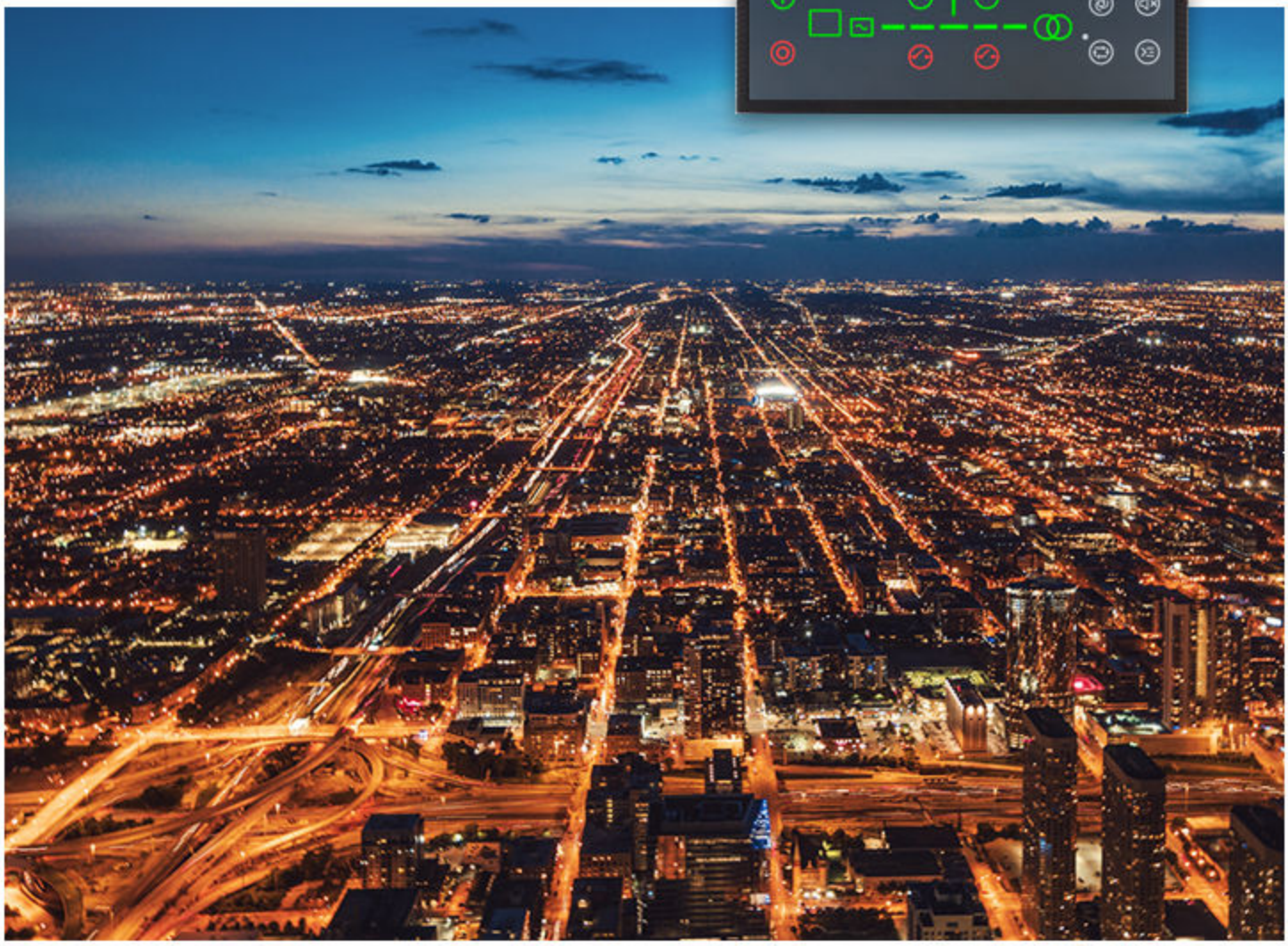
AGC 150 Stand-alone

4189341311B

Operator's manual

Improve
Tomorrow



1. Introduction

1.1 Symbols for hazard statements

DANGER!

This shows dangerous situations.

If the guidelines are not followed, these situations will result in death, serious personal injury, and equipment damage or destruction.

WARNING

This shows potentially dangerous situations.

If the guidelines are not followed, these situations could result in death, serious personal injury, and equipment damage or destruction.

CAUTION

This shows low level risk situation.

If the guidelines are not followed, these situations could result in minor or moderate injury.

NOTICE

This shows an important notice

Make sure to read this information.

1.2 About the operator's manual

This document gives the necessary information to operate the controller.

CAUTION

Installation errors

Read this document before working with the controller. Failure to do this may result in human injury or damage to the equipment.

Intended users of the operator's manual

The operator's manual is for the operator that uses the controller regularly.

The manual describes the LEDs, buttons and screens on the controller, alarm handling, and the logs menu.

1.3 Warnings and safety

Factory settings

The controller is delivered pre-programmed from the factory with a set of default settings. These settings are based on typical values and may not be correct for your system. You must therefore check all parameters before using the controller.

Data security

To minimise the risk of data security breaches:

- As far as possible, avoid exposing controllers and controller networks to public networks and the Internet.
- Use additional security layers like a VPN for remote access, and install firewall mechanisms.
- Restrict access to authorised persons.

1.4 Legal information

Third party equipment

DEIF takes no responsibility for the installation or operation of any third party equipment, including the **genset**. Contact the **genset company** if you have any doubt about how to install or operate the genset.

Warranty

NOTICE

Warranty

The controller 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.

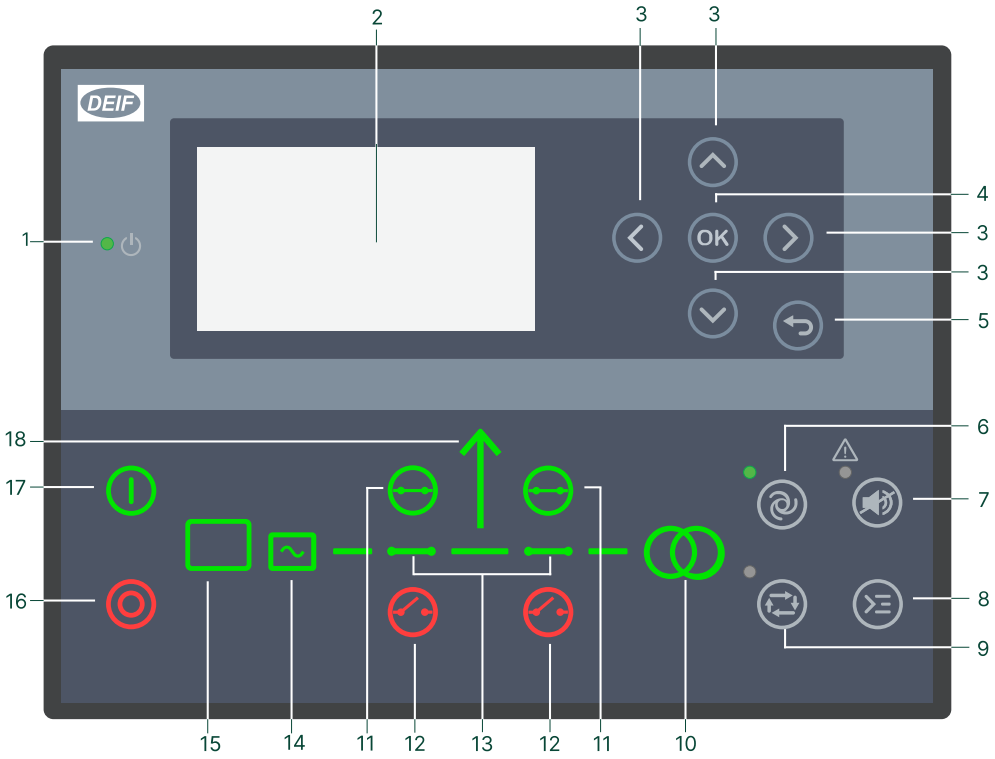
Copyright

Software version

This document is based on the AGC 150 software version 1.16.0.

2. About the AGC 150 Stand-alone

2.1 Display, buttons and LEDs



No.	Name	Function
1	Power	Green: The controller power is ON. OFF: The controller power is OFF.
2	Display screen	Resolution: 240 x 128 px. Viewing area: 88.50 x 51.40 mm. Six lines, each with 25 characters.
3	Navigation	Move the selector up, down, left and right on the screen.
4	OK	Go to the Menu system. Confirm the selection on the screen.
5	Back	Go to the previous page.
6	AUTO mode	The controller automatically starts and stops (and connects and disconnects) the genset. No operator actions are needed. The controller also automatically opens and closes the mains breaker (open transitions, since there is no synchronisation).
7	Silence horn	Turns off an alarm horn (if configured) and enters the Alarm menu.
8	Shortcut menu	Access the Jump menu, Mode selection, Test, Lamp test
9	SEMI-AUTO mode	The controller cannot automatically start, stop, connect or disconnect the genset, or open and close the mains breaker. The operator or an external signal can start, stop, connect or disconnect the genset, or open or close the mains breaker.
10	Mains symbol	Green: Mains voltage and frequency are OK. The controller can close the breaker. Red: Mains failure.
11	Close breaker	Push to close the breaker.
12	Open breaker	Push to open the breaker.

No.	Name	Function
13	Breaker symbols	Green: Breaker is closed. Red: Breaker failure.
14	Generator	Green: Generator voltage and frequency are OK. The controller can close the breaker. Green flashing: The generator voltage and frequency are OK, but the V&Hz OK timer is still running. The controller cannot close the breaker. Red: The generator voltage is too low to measure.
15	Engine	Green: There is running feedback. Green flashing: The engine is getting ready. Red: The engine is not running, or there is no running feedback.
16	Stop	Stops the genset if SEMI-AUTO or Manual is selected.
17	Start	Starts the genset if SEMI-AUTO or Manual is selected.
18	Load symbol	Green: The supply voltage and frequency are OK. Red: Supply voltage/frequency failure.

2.2 Display settings

To adjust for ambient lighting, configure the display settings.

Parameters > Basic settings > Controller settings > Display > Display control

Parameter	Text	Range	Default
9151	Backlight dimmer	0 to 15 *	12
9152	Green LEDs dimmer	1 to 15 *	15
9153	Red LEDs dimmer	1 to 15 *	15
9154	Contrast level	-20 to +20	0
9155	Sleep mode timer	1 to 1800 s	60 s
9156	Enable (Sleep mode timer)	OFF ON	ON
9157	Alarm Jump	OFF ON	ON
9158	Engineering units	Bar/Celsius PSI/Fahrenheit	Bar/Celsius

NOTE * Low numbers are minimum brightness and high numbers are maximum brightness.

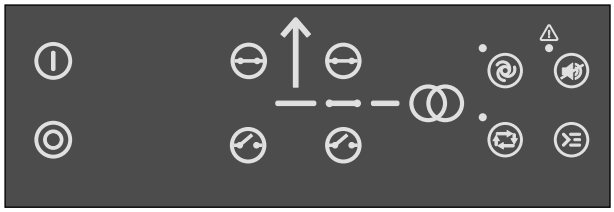
2.3 Mimic function

With the mimic function you can select how the control buttons and LEDs are shown on the controller's display.

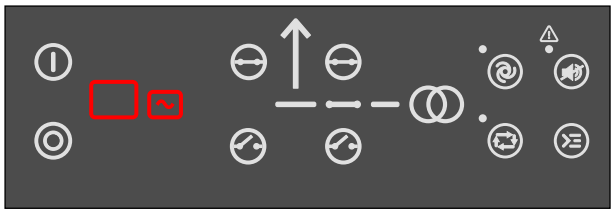
Parameters > Basic settings > Controller settings > Display > LED mimic

Parameter no.	Item	Range
6082	LED mimic	Standard with genset Standard Guided with genset Guided

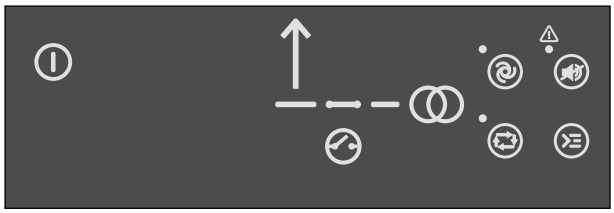
Standard
The control buttons and LEDs are shown.
If you stop the genset, the motor/generator symbols are not shown.



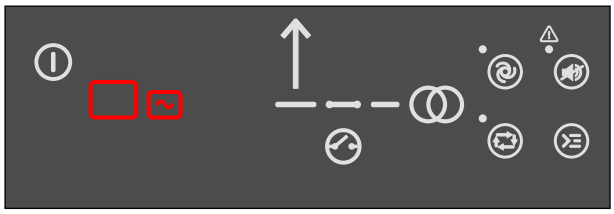
Standard with genset
The control buttons and LEDs are shown.
If you the stop the genset, the motor/generator symbols are shown in red.



Guided
Active control buttons and LEDs are shown inactive are not shown.
Example: The AGC 150 Stand-alone is in SEMI-AUTO mode, and the genset is not operating. Only the start button is shown, as this is the only possible action.



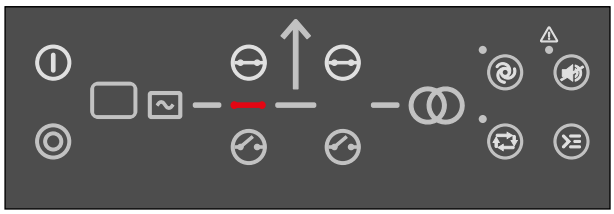
Guided with genset
Active control buttons, LEDs and the motor/generator symbols are shown, inactive are not shown.
Example: The AGC 150 Stand-alone is in SEMI-AUTO mode. The genset is not operating. The only possible action is to start the genset, and so only the start button and the red motor/generator symbols are shown.



All Mimic settings

Red breaker symbol:

- Breaker position failure
- Breaker close failure



2.4 Running modes

The controller has three different running modes, a block mode and a test mode. Push the *Shortcut* button and select *Running Modes* to see the running modes and block mode. Configure the test mode in `Parameters > Power set points > Test`. To select the test mode push the *Shortcut* button and select *Start Test*.

Mode	Description
AUTO	The controller automatically starts and stops (and connects and disconnects) the genset. The operator cannot start a sequence manually.
SEMI-AUTO	The controller cannot automatically start, stop, connect and disconnect the genset or open and close the mains breaker. The operator can start these sequences using the buttons on the controller, Modbus commands or the digital inputs. If the genset starts in semi-auto mode, it will operate at nominal values.
MANUAL	The operator can use the digital increase/decrease inputs (if they are configured) and the *Start* and *Stop* buttons. When the genset starts in manual mode, it will start without subsequent regulation.

Mode	Description
BLOCK	The controller cannot start a sequence, for example the start sequence. Select the block mode when you do maintenance work on the genset.
Test	The test sequence will start when you select the test mode.

NOTE The genset will shut down if you select the block mode while the engine is operating.

3. Menus

3.1 Menu structure

The controller has two menu systems, which can be used without password entry:

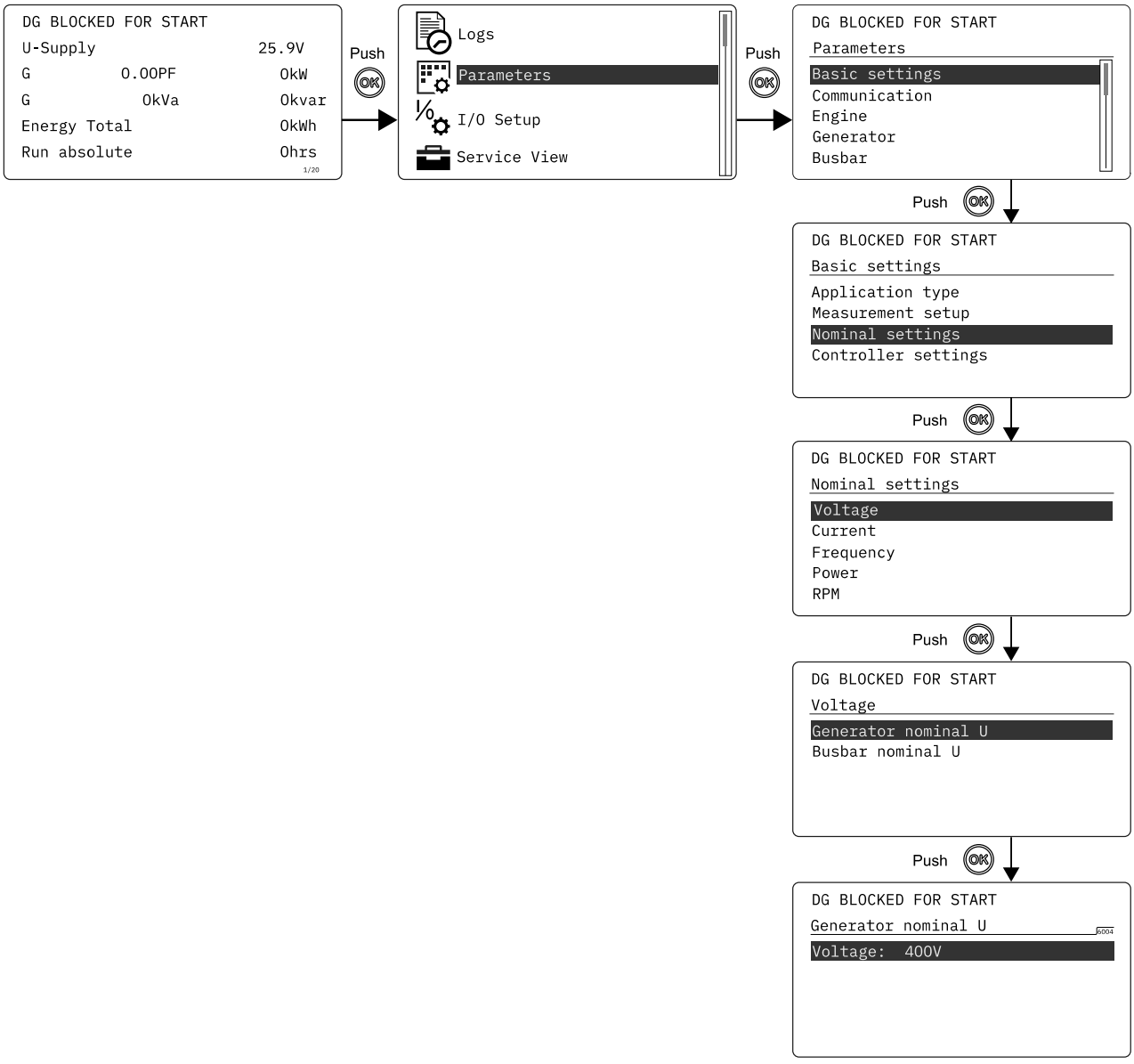
- **The View menu system**: Shows the operating status and values. The system has 20 configurable windows, that can be entered with the arrow buttons.
- **The Parameters menu system**: The operator can see the controller's parameters. A password is necessary to change the parameter settings.

3.2 Parameters menu

You can configure the controller in the parameters menu and you can also find information, which is not available in the view menu. From the view menu, push the OK button to find the parameters menu. Use the and buttons to find the different parameters and select with the OK button.

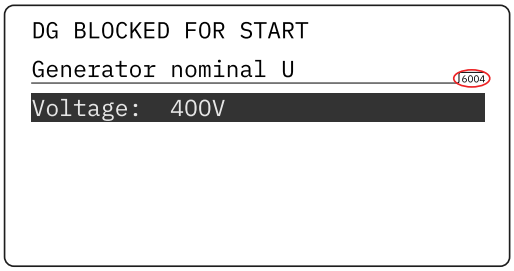
Parameters menu example

This is an example of how to change the nominal voltage settings.



3.2.1 Menu numbers

Each parameter has a menu number. You can find the number in the upper right corner on the display screen.



You can also find the menu number with the utility software:

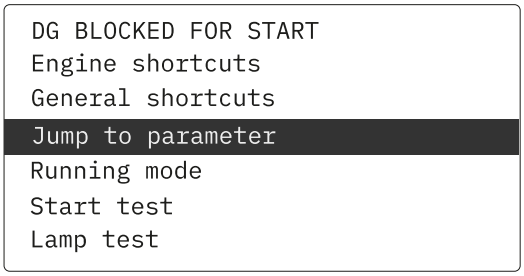
1. Select *Parameters* from the toolbar on the left.
2. Set the view mode to list. The view mode can be found in the left corner of the screen.
3. The menu numbers are in the *Channel* column.

3.2.2 The jump to parameter function

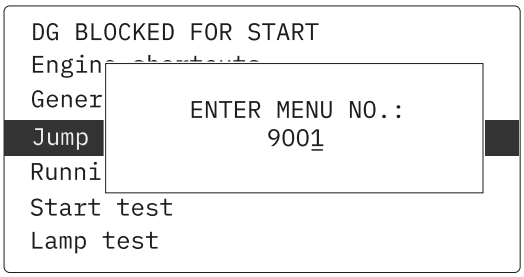
If you know the menu number for a parameter, you can use the jump to parameter function to go directly to the parameter.

On the controller

1. From the view menu, push the *Shortcut* button to see the jump to parameter function:



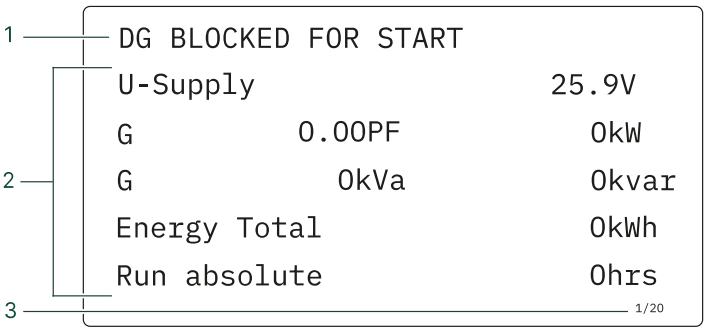
2. Use the and buttons to go to *Jump to parameter* and push the button.



3. Use the and buttons to change the numbers, and push the button to save. Use the and buttons to move to the next number.

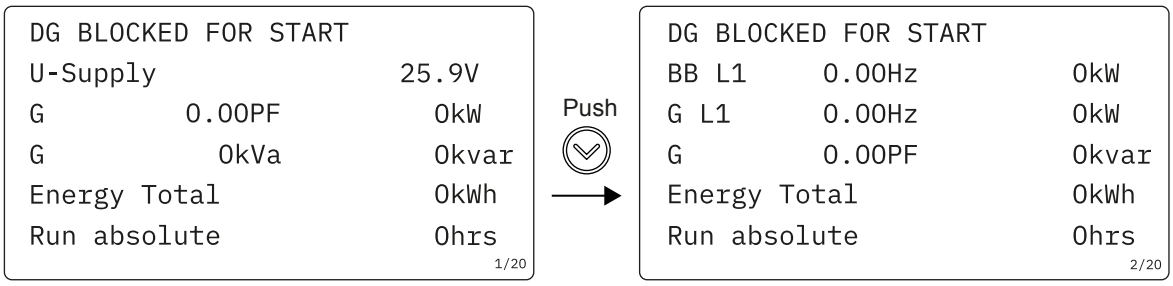
3.3 View menu

The view menu is shown when the controller is turned on, and you can see the operating status and values. The event and alarms list will also be shown if an alarm is on.



1. Operating status
2. Values and information
3. Page number

The view menu has 20 different display views. Use the and buttons to select a view.



3.3.1 Display views

The controller has 20 different display views and 17 of the views are pre-configured. You can configure the views with the utility software.

Line	View 1	View 2	View 3	View 4	View 5
1	G 0.00PF 0kW	Speed detection	Run absolute 0hrs	G 0 0 0V	Energy total 0kWh
2	G 0.00kVA 0kvar	Water temp. detection	Serv 1 0d 0h	G 0 0 0A	Date and Time
3	G L1 0.0Hz 0V	Oil pres. detection	Start attempts 0	G 0.00 0.00 0.00Hz	MB operations 0
4	G 0 0 0A	Fuel level detection	D+ Voltage 0V	G PF 0.00 0.00 0.00	GB operations 0
5	BB L1 0.0Hz 0V	U-Supply 0.0V	-	G 0 0 0kW	-

Line	View 6	View 7	View 8	View 9	View 10
1	-	After treatment	Engine dashboard	EIC T. Coolant	L-L and P total
2	Synchroniser II	EIC Tier 4 Icons	EIC Engine Icons	EIC T. Turbo Oil	Current and Q total
3	-	-	-	EIC T. Exh. Right	Pf and kW %
4	-	-	-	EIC T. Oil	GOV and AVR output
5	-	EIC Regeneration info	-	EIC T. Fuel	Ramp down/up setpoint

Line	View 11	View 12	View 13	View 14	View 15
1	P GTot and P %	G Angle L1L2 0deg	P 0kW 0%	P available 0kW	BB-Gen Angle 0deg
2	Q GTot and Q %	G Angle L2L3 0deg	Q 0kvar 0%	P available 0%	G Angle L1L2 0deg
3	BB freq and G freq	G Angle L3L1 0deg	S 0kVA 0%	P consumed 0kW	BB Angle L1L2 0deg
4	BB L-N and G L-N	AVR reg. type	-	P consumed 0%	BB Angle L2L3 0deg
5	kW % and kvar %	GOV reg. type	-	-	-

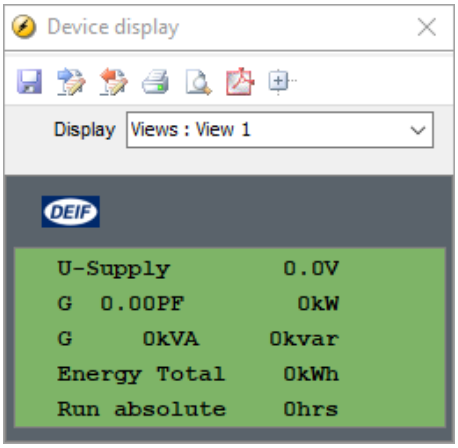
Line	View 16	View 17	View 18	View 19	View 20
1	G U-L1L2	G f-L1 0.00Hz	-	-	-
2	G U-L2L3 0V	G f-L2 0.00Hz	-	-	-
3	G U-L3L1 0V	G f-L3 0.00Hz	-	-	-
4	G U-Max 0V	-	-	-	-
5	G U-Min	-	-	-	-

3.3.2 Display text

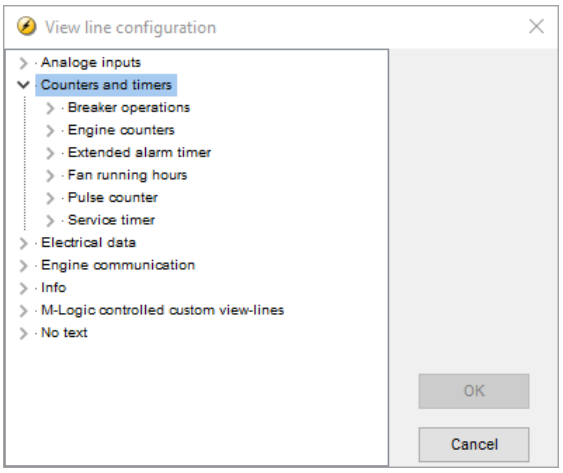
Configure the display views

You can configure the display views with the utility software:

1. Select the *Configuration of the user views* button in the toolbar.
2. In the pop-up window, select the display view you want to change.



3. Select the display line you want to change.
4. In the pop-up window, select the text you want and click OK.



Display text

You can select five of the display texts for each display view.

3.4 Status texts

Status text	Condition
ACCESS LOCK	The configurable input is activated, and the operator tries to activate one of the blocked keys.
AMF ACTIVE	The controller is in auto mode during a mains failure.
AMF AUTO	The mains controller is in auto mode and ready to respond.
AMF MAN	The controller is in manual mode and waiting for operator input.
AMF SEMI	The controller is in semi-automatic mode and waiting for operator input.
Aux. test ##.#V ####s	The battery test is activated.
BLOCK	Block mode is activated.
COOLING DOWN ###s	Cooling-down period is activated.
DERATED TO #####kW	Displays the ramp-down set point.
DG BLOCKED FOR START	The generator has stopped and has active alarm(s).
EXT. START ORDER	A planned AMF sequence is activated (without a mains failure).
EXT. STOP TIME ###s	The extended stop timer is running.
FULL TEST	Test mode is activated.
FULL TEST ###.#min	Test mode is activated and test timer counting down.
GB ON BLOCKED	The generator is running, the GB is open and there is an active Trip GB alarm.
GB TRIP EXTERNALLY	Some external equipment has tripped the breaker. An external trip is logged in the event log.
GENSET STOPPING	Cooling down has finished.
Hz/V OK IN ###s	The voltage and frequency on the genset is OK. When the timer runs out the generator breaker can be closed.
IDLE RUN	The Idle run function is active. The genset will not stop until a timer has expired.
IDLE RUN ###.#min	The Idle run function is active. The genset will not stop until the timer has expired.
ISLAND ACTIVE	The controller is in auto mode and supplying power while not connected to a mains supply.
ISLAND AUTO	The mains controller is in auto mode and ready to respond.
ISLAND MAN	The controller is in manual mode and waiting for operator input.
ISLAND SEMI	The controller is in semi-automatic mode and waiting for operator input.

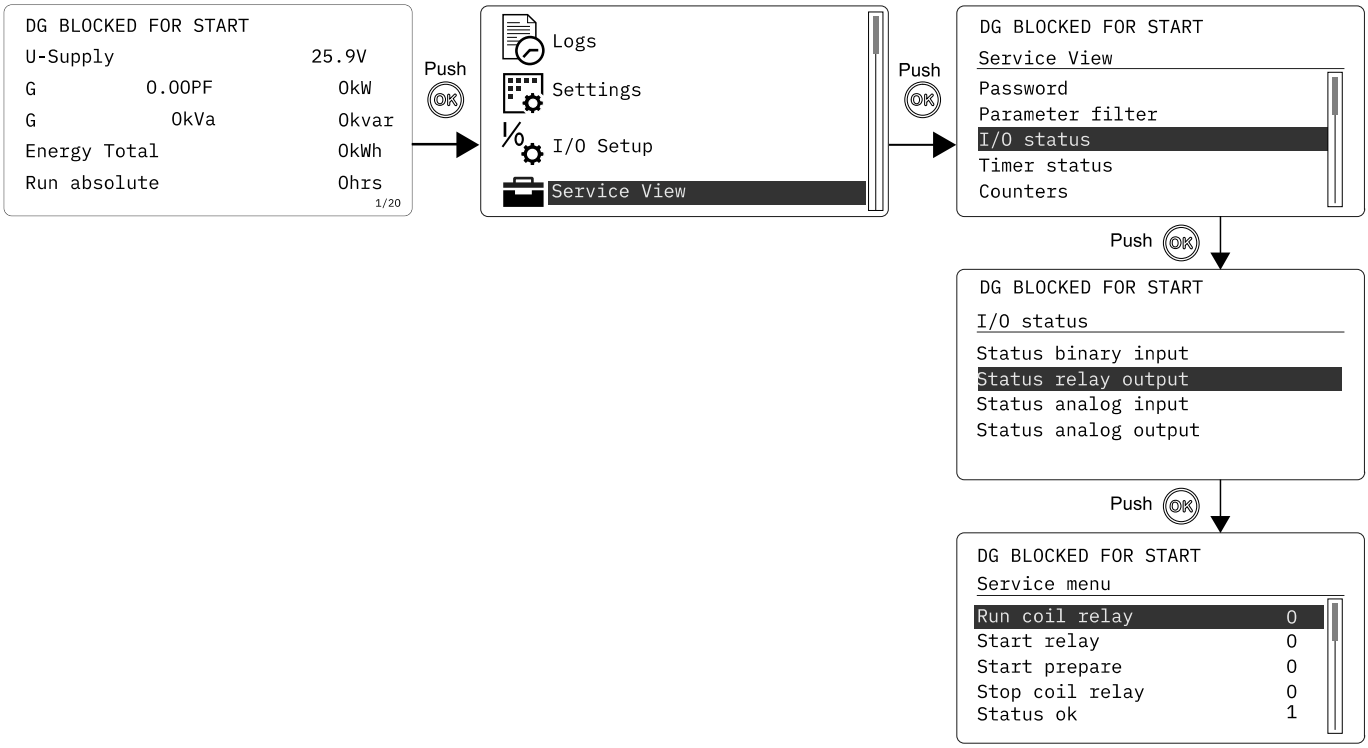
Status text	Condition
LOAD TAKE OVER MAN	The controller is in manual mode and waiting for operator input.
LOAD TAKE OVER SEMI	The controller is in semi-automatic mode and waiting for operator input.
LOAD TEST	Test mode is activated.
LOAD TEST ###.#min	Test mode is activated and test timer counting down.
LTO ACTIVE	The controller is in auto mode and taking over the load.
MAINS FAILURE	Mains failure and mains failure timer expired.
MAINS FAILURE IN ###s	The frequency or voltage measurement is outside the limits. The timer shown is the mains failure delay.
MAINS f OK DEL ####s	Mains frequency is OK after a mains failure. The timer shown is the mains OK delay.
MAINS U OK DEL ####s	The mains voltage is OK after a mains failure. The timer shown is the mains OK delay.
MB TRIP EXTERNALLY	Some external equipment (not the controller) has tripped the breaker. An external trip is logged in the event log.
READY AMF AUTO	The genset controller is in auto mode and the genset is stopped.
READY ISLAND AUTO	The genset controller is in auto mode and the genset is stopped.
READY LTO AUTO	The genset controller is in auto mode and the genset is stopped.
SELECT GENSET MODE	No genset mode has been selected.
SHUTDOWN OVERRIDE	The configurable input is active.
SIMPLE TEST	Test mode is activated.
SIMPLE TEST ###.#min	Test mode is activated and test timer counting down.
START DG(s) IN ###s	The start genset set point has been exceeded. The genset will start when the timer expires.
START PREPARE	The start prepare relay is activated.
START RELAY OFF	The start relay is deactivated during the start sequence.
START RELAY ON	The start relay is activated.
STOP DG(s) IN ###s	The stop genset set point has been exceeded. The genset will stop when the timer expires.

3.5 Service view

You can use the service view to see the status of the controller. You can change the passwords in the service menu, but not the other controller settings.

From the view menu, push the OK button and select *Service View* . Use the and buttons to go through the parameters in the service view, and use the OK button to select the parameters.

Service view example



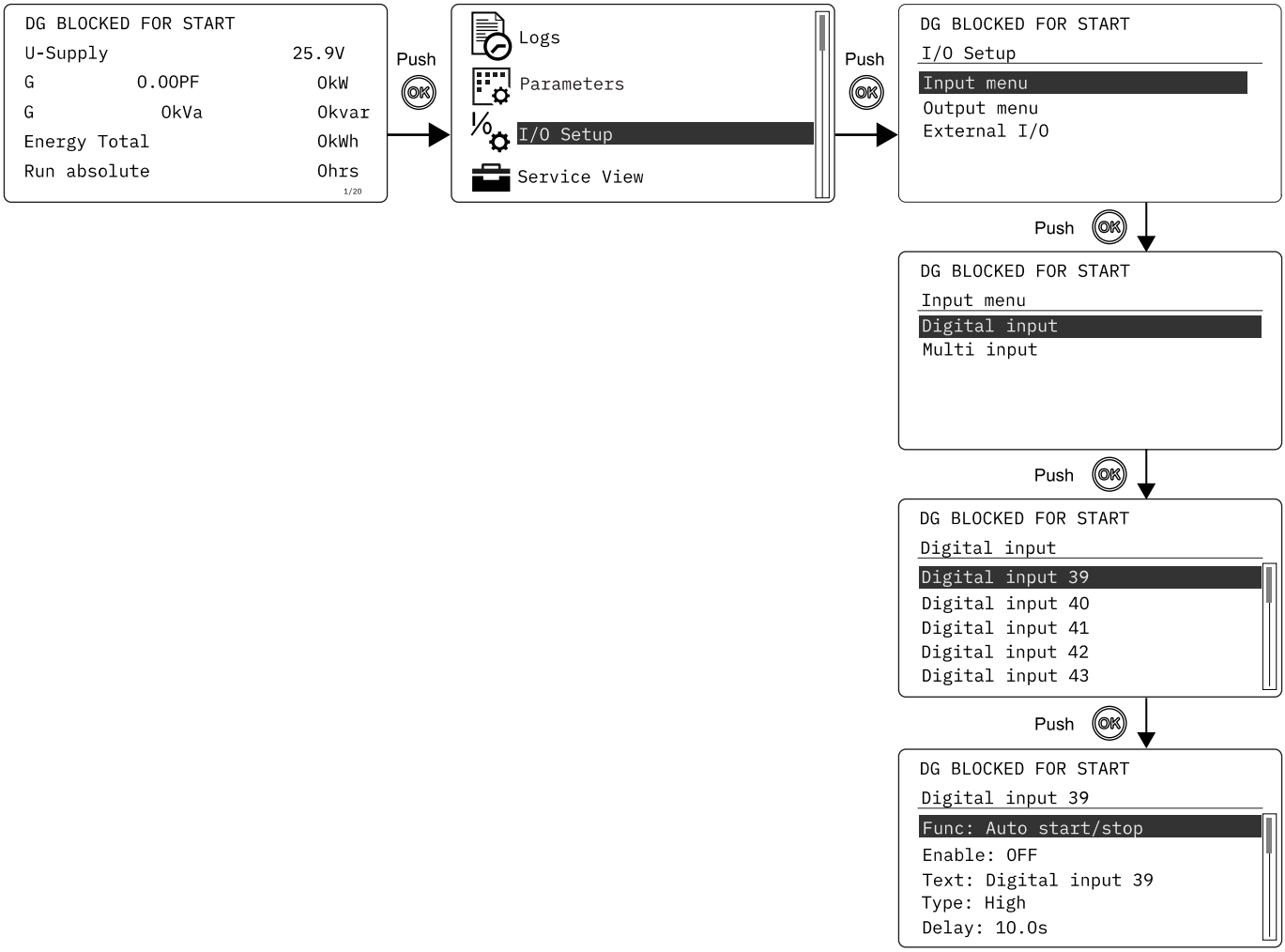
3.6 I/O Setup menu

You can configure digital inputs, multi inputs, digital outputs, and external inputs/outputs on the controller.

On the controller

1. Push the *OK* button to see the different menus.
2. Select *I/O Setup*.
3. Select the type of input you want to configure, for example digital inputs.
4. Select the digital input you want configure, for example digital input 39.
5. Configure the parameters for digital input 39.

I/O Setup example



3.7 Engine shortcuts

3.7.1 ECU Diagnose and Force Regeneration

You can activate ECU diagnose from the engine shortcuts menu. You can also use the menu to inhibit or force regeneration.

ECU Diagnose

Use ECU Diagnose to read ECU data without starting the engine.

To activate ECU diagnose on the controller:

1. Push the *Shortcut* button.

2. Select *Engine shortcuts*.
3. Select *ECU Diagnose*.

The diagnostics timer is activated when you select ECU Diagnose, and the controller starts to read the ECU data when the diagnostic timer expires. To configure this timer, go to *Parameters* in the utility software and select parameter *6701*.

Force Regeneration

To inhibit or force regeneration:

1. Push the *Shortcut* button.
2. Select *Engine shortcuts*.
3. Select *Force Regeneration*.
4. Select *Inhibit* or *Force*.

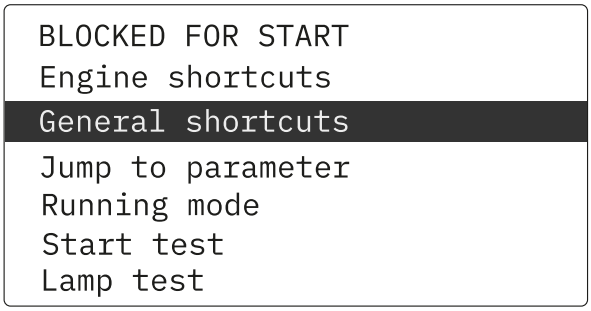
3.8 General shortcuts

You can see your configured shortcuts in the General shortcuts menu. If you have not configured a shortcut, then the menu is empty. Use the shortcuts when the controller is in SEMI-AUTO and manual mode.

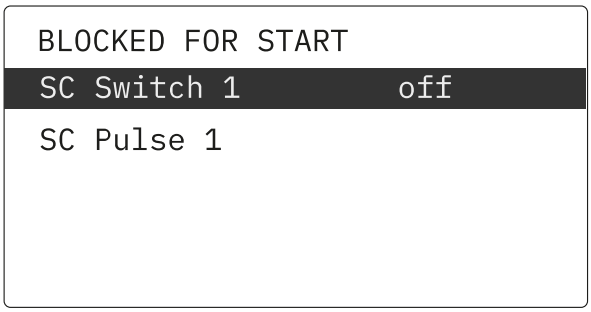
More information
See **General shortcuts** in the **AGC 150 Stand-alone Designer's handbook** for how to configure the general shortcuts.

On the controller

1. From the view menu, push the *Shortcut* button to see the menu.



2. Use the *Up* and *Down* buttons to go to *General shortcuts* , and push the button.

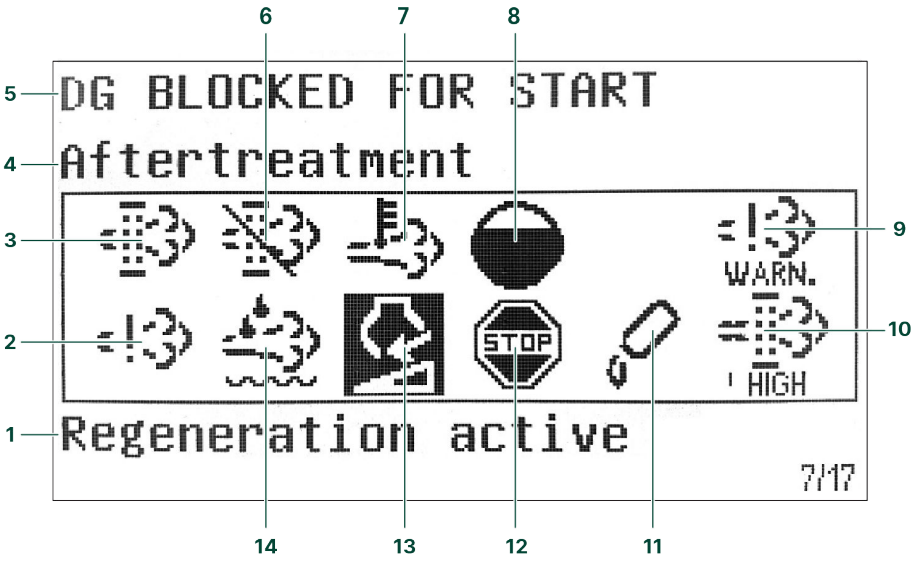


3. Use the *Up* and *Down* buttons to go to select a shortcut.

3.9 Exhaust after-treatment (Tier 4/Stage V)

AGC 150 meets the Tier 4 (Final)/Stage V requirements. The user can use the display to monitor (and control) both the engine, and the exhaust after-treatment system.

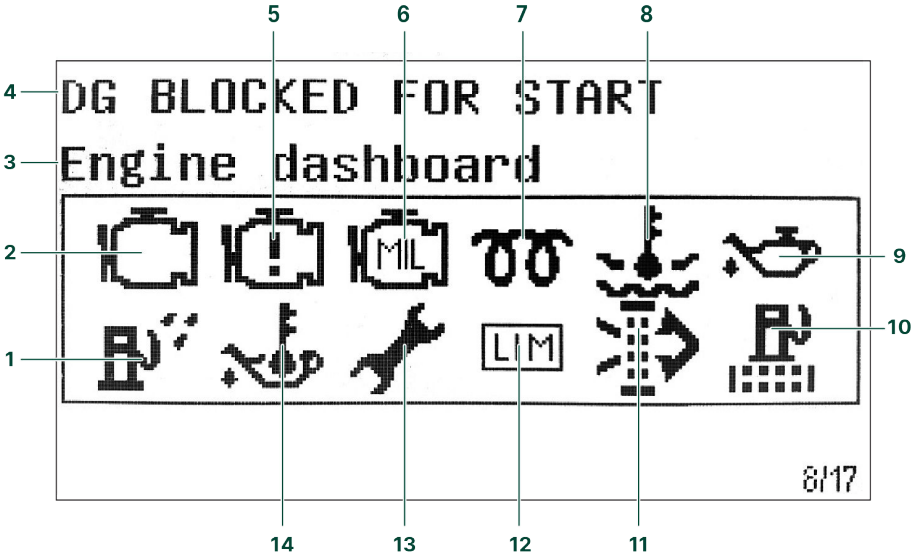
After-treatment page

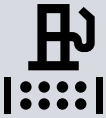
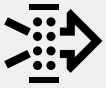


No.	Referent	Symbol	Description
1	After-treatment status	-	
2	Engine emission system failure		Emission failure or malfunction.
3	Diesel Particle Filter (DPF)		Regeneration is needed.
4	Page name	-	
5	Controller status	-	
6	Diesel Particle Filter (DPF) Inhibit		Regeneration is inhibited.
7	High temperature - Regeneration		There is a high temperature and regeneration is in process.
8	HC burn-off		Hydrocarbon accumulation that requires burn-off.
9	Engine emission system failure level	LOW HIGH WARN.	Emission failure or malfunction, with the severity.

No.	Referent	Symbol	Description
10	Diesel Particle Filter (DPF) level	  	Regeneration needed, with the severity.
11	DEF level warning		Low DEF level.
12	DEF shutdown		DEF problem stops normal operation.
13	DEF level inducement		Mid-level inducement.
			Severe inducement.
14	Diesel Exhaust Fluid (DEF)		DEF quality is low.

Engine dashboard



No.	Referent	Symbol	Description
1	Water in fuel		There is water in the fuel.
2	Engine interface status		An engine warning.
3	Page name	-	-
4	Controller status	-	
5	Engine interface status		An engine shutdown.
6	Engine interface status		An engine malfunction.
7	Cold start		The engine is cold.
8	High engine coolant temperature		The engine coolant temperature is high.
9	Low engine oil pressure		The engine oil pressure is low.
10	Fuel filter clogging		The fuel filter is blocked.
11	Air filter clogging		The air filter is blocked.
12	LIMIT lamp		Only for MTU engines.
13	Oil change		The engine needs an oil change.
14	High engine oil temperature		The engine oil temperature is high.

NOTE Grey symbols show that communication is available for the referent. An engine type might not support all of the referents.

4. Alarm handling and log list

4.1 Alarm handling

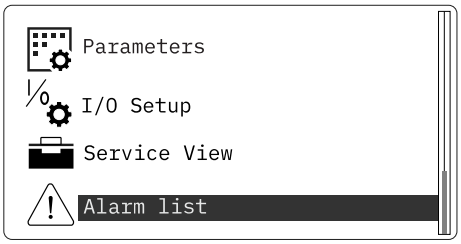
If the function *Alarm Jump* is on, the controller will automatically show the alarm list on the display screen when an alarm occurs.

`Service View > Display > Alarm Jump`

Parameter	Text	Range	Default
9157	Alarm Jump	OFF ON	ON

Access the alarm list from the display unit

1. From the view menu, push the OK button.
2. Use the ^ and v buttons to go to the *Alarm list*.

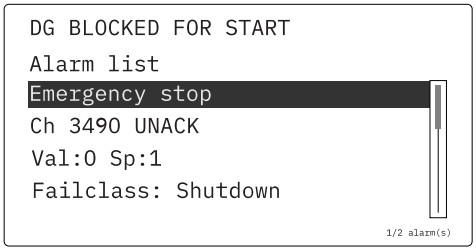


3. Push the OK button to view the *Alarm list*.
4. Push the back button to go back.

The alarm list contains both acknowledged and unacknowledged alarms that are active. An alarm is active, if you have not cleared the alarm condition, which started the alarm. Once an alarm is acknowledged and you have cleared the alarm condition, the alarm is removed from the alarm list. If there are no alarms, then the alarm list will show *No alarms*.

The display screen can show only one alarm at a time. The number of alarms is shown on the right at the bottom of the screen.

Example of an unacknowledged alarm



To see the other alarms, use the ^ and v buttons to go through the list. To acknowledge an alarm, select the alarm and push the OK button.

Access the alarm list with the utility Software

Select *Alarms* from the menu on the left.

CAUTION

Caution

If an alarm is blocking a genset in AUTO mode from starting, the genset will automatically start if the condition that triggered the alarm has gone and the alarm has been acknowledged.

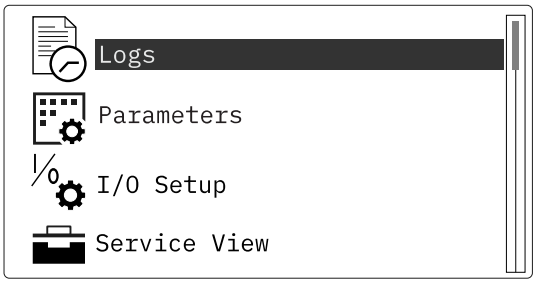
4.2 Logs menu

These are the log sub-menus:

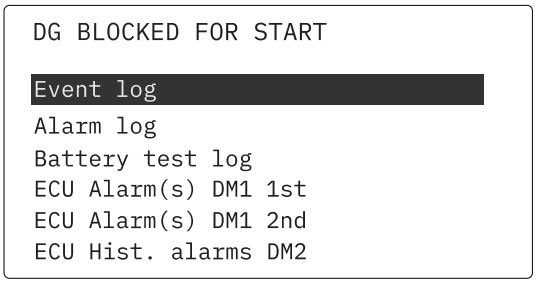
1. Event log: Shows up to 500 events.
2. Alarm log: Shows up to 500 alarms. Only the latest 100 alarms are shown on the display unit, while the remaining alarms are shown in the utility software.
3. Battery test log: Shows up to 52 tests, either *Test OK* or *Test failed*.

Access the log menu from the controller

1. From the view menu, push the OK button.
2. Use the and buttons to go to *Logs*.



3. Push the OK button to select *Logs*.
4. Select the log you want to see and push the OK button.



5. To leave the *Log* , push the button.

Access the log list with the utility software

1. Select *Logs* from the menu on the left.
2. In the task bar, select *Read logs* .
3. Select the *Log list* you want to see.