



# GUARD REVOLUTION

Controller for single gen-set applications

## SW version 1.1.0

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# 1 Front panel elements

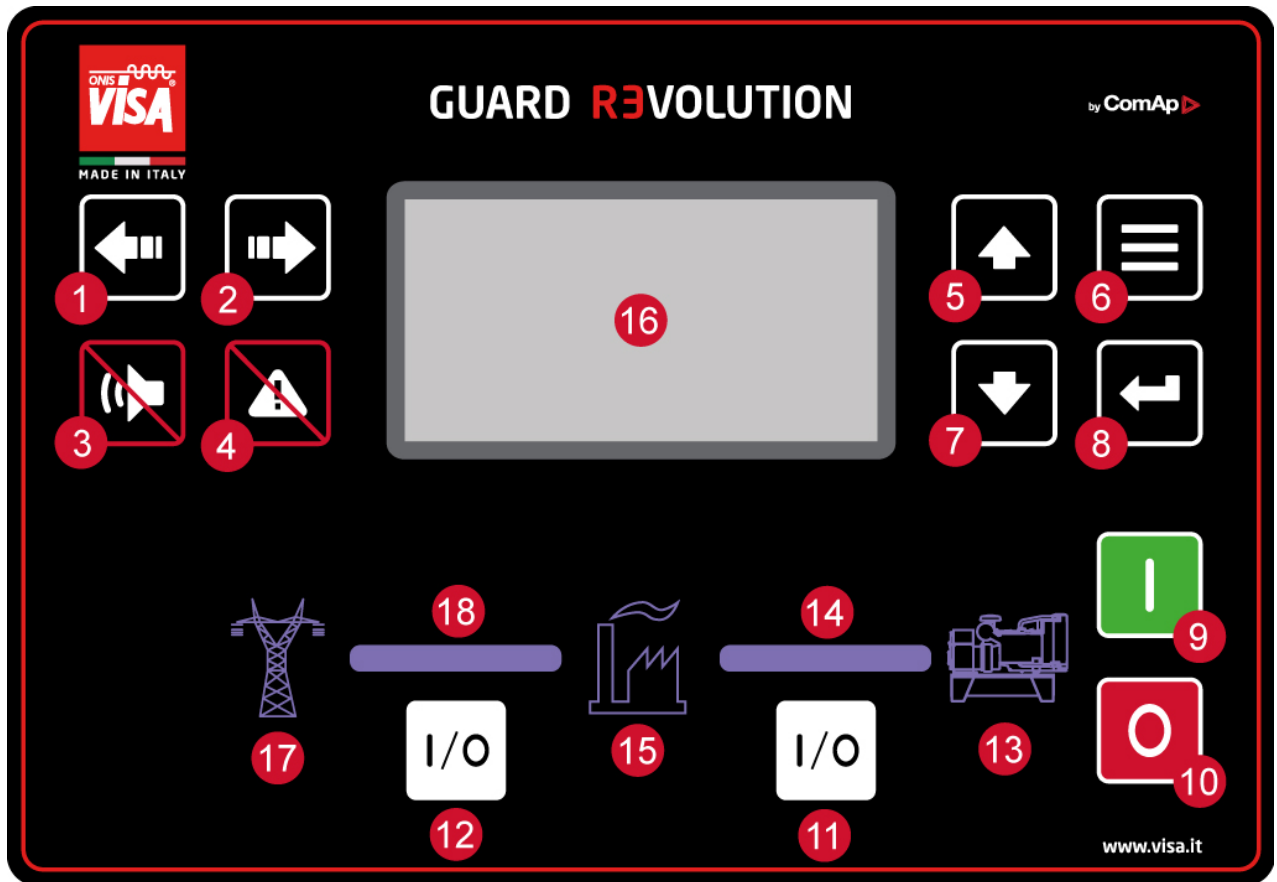


Image 1.1 Operator interface of Guard Revolution

Control buttons		
Position	Picture	Description
1		<b>LEFT</b> button. Use this button to move left or to change the mode. The button can change the mode only if the main screen with the indicator of currently selected mode is displayed. <i>Note: This button will not change the mode if the controller mode is forced by one of binary inputs listed in the Reference Guide – “Operating modes” chapter.</i>
2		<b>RIGHT</b> button. Use this button to move right or to change the mode. The button can change the mode only if the main screen with the indicator of currently selected mode is displayed. <i>Note: This button will not change the mode if the controller mode is forced by one of binary inputs listed in the Reference Guide – “Operating modes” chapter.</i>
3		<b>HORN RESET</b> button. Use this button to deactivate the horn output without acknowledging the alarms.
4		<b>FAULT RESET</b> button. Use this button to acknowledge alarms and deactivate the horn output. Inactive alarms will disappear immediately and status of active alarms will be changed to "confirmed" so they will disappear as soon as their reasons

		dismiss.
5		<b>UP</b> button. Use this button to move up or increase value.
6		<b>PAGE</b> button. Use this button to switch over display pages.
7		<b>DOWN</b> button. Use this button to move down or decrease value.
8		<b>ENTER</b> button. Use this button to finish editing a setpoint or moving right in the history page.
9		<b>START</b> button. Works in MAN mode only. Press this button to initiate the start sequence of the engine.
10		<b>STOP</b> button. Works in MAN mode only. Press this button to initiate the stop sequence of the gen-set. Repeated pressing or holding the button for more than 2 s will cancel current phase of stop sequence (like ramping the power down or cooling) and next phase will continue.
11		<b>GCB</b> button. Works in MAN and TEST modes only. Press this button to open or close the GCB.
12		<b>MCB</b> button. Works in MAN and TEST modes only. Press this button to open or close the MCB.

#### Indicators and others

Position	Description
13	<b>GENERATOR</b> status indicator. There are two states - Gen-set OK (indicator is green) and Gen-set failure (indicator is red). Green LED is on if the generator voltage is present and within limits. Red LED starts flashing when gen-set failure occurs. After FAULT RESET button is pressed, goes to steady light (if an alarm is still active) or is off (if no alarm is active).
14	<b>GCB ON</b> . Green LEDs are on if GCB is closed and Gen-set is healthy. If Gen-set is not healthy and GCB is closed than middle LED is on. It is driven by GCB CLOSE/OPEN output or by GCB feedback signal.
15	<b>LOAD</b> . Green LED is ON if load is supplied by mains or by generator. It means, that Gen-set or mains is OK and proper circuit breaker is closed.
16	Graphic B/W display, 132x64 pixels.
17	<b>MAINS</b> status indicator. There are two states - Mains OK (indicator is green) and Mains failure (indicator is red). Green LED is on, if mains is present and within limits. Red LED starts blinking when the mains failure is detected and after the gen-set has started and connected to the load it lights permanently until the mains failure disappears and until Wrn MCB Fail disappears.
18	<b>MCB ON</b> . Green LEDs are on if MCB is closed and Mains is healthy. If Mains is not healthy and MCB is closed than middle LED is on. It is driven by MCB CLOSE/OPEN output or by MCB feedback signal.

# 2 Display screens and pages structure

The displayed information is structured into "pages" and "screens". Use PAGE button to switch over the pages.

- ▶ The page Measurement consists of screens which display measured values like voltages, current, oil pressure etc., computed values like i.e. gen-set power, statistic data and the alarm list on the last screen.
- ▶ The page Setpoints contains all setpoints organized to groups and also a special group for entering password.
- ▶ The page History log shows the history log in the order that the last record is displayed first.

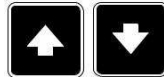
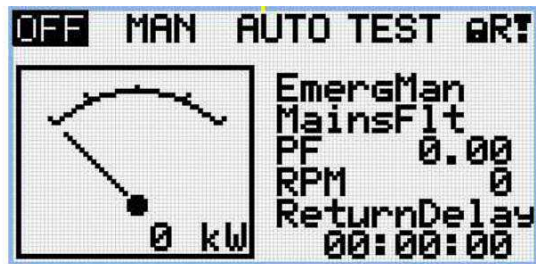
## 2.1 Main Screen



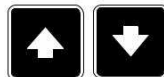
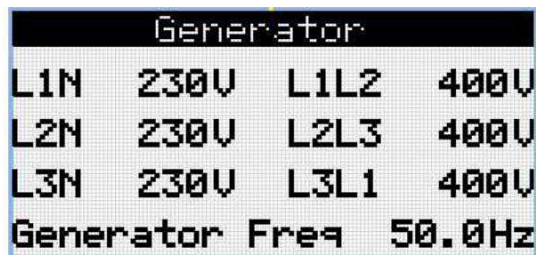
### 2.1.1 Symbols

- ▶ Padlock - active when LBI ACCESS LOCK is active
- ▶ R - active when there is active remote connection to controller
- ▶ Exclamation mark - active when there is any alarm in alarmlist

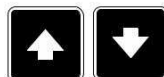
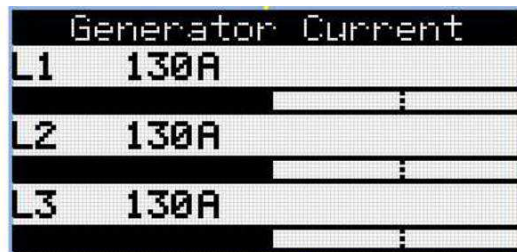
## 2.2 Measurement Screens



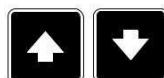
**Note:** Use Up and Down button to move between measurement pages.



**Note:** Use Up and Down button to move between measurement pages.



**Note:** Use Up and Down button to move between measurement pages.



**Note:** Use Up and Down button to move between measurement pages.

```

Analog Inputs 1/2
Oil Pressure #####Bar
:
Coolant Temp ##### °C
:
Fuel Level #####%
:

```

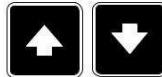


**Note:** Use Up and Down button to move between measurement pages.

```

Analog Inputs 2/2
Not Used
:
BatteryVoltage 23.8V
:

```

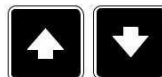


**Note:** Use Up and Down button to move between measurement pages.

```

Fuel
Fuel Level #####%
:
Fuel Pump On 12%
Fuel Pump Off 34%
Fuel Pump Status 0

```

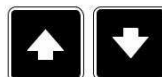


**Note:** Use Up and Down button to move between measurement pages.

```

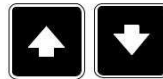
Battery Charger
Charging Voltage ####V
Charging Current ####A
Charging 0
Pause 0
Alarm 0

```



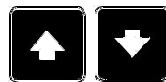
**Note:** Use Up and Down button to move between measurement pages.

Binary Inputs 1/2		
0000000		
1	Input	0
2	Input	0
3	Input	0
4	Input	0
5	Input	0



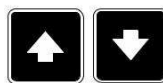
**Note:** Use Up and Down button to move between measurement pages.

Binary Outputs 1/2		
00000000		
1	Output	0
2	Output	0
3	Output	0
4	Output	0
5	Output	0



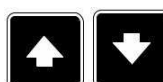
**Note:** Use Up and Down button to move between measurement pages.

Binary Inputs 2/2		
0000000		
6	Input	0
7	Input	0
8	Input	0



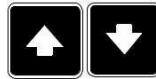
**Note:** Use Up and Down button to move between measurement pages.

Binary Outputs 2/2		
00000000		
6	Output	0
7	Output	0
8	Output	0



**Note:** Use Up and Down button to move between measurement pages.

EM-BI08-EFCP 1/2	
00101010	
Earth Fault	0.00A
IN: Input	1
Not Used	0
OUT: Output	1



**Note:** Use Up and Down button to move between measurement pages.

EM-BI08-EFCP 2/2	
00101010	
IN: Input	0
OUT: Output	1
OUT: Output	0
OUT: Output	1
OUT: Output	0



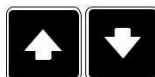
**Note:** Use Up and Down button to move between measurement pages.

Gen-Set Power			
	kW	PF	kVA
L1	0	0.00C	0
L2	0	0.00C	0
L3	0	0.00C	0
Σ	0	0.00C	0



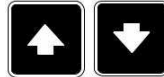
**Note:** Use Up and Down button to move between measurement pages.

ECU Values	
Fuel Rate	#####l/h
CoolantTemp	##### °C
IntakeTemp	##### °C
Oil Press	#####bar
Boost Press	#####bar
Load	#####%



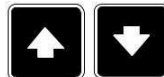
**Note:** Use Up and Down button to move between measurement pages.

Statistics 1/3	
Genset kWh	0
Genset kVAh	0
Mains kWh	0
Mains kVAh	0
Running Hours	0
Num Starts	0



**Note:** Use Up and Down button to move between measurement pages.

Statistics 2/3	
Num E-Stops	0
Shutdowns	0
Maintenance 1	0
Maintenance 2	0
Maintenance 3	0
Rental Timer 1	0



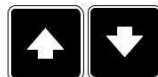
**Note:** Use Up and Down button to move between measurement pages.

Statistics 3/3	
Rental Timer 2	000
Ex. Timer 1	00:00:00
Ex. Timer 2	00:00:00



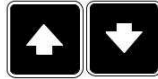
**Note:** Use Up and Down button to move between measurement pages.

CM-4G-GPS 1/2	
Cell Signal Lev	93%
Cell ErrorRate	12%
Cell Status	/
Cell Diag Code	12
Operator	T-Mobile CZ
Connection Type	4G



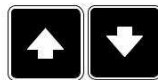
**Note:** Use Up and Down button to move between measurement pages.

```
CM-4G-GPS 2/2
Latitude 0.1234
Longitude 0.1234
Altitude 123m
HomePosDist 123km
Satelites 1
```



**Note:** Use Up and Down button to move between measurement pages.

```
CM-GPRS
Cell Signal Lev 93%
Cell ErrorRate 12%
Cell Status /
Cell Diag Code 12
Operator T-Mobile CZ
```



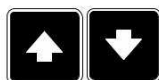
**Note:** Use Up and Down button to move between measurement pages.

```
CM-Ethernet
Current IP Address
123.123.123.123
ETH Interface Status
Connected
```

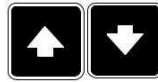
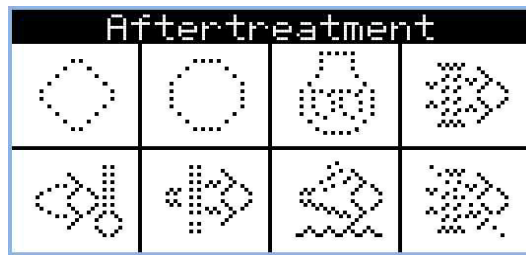


**Note:** Use Up and Down button to move between measurement pages.

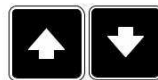
```
AirGate
CM-4G-GPS
AirGate ID: ABABCABCAB
AirGate Diag: 0
CM-Ethernet
AirGate ID: ABABCABCAB
AirGate Diag: 0
```



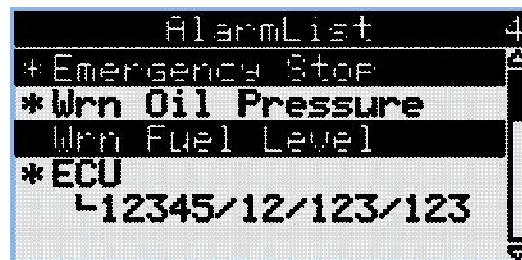
**Note:** Use Up and Down button to move between measurement pages.



**Note:** Use Up and Down button to move between measurement pages.



**Note:** Use Up and Down button to move between measurement pages.

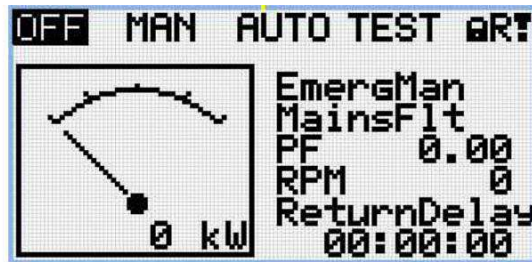


**Note:** Use Up and Down button to move between measurement pages.

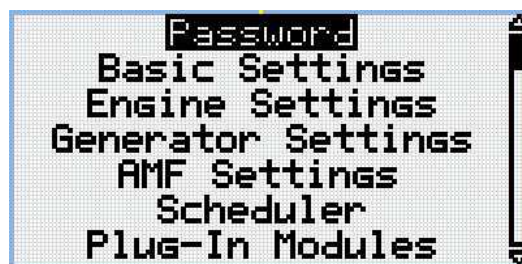
**Note:** From all of these pages we can fluently go to the setpoint group page by pressing Page button.

**Note:** There can be some additional screens and also some screens can be hidden. Screen's visibility depends on actual configuration (usage of extension or communication modules, ECU, etc.).

## 2.3 Setpoint Screens



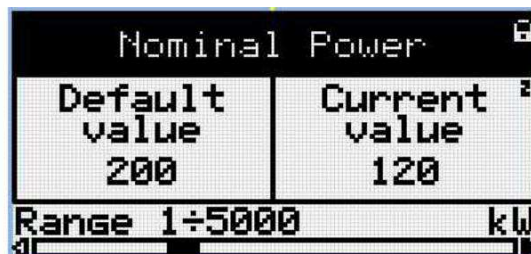
**Note:** From all measurement pages we can fluently go to the setpoint group page by pressing Page button.



**Note:** Use Up and Down button to select required setpoint group.



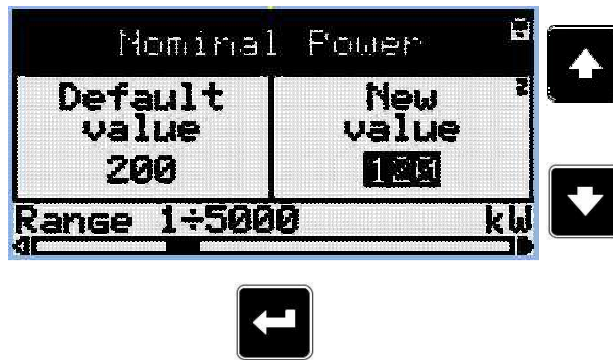
**Note:** Use Enter button to enter selected setpoint group.



**Note:** Use Left and Right button to select required setpoint.



**Note:** Use Enter button to enter selected setpoint.



*Note: Use Up and Down button to set required value of selected setpoint.*

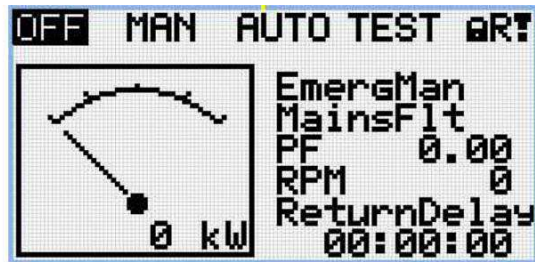
**Note:** Use Enter button to confirm adjusted value of setpoint.



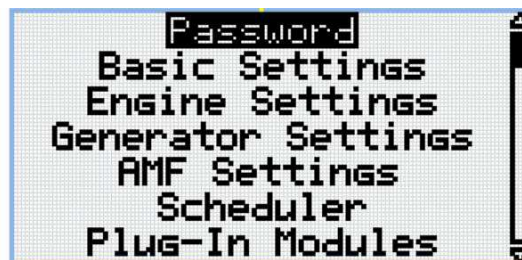
**Note:** Use Page button to discard changes, to set setpoint to previous value and to return to the list of setpoints of selected group.

**IMPORTANT:** Cannot change setpoint? Setpoints marked with an padlock are password protected. Enter password as described in the chapter Password (page 20).

## 2.4 History Log



**Note:** From all measurement pages we can fluently go to the setpoint group page by pressing Page button.



**Note:** From setpoint group page we can fluently go to the history log pages by pressing Page button.

No.	Reason
-001	GCB Closed
-002	MCB Opened
-003	MCB Closed
-004	GCB Opened
-005	GCB Closed
11:05:45 15/03/2003	



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

Time	Date
14:01:43AM	15/03/2014
11:05:43AM	15/03/2014
11:01:43AM	15/03/2014
11:04:43AM	14/03/2014
14:41:43AM	11/03/2014
-002 MCB Opened	



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

RPM	Fwr	Q
1500	15.0	15.0
0	0.0	0.0
0	0.0	0.0
1500	15.0	15.0
1500	15.0	15.0
-002 MCB Opened		



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

PF	LChr	GFra
0.75	C	50.0
0.00	C	0.0
0.00	C	0.0
0.73	C	50.0
0.74	C	50.0
-002 MCB Opened		



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

Ug1	Ug2	Ug3
230	230	230
0	0	0
0	0	0
230	230	230
230	230	230
-002 MCB Opened		



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

Ua12	Ua23	Ua31
230	230	230
0	0	0
0	0	0
230	230	230
230	230	230

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

IL1	IL2	IL3
30	30	30
0	0	0
0	0	0
30	30	30
30	30	30

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

Um1	Um2	Um3
230	230	230
0	0	0
0	0	0
230	230	230
230	230	230

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

Um12	Um23	Um31
230	230	230
0	0	0
0	0	0
230	230	230
230	230	230

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

FC	FMI
0	0
0	0
0	0
0	0
0	0
0	0

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

MFra	VBat	OilP
50.0	23.2	3.2
0.0	0.0	0.0
0.0	23.2	0.0
50.0	23.3	3.2
50.0	23.3	3.2

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

EngT	FLvl	Ain4
30.0	50	00.0
22.0	20	00.0
23.0	30	00.0
23.0	30	00.0
23.0	50	00.0

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.

BIN	BOUT
01101000	11000011
11001001	01001010
01010100	01010100
11010000	01101000
11000011	01010100

-002 MCB Opened



**Note:** Use Up and Down button to select required alarm reason.



**Note:** Use Enter button to move to the next page of history log.



**Note:** Use Up and Down button to select required alarm reason.

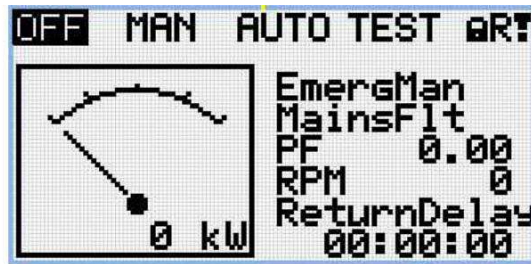


**Note:** Use Enter button to move to the first page of history log.

**IMPORTANT:** The records are numbered in reverse order, i.e. the latest (newest) record is "0" and older records have "-1", "-2" etc.

**Note:** This is only basic history record. There can be some additional screens in case that in controller is extension module or ECU is configured. Also it depends on connection type.

# 3 Browsing alarms



**Note:** Use Up button to move to alarmlist from main measurement screen.



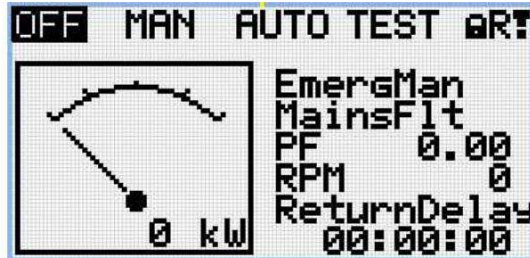
- ▶ Active alarms are displayed as white text on black background. It means the alarm is still active, i.e. the appropriate alarm conditions are still present.
- ▶ Inactive alarms are displayed as black text on white background. It means the alarm is no more active, i.e. the appropriate alarm conditions are gone
- ▶ Not confirmed alarms are displayed with an asterisk. It means the alarm is still not acknowledged (confirmed).
- ▶ ECU alarms: SPN/FMI/OC/SC
  - SPN - Suspect parameter number
  - FMI - type of protection
  - OC - number of errors
  - SC - source of error



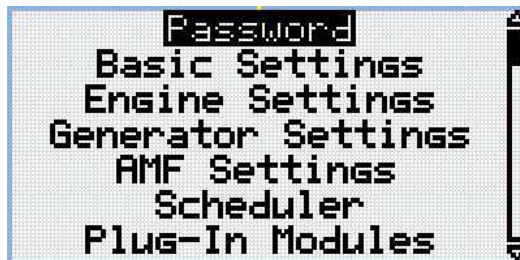
# 4 Password

User Password: 301

## 4.1 Enter password



**Note:** From all measurement pages we can fluently go to the setpoint group page by pressing Page button.



**Note:** Use Up and Down button to select setpoint group Password.



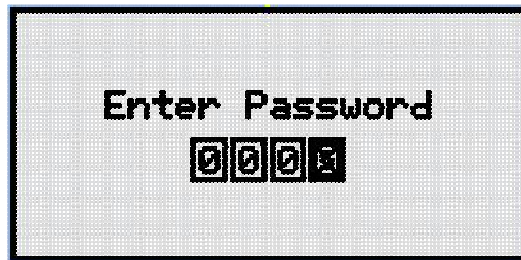
**Note:** Use Enter button to enter setpoint group Password.



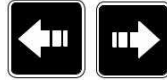
**Note:** Use Up and Down button to select Enter Password.



**Note:** Use Enter button to enter selected setpoint.



**Note:** Use Up and Down button to set required value of selected setpoint.



**Note:** Use Left and Right button to move between digits.

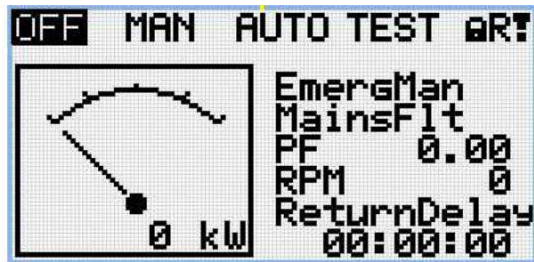


**Note:** Use Enter button to confirm the password or Page button to cancel entering the password.

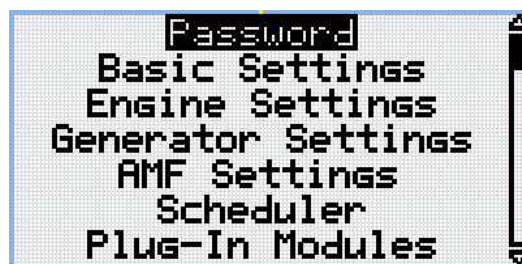


**Note:** In case that invalid password is entered, the controller shows Invalid password screen. Use Page button to go back to menu.

## 4.2 Change password



**Note:** From all measurement pages we can fluently go to the setpoint group page by pressing Page button.



**Note:** Use Up and Down button to select setpoint group Password.



**Note:** Use Enter button to enter setpoint group Password.



**Note:** Use Up and Down button to select Change Password.



**Note:** Use Enter button to enter selected setpoint.



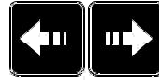
**Note:** Use Up and Down button to select required level of password.



**Note:** Use Enter button to enter selected setpoint.



**Note:** Use Up and Down button to set required value of password.



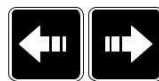
**Note:** Use Left and Right button to move between digits.



**Note:** After setting new password use Enter button to confirm adjusted password.



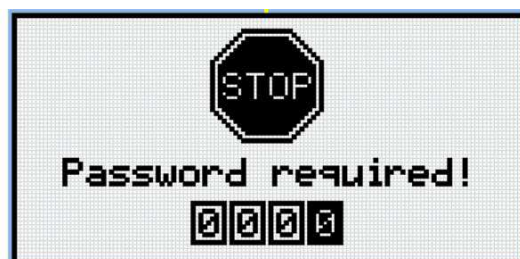
**Note:** Use Up and Down button to set required value of password again.



**Note:** Use Left and Right button to move between digits.



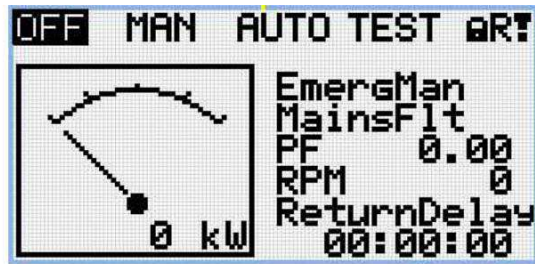
**Note:** After setting new password again use Enter button to confirm adjusted password or Page button to discard changes and to cancel changing password.



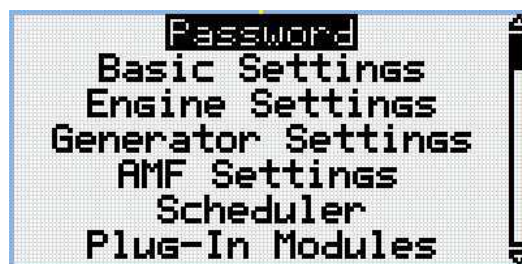
**Note:** Before changing the password controller has to be unlocked. In case that controller is locked, the controller shows Password required screen. In that case the password has to be entered before changing the password.

**IMPORTANT:** Lost password? Display the information screen containing the serial number and password decode number as described in the chapter Information screen (page 26) and send them to your local distributor.

## 4.3 Log out from controller



**Note:** From all measurement pages we can fluently go to the setpoint group page by pressing Page button.



**Note:** Use Up and Down button to select setpoint group Password.



**Note:** Use Enter button to enter setpoint group Password.



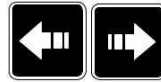
**Note:** Use Up and Down button to select Enter Password.



**Note:** Use Enter button to enter selected setpoint.



**Note:** Use Up and Down button to set required value of selected setpoint.



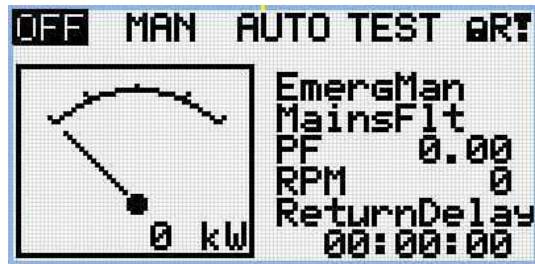
**Note:** Use Left and Right button to move between digits.

**Note:** Enter invalid password to log out from controller.



**Note:** In case that invalid password is entered, the controller shows Invalid password screen. Use Page button to go back to menu.

# 5 Information screen



**Note:** On Main measurement screen press Enter and Page button together. Enter button has to be pressed first.



**Note:** Use Page button to move to the next page.



**Note:** Use Page button to move to the next page.

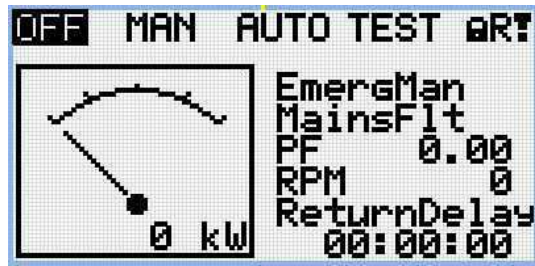


```
About Controller 2/2  
SW Version: 1.0.0.00  
HW Version: 1.0  
Serial: 12345678  
Pwd.Dec.: 1212345678
```



**Note:** Use Up button to move back to main measurement screen.

# 6 Language selection



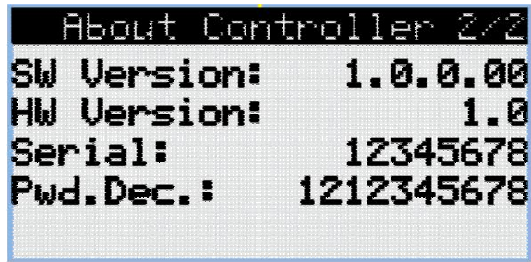
**Note:** On Main measurement screen press Enter and Page button together. Enter button has to be pressed first.



**Note:** Use Page button to move to the next page.



**Note:** Use Page button to move to the next page.



**Note:** Use Page button to move to the next page.

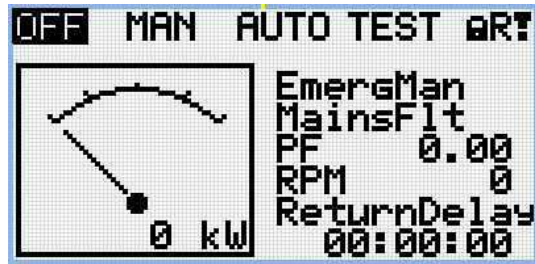


**Note:** Use Up and down button to select required language.



**Note:** Use Enter button to confirm selected language.

# 7 Configuration level



**Note:** On Main measurement screen press Enter and Page button together. Enter button has to be pressed first.



**Note:** Use Page button to move to the next page.



**Note:** Use Page button to move to the next page.

```
About Controller 2/2
SW Version: 1.0.0.00
HW Version: 1.0
Serial: 12345678
Pwd.Dec.: 1212345678
```



**Note:** Use Page button to move to the next page.

```
LANGUAGES
Language1
Language2
Language3
```



**Note:** Use Page button to move to the next page.

```
Configuration Level
Standard
Advanced
```

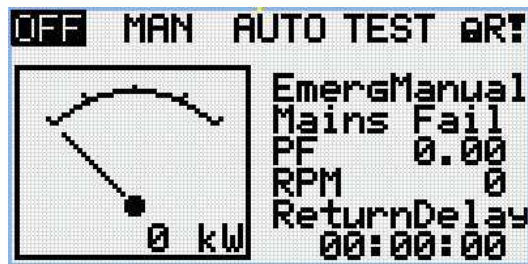


**Note:** Use Up and down button to select required level of configuration.



**Note:** Use Enter button to confirm selected level of configuration.

# 8 Display contrast adjustment



**Note:** On any measurement screen press Enter and Down button together for lower contrast.

**Note:** On any measurement screen press Enter and Up button together for higher contrast.



**Note:** After setting a contrast, no another action is needed.

# 9 Manual fuel pump command

LBO "Fuel Pump On/Off" will be activated in MANUAL mode only, pressing "Fault Reset" and "Horn Reset": buttons together and holding for at least 2 seconds. Releasing buttons immediately deactivates Fuel Pump LBO.

If buttons are still pressed, Fuel Pump LBO won't deactivate even if the Fuel Level reach 100%: Fuel pump is fully under manual control (allows tank overfill).

Both buttons (Fault Reset and Horn Reset) keeps their function all the time so manual activation of fuel pump also causes horn reset and fault reset.

Fuel	
Fuel Level	####%
Fuel Pump On	12%
Fuel Pump Off	34%
Fuel Pump Status	1

