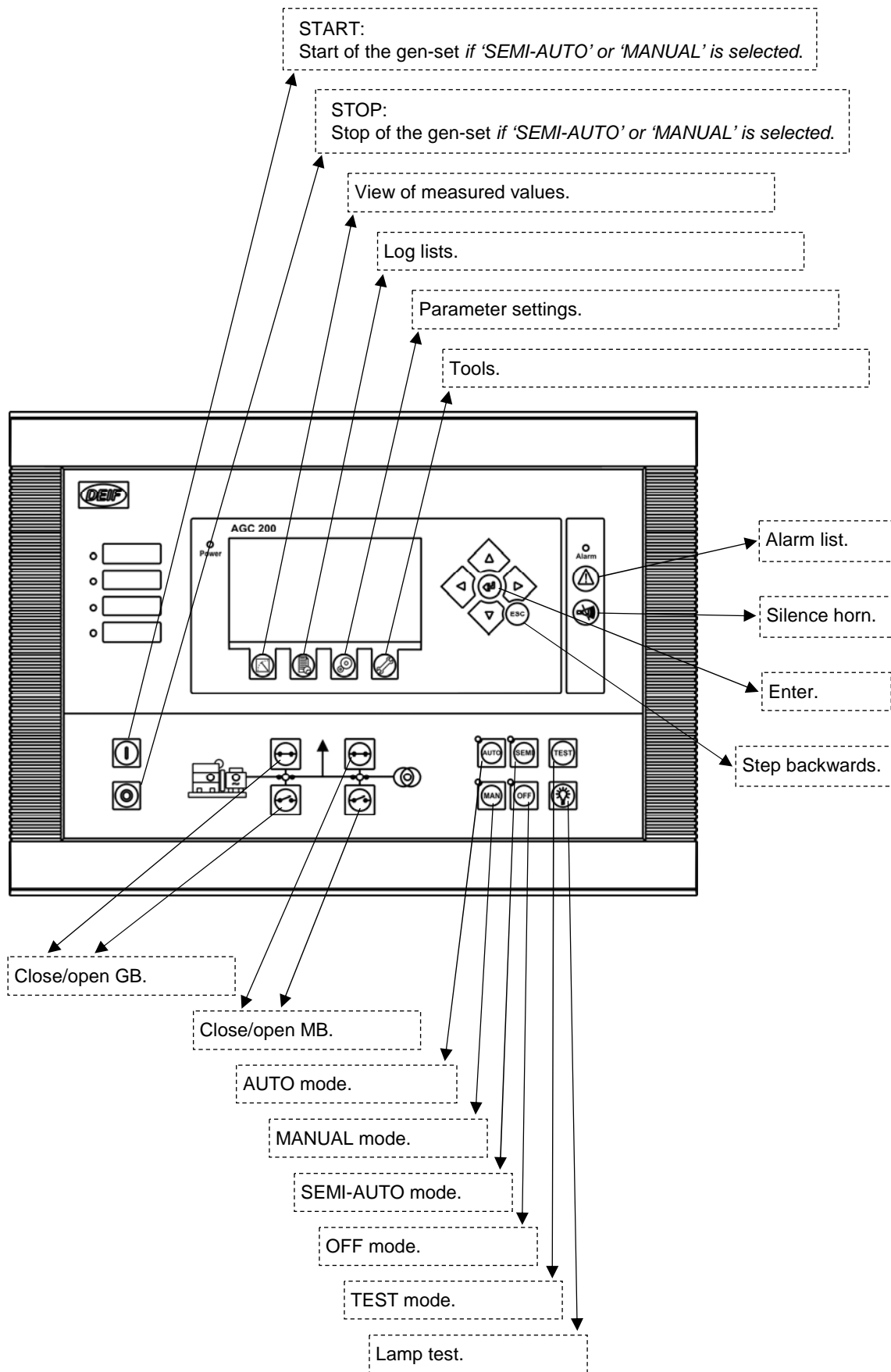
OFF Selects OFF mode. All functions except protections are switched off.

TEST Selects TEST RUN of the generator.



Lamp test.

The push-buttons are placed as follows:

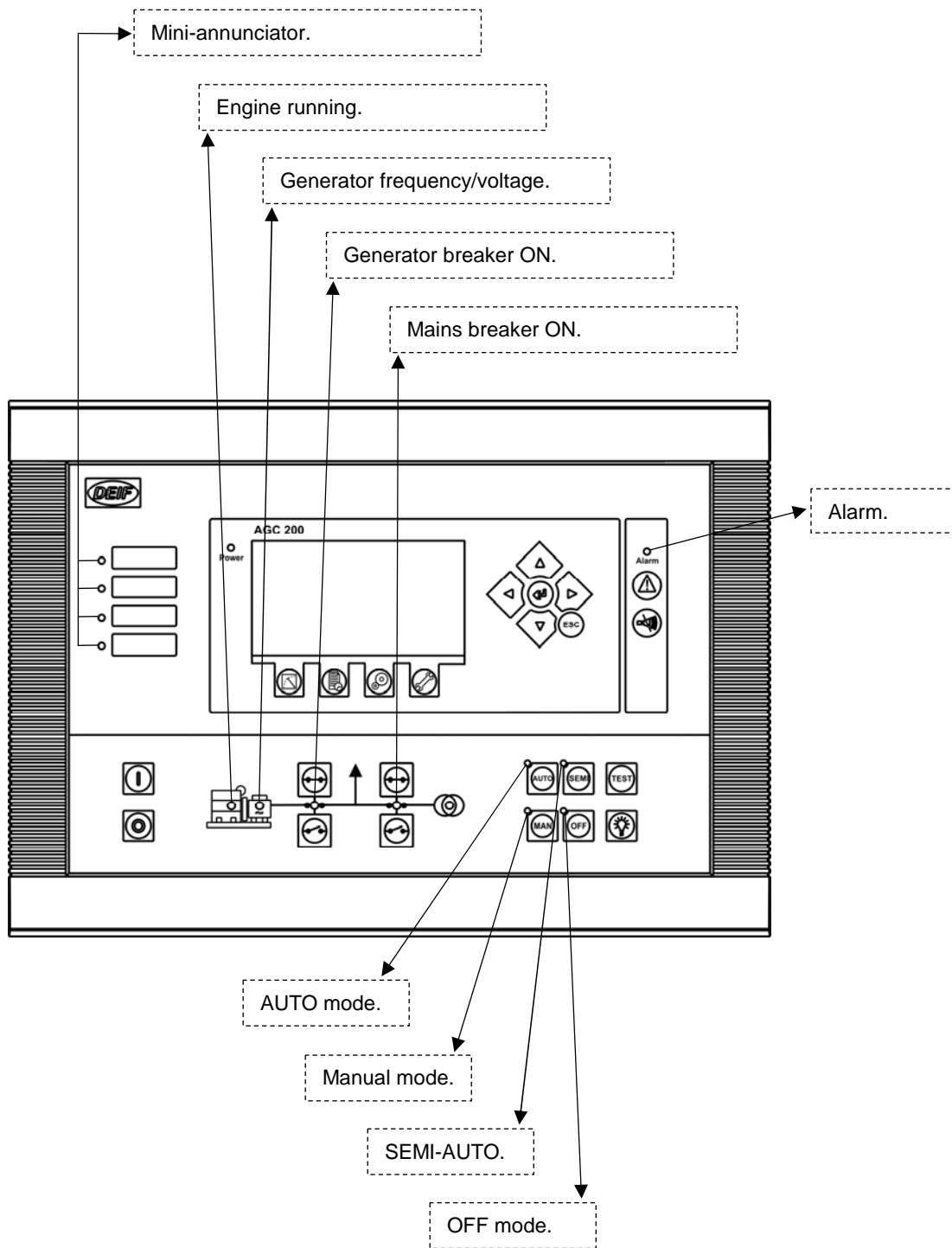


LED functions

The display unit holds 10 LED functions. Dependent on the situation, the colour of the LEDs is green, red or a combination.

Alarm:	LED flashing indicates that unacknowledged alarms are present. LED steady light indicates that ALL alarms are acknowledged, but some are still present.
Power:	LED indicates that the auxiliary supply is switched on. If it is green, the AGC 200 is operational. If it is red, the self-check has failed.
Run:	LED indicates that the generator is running.
Hz/V OK:	LED green light indicates that the voltage/frequency is present and OK.
GB ON:	LED indicates that the generator breaker is closed.
MB ON:	LED indicates that the mains breaker is closed.
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.
AUTO:	LED indicates that auto mode is selected.
MAN:	LED indicates that manual mode is selected.
SEMI:	LED indicates that SEMI AUTO mode is selected.
OFF:	LED indicates that OFF mode is selected.
Annunciator:	4 x LEDs with selectable indication function. Selection is made in M-logic.

The display LEDs indicate the following:



5. Display and menu structure

LCD display

The display is a backlit LCD graphical display. The display light intensity, LED indication and contrast can be adjusted from menu 9150.

Basically, all measured and calculated values can be read in the display. These may be selected via the PC utility software (USW).



For selection of values, please refer to the Designer's Reference Handbook.

Menu structure

The display includes two menu systems which can be used without password entry:

View menu system

This is the commonly used menu system. 20 windows are configurable and can be entered by using the arrow push-buttons.

Setup menu system (not commonly used by the operator)

This menu system is used to set 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.

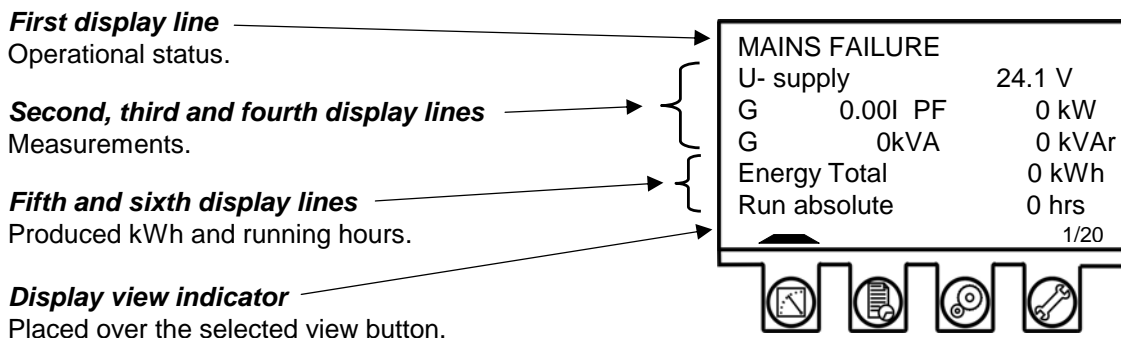
Entry window

When the unit is powered up, an entry window appears. The entry window is the first window of the view menu system. It can always be accessed by pressing the BACK push-button three times.

MAINS FAILURE			
U-Supply			24.1 V
G	0.00I PF		0 kW
G	0kVA		0 kVAr
Energy Total			0 kWh
Run absolute			0 hrs

View menu


The view menu is the daily use menu for the operator.





In the view menu, various measured values are displayed.

View menu navigation

Display of measured values according to the selections made during configuration.

 **For detailed information about configuration, please see the Designer's Reference Handbook.**

The views contain up to 20 different windows which can be selected using the  and  push-buttons located on the right hand side of the display.

Status line text

This table explains the different messages.

Status text	Condition	Comment
BLOCK	Block mode is activated	
SIMPLE TEST	Test mode is activated	
LOAD TEST		
FULL TEST		
SIMPLE TEST ###.#min	Test mode is activated and test timer counting down	
LOAD TEST ###.#min		
FULL TEST ###.#min		
ISLAND MAN	Gen-set stopped or running and no other action taking place	
ISLAND SEMI		
READY ISLAND AUTO	Gen-set stopped in Auto	
ISLAND ACTIVE	Gen-set running in Auto	
AMF MAN	Gen-set stopped or running and no other action taking place	
AMF SEMI		
READY AMF AUTO	Gen-set stopped in Auto	
AMF ACTIVE	Gen-set running in Auto	
FIXED POWER MAN	Gen-set stopped or running and no other action taking place	
FIXED POWER SEMI		
READY FIXED P AUTO	Gen-set stopped in Auto	
FIXED POWER ACTIVE	Gen-set running in Auto	
PEAK SHAVING MAN	Gen-set stopped or running and no other action taking place	
PEAK SHAVING SEMI		
READY PEAK SHAV AUTO	Gen-set stopped in Auto	
PEAK SHAVING ACTIVE	Gen-set running in Auto	
LOAD TAKEOVER MAN	Gen-set stopped or running and no other action taking place	
LOAD TAKEOVER SEMI		
READY LTO AUTO	Gen-set stopped in Auto	
LTO ACTIVE	Gen-set running in Auto	
MAINS P EXPORT MAN	Gen-set stopped or running and no other action taking place	
MAINS P EXPORT SEMI		
READY MPE AUTO	Gen-set stopped in Auto	
MPE ACTIVE	Gen-set running in mains power export mode	
DG BLCKD FOR START	Generator stopped and active alarm(s) on the generator	
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 gen-set will not stop, until a timer has expired	
IDLE RUN ###.#min	The timer in the 'Idle run' function is active	

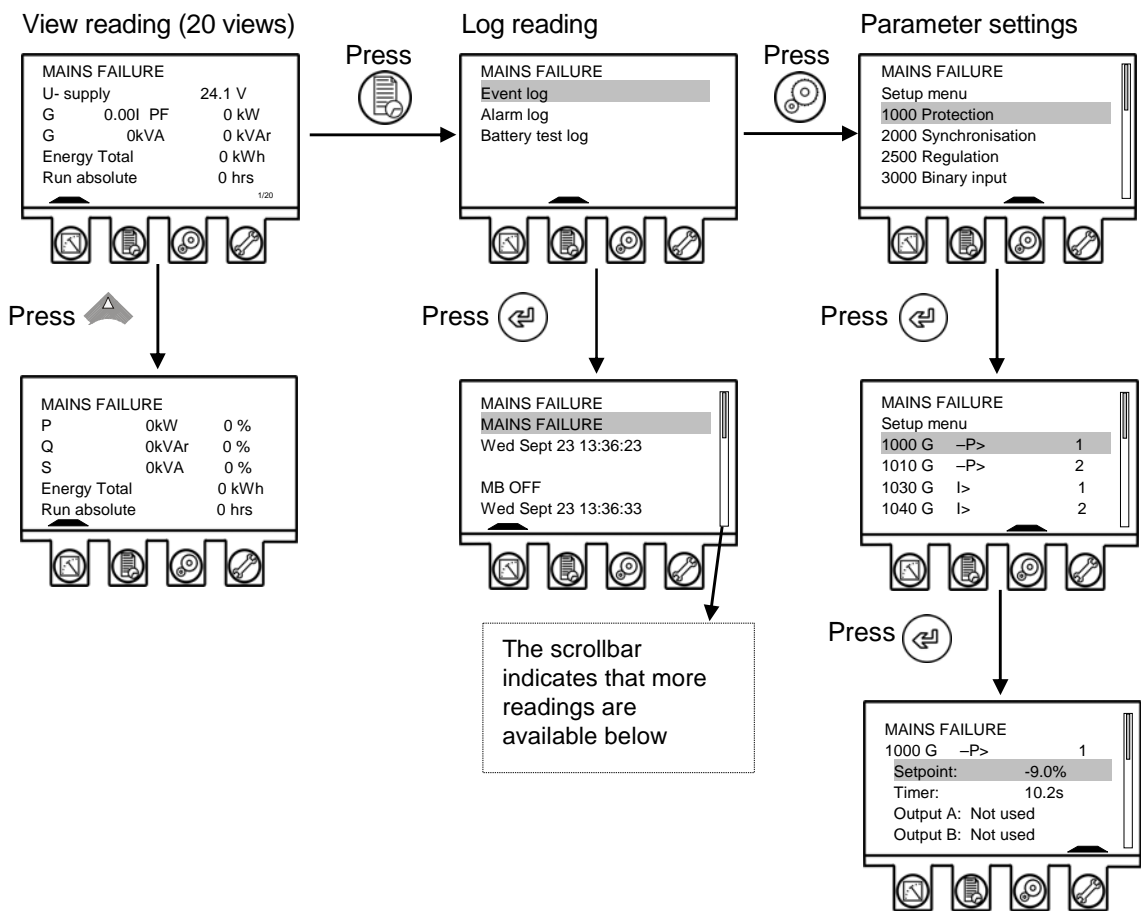
Status text	Condition	Comment
COMPENSATION FREQ.	Compensation is active	The frequency is not at the nominal setting
Aux. test ##.#V ####s	Battery test activated	
DELOAD	Decreasing the load of the gen-set in order to open the breaker	
START DG(s) IN ####s	The start gen-set setpoint is exceeded	
STOP DG(s) IN ####s	The stop gen-set setpoint is exceeded	
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 of the gen-set is OK	When the timer runs out it is allowed to operate the generator breaker
COOLING DOWN ####s	Cooling down period is activated	
GEN-SET STOPPING	This info is shown when cooling down has finished	
EXT. STOP TIME ####s		
PROGRAMMING LANGUAGE	This info is shown if the language file is downloaded from the PC utility software	
	Generator is synchronising	The dot marks the actual generator phase angle position in the synchronisation When the dot is at 12 o'clock, the generator and busbar are in synchronism The second dot indicates when the relay output for the generator or mains breaker is activated
	Generator running too slow during synchronising	
	Generator running too fast during synchronising	
EXT. START ORDER	A planned AMF sequence is activated	There is no failure on the mains during this sequence

Status text	Condition	Comment
SELECT GEN-SET MODE	Power management has been deactivated and no other gen-set mode has been selected	AGC 24x only
QUICK SETUP ERROR	Quick setup of the application failed	
MOUNT CAN CONNECTOR	Connect the power management CAN line	
ADAPT IN PROGRESS	The AGC 200 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	
RAMP TO #####kW	The power ramp is ramping in steps, and the next step that will be reached after the timer has expired will be displayed	
DERATED TO #####kW	Displays the ramp down setpoint	

Texts only related to power management (AGC 24x variants only)

Status text	Condition	Comment
DG unit		
BLACKOUT ENABLE	This information is shown if a CAN failure is present in a power management application	
UNIT STANDBY	If redundant mains units are present, this message is shown on the redundant unit	
DELOADING BTB XX	DG units are load sharing asymmetrically to deload BTB XX dividing 2 sections in an application	
BTB XX DIVIDING SEC.	BTB XX is dividing 2 sections in an application	
SYNCHRONISING TB XX	TB XX is synchronising	
SYNCHRONISING MB XX	MB XX is synchronising	
SYNCHRONISING BTB XX	BTB XX is synchronising	
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
BTB unit		
DIVIDING SECTION	A BTB unit is dividing 2 sections in an application	
READY AUTO OPERATION	BTB unit in Auto and ready for breaker operation (no active 'BTB trip' alarm)	
SEMI OPERATION	BTB unit in Semi	
AUTO OPERATION	BTB unit in Auto, but not ready for breaker operation (active 'BTB trip' alarm)	
BLOCKED FOR CLOSING	Last open BTB in a ring bus	
BTB TRIP EXTERNALLY	Some external equipment has tripped the breaker	An external trip is logged in the event log
All units		
BROADCASTING APPL. #	Broadcast of an application through the CAN line	Broadcasts one of the four applications from one unit to the other AGCs in the power management system
RECEIVING APPL. #	AGC 200 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	

View menu example




Running modes

The running modes are selected using the buttons as follows:


Mode	Description
SEMI	<ul style="list-style-type: none"> - The display push-buttons (START, STOP, GB ON, GB OFF) are active and can be used by the operator. - The regulators are also active, i.e. the speed control will bring the generator to nominal speed upon start. - When pushing a breaker button for closing, the AGC 200 will synchronise (if allowed) the breaker. When the breaker closes, the controls stop.
TEST	<ul style="list-style-type: none"> - The unit will start the generator, carry out the test sequence (predefined time period) and stop the generator again. Subsequently, the generator will return to AUTO or SEMI-AUTO mode. The mains breaker will remain closed, and the generator breaker will remain open. NOTE: The test running can be: Simple test: Starting the gen-set without closing the GB; Load test: Parallel to the mains and take load to a predefined value; Full test: Transfer the load to the gen-set and open the MB.
AUTO	<ul style="list-style-type: none"> - The unit will automatically carry out the control type selected (AMF, fixed power, etc.). - The display control push-buttons (START, STOP, GB ON, GB OFF) are disabled. - If the selected running mode is fixed power, mains power export, load takeover or island, timer start/stop (week watch) or binary input, then start/stop can be used.
MAN	<ul style="list-style-type: none"> - The display push-buttons (START, STOP) are active and can be used by the operator. - The regulators are not active, i.e. speed (and voltage) control has to take place using external controls for generator speed and possibly generator voltage control. - The breakers will be able to open or close at any time. A synchronisation check will always be performed to ensure safe closing of the breakers.
BLOCK	<ul style="list-style-type: none"> - The unit will not be able to start. BLOCK mode can be selected during standstill and the password is needed to leave BLOCK mode. If the BLOCK mode is selected while the gen-set is running, the mode will have no effect until the gen-set is stopped. To select another mode after the BLOCK mode, the password must be entered.

6. Alarm handling and log list

Alarm handling

When an alarm occurs, the unit will automatically go to the alarm list, if selected (setting 6900 Alarm jump) for display of the alarm. If setting 6900 is OFF, you have to press  to enter the alarm list.

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, use the  push-button 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 read 'No alarms'.

MAINS FAILURE			
Alarm list :			
Ch	1300		UNACK
BB	U<		1
09-09-23	15:20:21:0		
			1/1 alarm(s)

This display example 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, place the cursor (grey area) over the channel number and then press



Log list





The log is divided into three different lists:

1. Events
2. Alarms
3. Battery test

The log list contains up to 150 events, the alarm list contains up to 30 historical alarms and the battery test list contains up to 52 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. Press .
2. Select the needed list by using the  and  push-buttons (move the highlight of the list) and press the  push-button.

DEIF A/S reserves the right to change any of the above