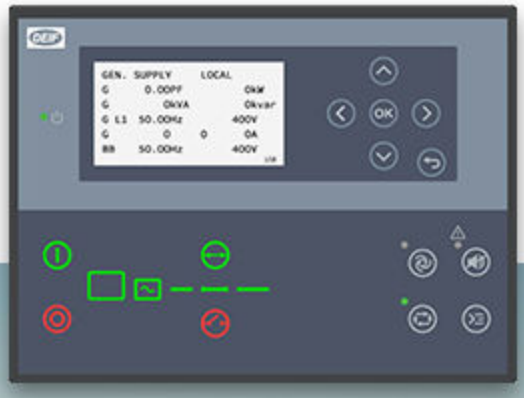
AGC 150 Marine

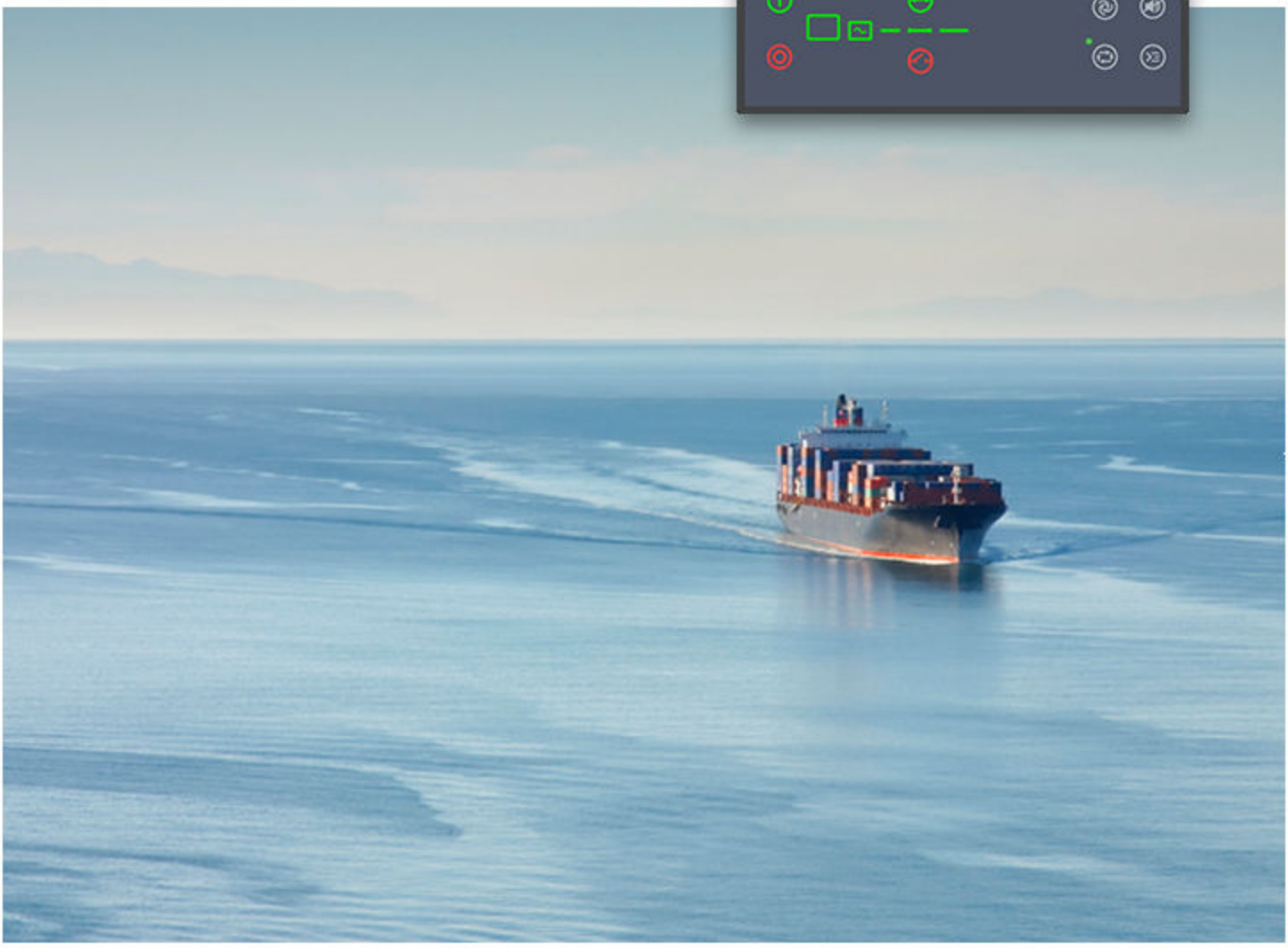
4189341314-D

Generator stand-alone

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

Read this manual

Read this manual before you operate the system. Failure to do this may result in personal injury and 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 and settings 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

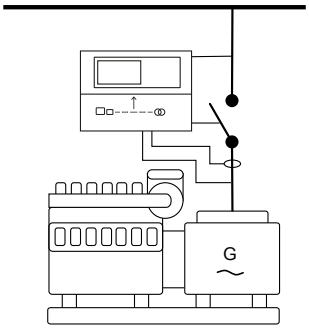
Software version

This document is based on the AGC 150 software version 1.30.0.

2. About the AGC 150 Stand-alone marine

2.1 Single genset

Single genset

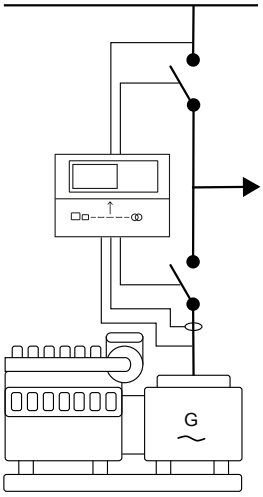


Single genset application is typically used in power plants that are isolated from other power generation systems.

NOTE You can disable breaker control.

2.2 Emergency genset

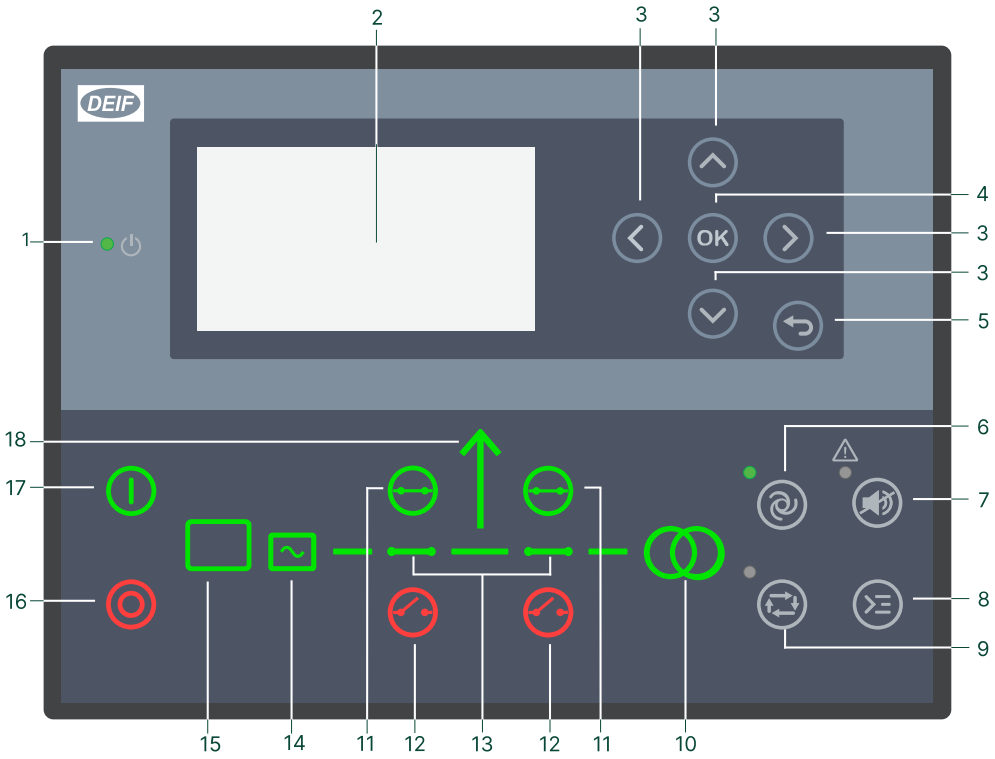
Emergency genset



If there is a significant loss of power or a total blackout in the main power generation system, the controller automatically changes the supply to the emergency generator. This makes sure that there is power during a failure and prevents damage to electrical equipment.

NOTE Alternatively, the breaker to the busbar can be externally controlled.

2.3 Display layout



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	**Single genset (GEN):** Use to switch to REMOTE mode. Remote equipment (digital inputs, Modbus commands, AOP-2 commands) controls the controller. The operator cannot control the controller from the display. **Emergency genset (EDG):** Use to switch to AUTO mode. If there is a blackout, the controller automatically starts and connects the genset. No operator actions are needed. The controller also automatically opens and closes the tie breaker (open transitions, since there is no synchronisation).
7	Silence horn	Stops an alarm horn (if configured) and enters the Alarm menu.
8	Shortcut menu	Access the Jump menu, Mode selection, Test, and Lamp test.
9	MANUAL mode	**Single genset (GEN)**: Use to switch to LOCAL mode. The operator can use the display buttons to start and stop the engine as well as open and close the breaker. Remote equipment cannot start and stop the engine. **Emergency genset (EDG)**: Use to switch to MANUAL mode. The operator or an external signal can start, stop, connect or disconnect the genset. The generator controller cannot automatically perform these actions.
10	Mains symbol	This controller does not use this. It is only lit during a lamp test.
11	Close breaker	Push to close the breaker.

No.	Name	Function
12	Open breaker	Push to open the breaker.
13	Breaker symbols	Green: Breaker is closed. Red: Breaker failure. OFF: The breaker is open.
14	Generator	Green: Generator voltage and frequency are OK. The controller can synchronise and 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 or frequency is outside the V/Hz OK window.
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	**Single genset (GEN)**: Stops the genset if LOCAL mode is selected. **Emergency genset (EDG)**: Stops the genset if MANUAL mode is selected.
17	Start	**Single genset (GEN)**: Starts the genset if LOCAL mode is selected. **Emergency genset (EDG)**: Starts the genset if MANUAL mode is selected.
18	Load symbol	Green: The supply voltage and frequency are OK. Red: Supply voltage/frequency failure.

2.4 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.

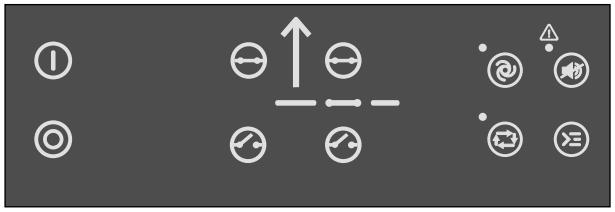
2.5 Mimic function

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

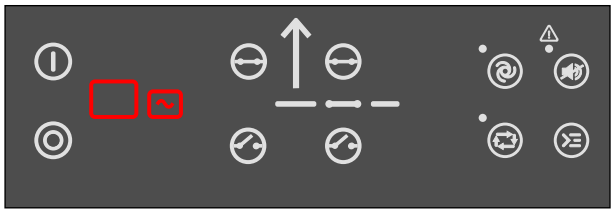
Parameters > Basic settings > Controller settings > Display > LED mimic

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

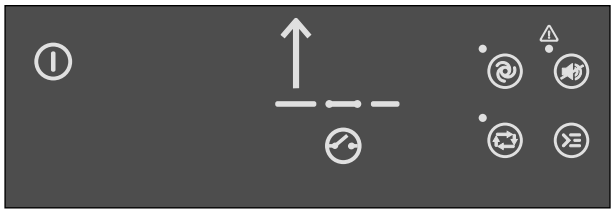
Standard
The control buttons and LEDs are shown.
If you stop the genset, the engine/generator symbols are not shown.



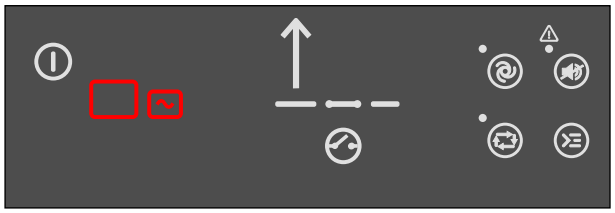
Standard with genset
The control buttons and LEDs are shown.
If you the stop the genset, the engine/generator symbols are shown in red.



Guided
Active control buttons and LEDs are shown inactive are not shown.
Example: The controller is in LOCAL mode, and the genset is not operating. Only the start button and the open breaker symbol is shown, as these are the only possible actions.



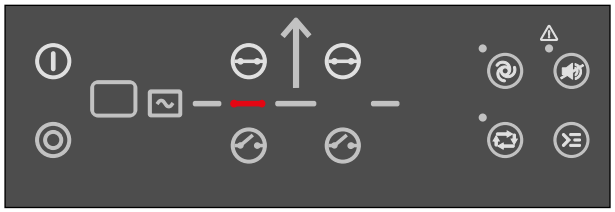
Guided with genset
Active control buttons, LEDs and the engine/generator symbols are shown, inactive are not shown.
Example: The controller is in LOCAL mode, and the genset is not operating. The only possible actions are to start the genset, and to open the breaker, so only these symbols and the red engine/generator symbols are shown.



All Mimic settings

Red breaker symbol:

- Breaker position failure
- Breaker close failure



2.6 Running modes

To configure the running modes, push the *Shortcut* button and use the display buttons to select *Running Modes*.

You can select LOCAL or REMOTE, when none or a single breaker is configured. In EDG, you can select AUTO or MANUAL.

More information
See Display, buttons and LEDs for a description of the different running modes.

To configure the test mode go to `Settings > Test`. To select the test mode push the *Shortcut*  button and select *Start Test*.

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

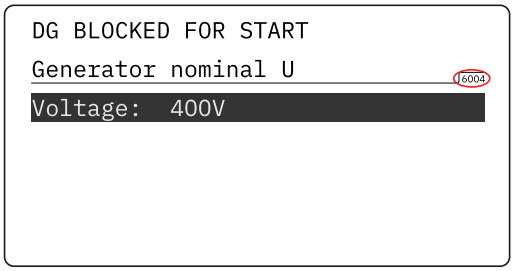
You can configure the controller in the parameters menu and you can also find information, which is not available in the view menu. From the view menu, push the OK button to find the parameters menu. Use the and buttons to find the different settings parameter and select with the OK button.

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:

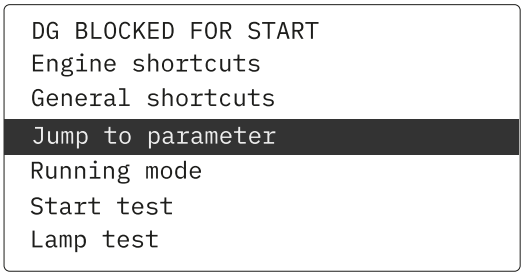
1. Select *Parameters* from the toolbar on the left.
2. Set the view mode to list. The view mode can be found in the left corner of the screen.
3. The menu numbers are in the *Channel* column.

3.2.2 The jump to parameter function

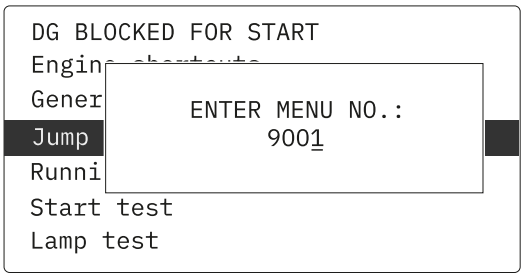
If you know the menu number for a parameter, you can use the jump to parameter function to go directly to the parameter.

On the controller

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



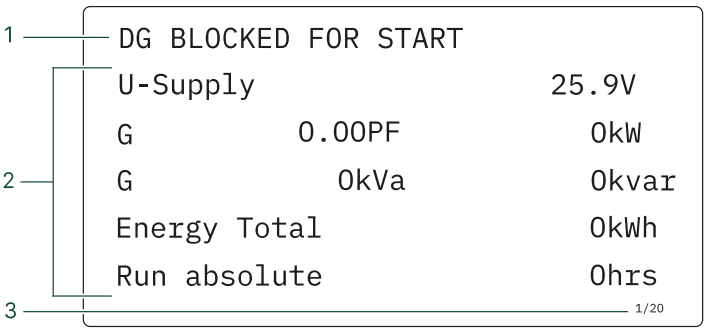
2. Use the and buttons to go to *Jump to parameter* and push the button.



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.

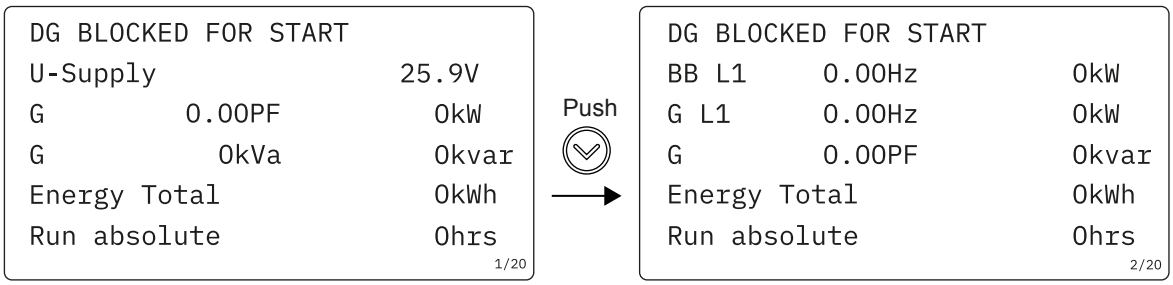
3.3 View menu

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 %

Line	View 6	View 7	View 8	View 9	View 10
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	-	-	-

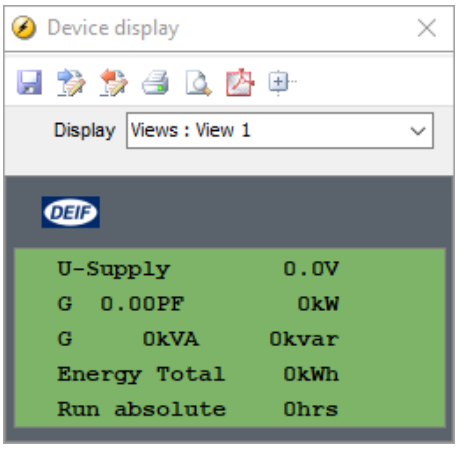
Line	View 16	View 17	View 18	View 19	View 20
1	G U-L1L2	G f-L1 0.00Hz	-	-	-
2	G U-L2L3 0V	G f-L2 0.00Hz	-	-	-
3	G U-L3L1 0V	G f-L3 0.00Hz	-	-	-
4	G U-Max 0V	-	-	-	-
5	G U-Min	-	-	-	-

3.3.2 Display text

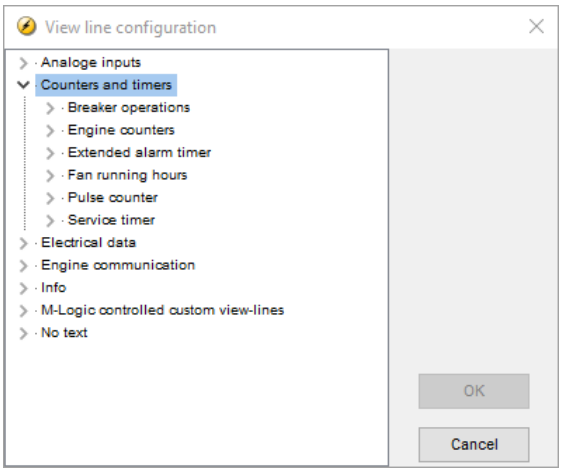
Configure the display views

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.
Aux. test ##.#V ####s	The battery test is activated.
COOLING DOWN ###s	Cooling-down period is activated.
DG BLOCKED FOR START	The generator has stopped and has active alarm(s).
EDG READY AUTO	The controller is in auto mode and ready to start in case of blackout.
EDG READY MAN	The controller is in manual mode and ready for external signals or operator input.
EDG RUNNING MAN	The genset is running in manual mode. The breaker is open.
EMERGENCY SUPPLY	The controller is in auto mode and supplying power from the emergency generator due to blackout on the mains busbar.
EXT. STOP TIME ###s	The extended stop timer is running.
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.
GEN. RUNNING LOCAL	Genset running in local mode.
GEN. RUNNING REMOTE	Genset running in remote mode.
GEN. SUPPLY LOCAL	Genset is supplying busbar in local mode.
GEN. SUPPLY REMOTE	Genset is supplying busbar in remote mode.
GENSET READY REMOTE	The controller is in remote mode and ready to respond.
GENSET READY LOCAL	The controller is in local mode and waiting for operator input.
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 input is active.
IDLE RUN ###.#min	The idle run function is active. During a start the genset will not go to nominal RPMs. During a stop the genset will not stop before the timer has expired.
ISLAND ACTIVE	The controller is in remote mode and supplying power.

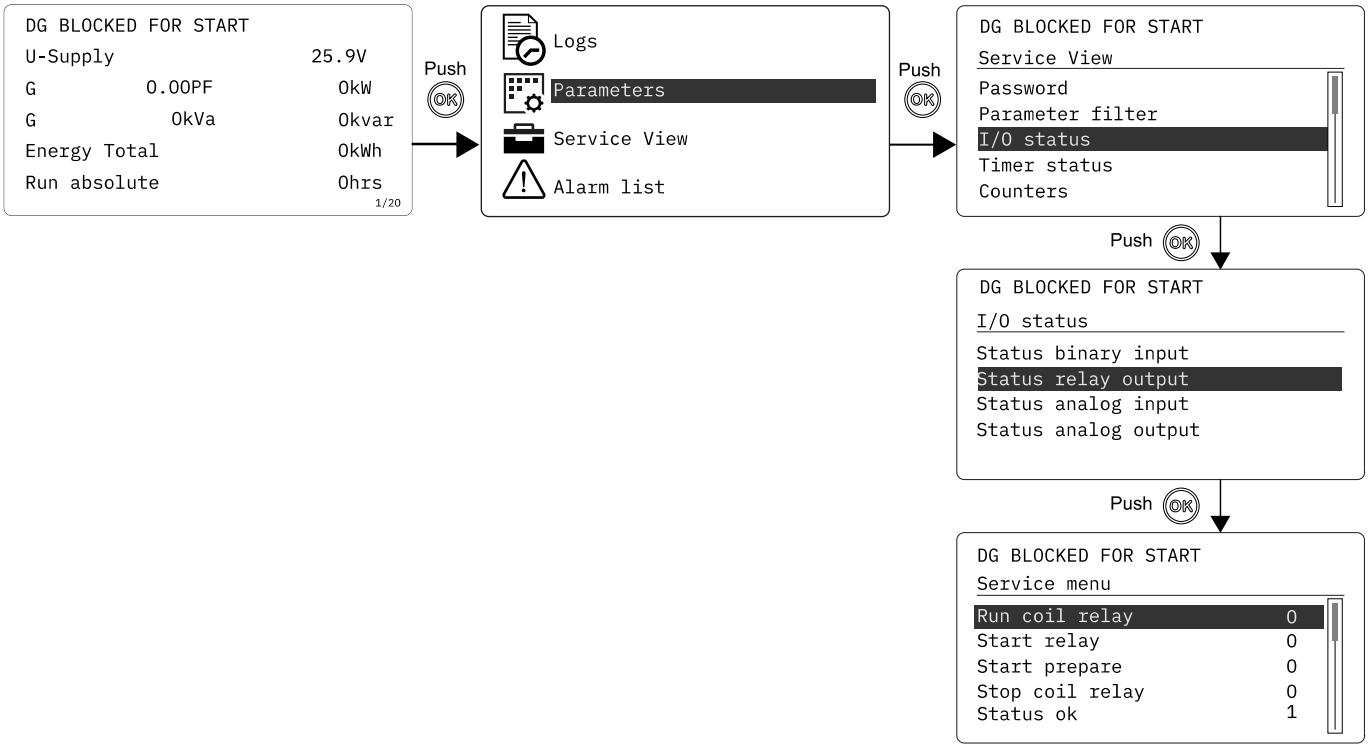
Status text	Condition
RUN COIL ON	Run coil is active during the start sequence.
SHUTDOWN OVERRIDE	The configurable input is active.
SIMPLE TEST ###.#min	Test mode is activated and test timer counting down.
START DG(s) IN ###s	The start genset set point has been exceeded. The genset will start when the 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.
TB TRIP EXTERNALLY	Some external equipment (not the controller) has tripped the breaker. An external trip is logged in the event log.
VOLT/FREQ OK IN ###s	The voltage and frequency will be okay in ###s.

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



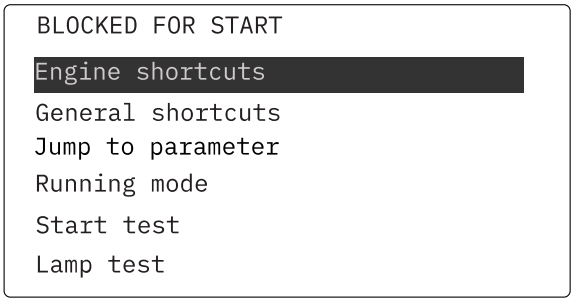
3.6 Engine shortcuts

3.6.1 PID configuration

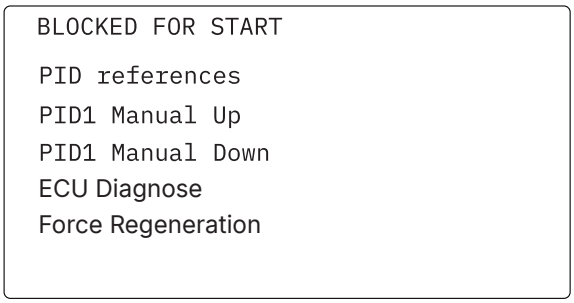
You can use the engine shortcuts menu to configure the PID set points.

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 *Engine shortcuts* menu, and push the button.



PID references

- Only active inputs are shown in the list.
- You can also see the values in the utility software. Select *General Purpose PID* from the left menu. There are a total of 2 reference values.

Manual regulation (up and down)

- Used for PID1.
- Not active during ramp up/down.

3.6.2 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

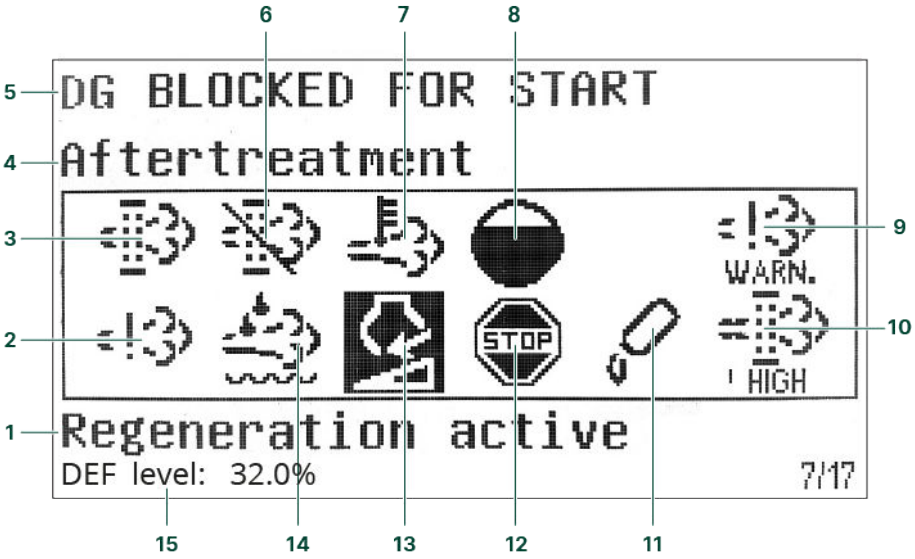
To inhibit or force regeneration:

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

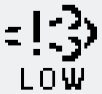
3.7 Exhaust after-treatment (Tier 4/Stage V)

The controller meets the Tier 4 (Final)/Stage V requirements. Use the display to monitor and control the engine and the exhaust after-treatment system.

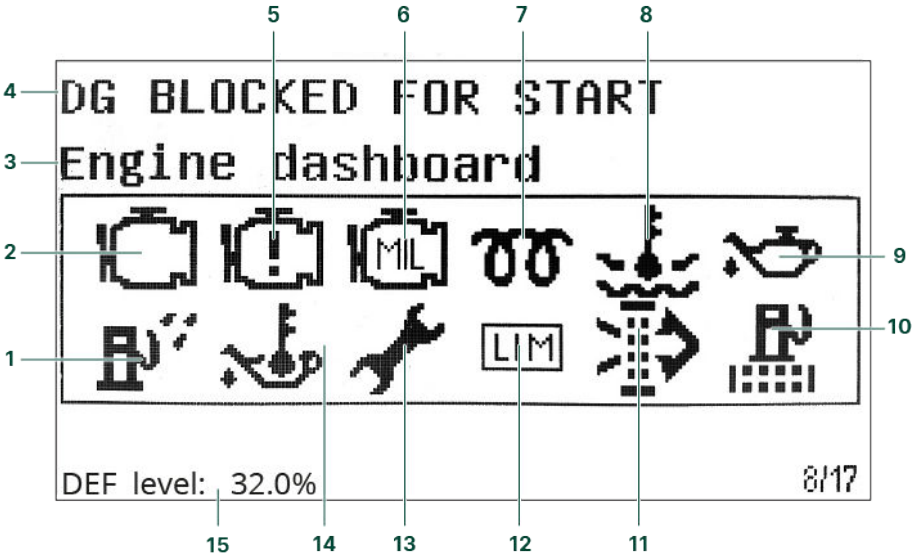
After-treatment page

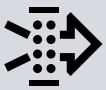


No.	Referent	Symbol	Description
1	After-treatment status	-	
2	Engine emission system failure		Emission failure or malfunction.
3	Diesel Particle Filter (DPF)		Regeneration is needed.
4	Page name	-	
5	Controller status	-	
6	Diesel Particle Filter (DPF) Inhibit		Regeneration is inhibited.
7	High temperature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

No.	Referent	Symbol	Description
9	Engine emission system failure level	  	Emission failure or malfunction, with the severity.
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.
15	Diesel Exhaust Fluid (DEF) % level		Shows the level (%) of the Diesel Exhaust Fluid.

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.

No.	Referent	Symbol	Description
14	High engine oil temperature		The engine oil temperature is high.
15	Diesel Exhaust Fluid (DEF) % level		Shows the level (%) of the Diesel Exhaust Fluid.

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

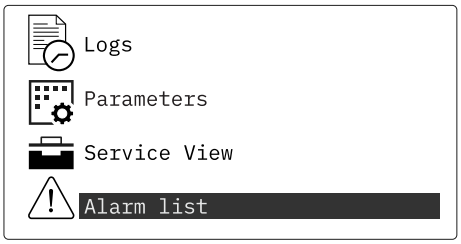
If the function *Alarm Jump* is on, the controller will automatically show the alarm list on the display screen when an alarm occurs.

`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 ▼ buttons to go to the *Alarm list*.

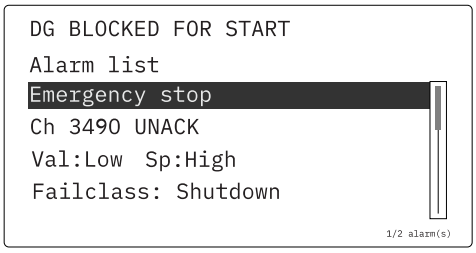


3. Push the OK button to view the *Alarm list*.
4. Push the ↩ button to go back.

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 ▼ 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 toolbar on the left.

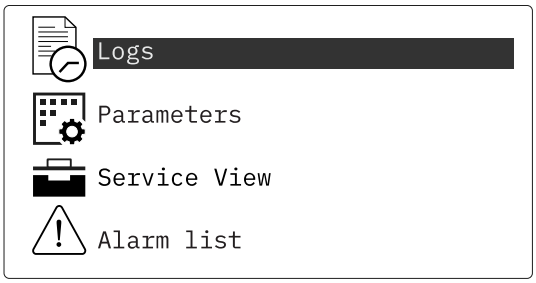
4.2 Logs menu

These are the log sub-menus:

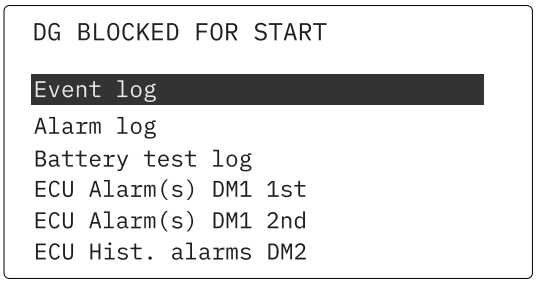
1. Event log: Shows up to 500 events.
2. Alarm log: Shows up to 500 alarms. Only the latest 100 alarms are shown on the display unit, while the remaining alarms are shown in the utility software.
3. Battery test log: Shows up to 52 tests, either *Test OK* or *Test failed*.

Access the log menu from the controller

1. From the view menu, push the OK button.
2. Use the ^ and v 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 toolbar on the left.
2. In the task bar, select *Read logs* .
3. Select the *Log list* you want to see.