

MONITORING SCREEN

FOR PGH INVERTER SERIES



Version 1.0



Important Safety Instructions

Please save these instructions.

This manual contains important installation and operation instructions for your Renogy monitoring screen. Please review and observe these instructions and keep them located near the monitoring screen for further reference. The following symbols are used throughout the manual to indicate potentially dangerous conditions or important safety information.

WARNING

Indicates a potentially dangerous condition. Use extreme caution when performing this task.

CAUTION

Indicates a critical procedure for the safe and proper installation and operation of the monitoring screen.

NOTE

Indicates a procedure or function that is important to the safe and proper installation and operation of the monitoring screen.

■ **Disclaimer**

The manufacturer accepts no liability for any damage caused by:

- Force majeure: including fire, typhoon, flood, earthquake, war, and terrorism.
- Intentional or accidental misuse, abuse, neglect or improper maintenance, and use under abnormal conditions.
- Improper installation, improper operation, and malfunction of a peripheral device.
- Contamination with hazardous substances, diseases, vermin, or radiation.
- Alterations to the product without express written consent from the manufacturer.
- Must be properly ventilated to ensure no build-up of explosive gases prior to installation.

■ General Safety Information

- Installation and wiring must comply with the Local and National Electric Codes (NEC) and must be done by a certified technician.
- Read all the instructions and cautions in the manual before beginning the installation. There are no serviceable parts for this inverter.
- Do NOT disassemble or attempt to repair the monitoring screen.
- Make sure all connections going into and from the inverter are tight. There may be sparks when making connections, therefore, make sure there are not flammable materials or gases near installation.

■ Inverter Safety

- The inverters are suitable for 12V Battery Banks ONLY.
- ALWAYS make sure inverter is in OFF position and disconnect all AC and DC connections when working on any circuit associated with the inverter.
- NEVER connect the AC output of the unit directly to an Electrical Breaker Panel/ Load Centre which is also fed from the utility power / generator.
- When connecting battery terminals, ensure the polarity of the battery connections is correct. Incorrect polarity may cause permanent damage to the unit.
- Be careful when touching bare terminals of capacitors as they may retain high lethal voltages even after power is removed.

■ Monitoring Screen Safety

- The monitoring screen is designed for indoor/compartment installation. DO NOT expose it to direct sunlight, rain, snow, moisture, or liquids of any type.
- DO NOT puncture, drop, crush, burn, penetrate, or strike the monitoring screen.
- DO NOT open, dismantle, or modify the monitoring screen.
- The monitoring Screen is only compatible with Renogy PGH Inverter Series. DO NOT attempt connecting the monitoring screen to other inverters or systems.
- The RMS-PGH will operate when the PGH Inverter is in the ON or REM position. Only in the REM position, will the RMS-PGH be able to manually turn the inverter ON/OFF in addition to monitoring the inverter.
- In order to read the parameters of the inverter correctly,
 1. The switch must be in the ON or REM position and the COMM port correctly connected to the RJ45 cable.
 2. The REMOTE port is correctly connected to the RJ12 communication cable.
- Changing the frequency (50/60Hz) or the power mode (Normal/Eco) will need to be done physically on the inverter. The inverter then needs to be rebooted for the changes to take effect on the monitoring screen.

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General Information

The RMS-PGH is a high precision meter designed for PGH series pure sine wave inverters. Featuring a backlit display and flush-mountable, it is engineered for an aesthetically clean and professional look on RVs or camper walls. Utilize the 2-key input to easily navigate through your system information as well as identify any error codes. In addition, use the power button to manually shut down the inverter at your convenience. The RMS-PGH is the perfect monitor companion to optimize any solar system!

Key Features

- **Plug and Play**

Simply connect the monitoring screen to the PGH inverter using an RJ12 and RJ45 communication cable for real-time monitoring.

- **Accurate Readings**

Obtains input and output readings directly from the communication port on the inverter.

- **Comprehensive Protection**

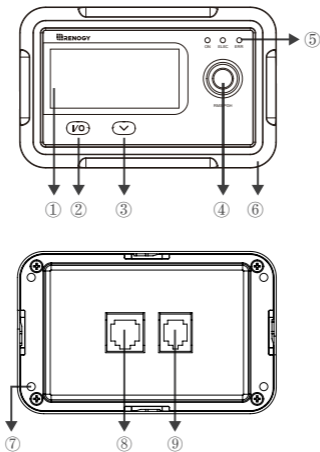
Displays inverter error codes for quick identification of abnormal conditions or improper operation

- **Easy Operation**

Simply connect it to your inverter and let the screen take care of the rest.

Product Overview

■ Identification of Parts



① LCD Screen

② Input/output

③ Parameter Switch Key

④ Main On/Off power key

⑤ LED Status Lights

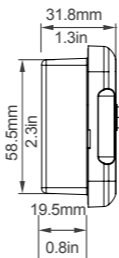
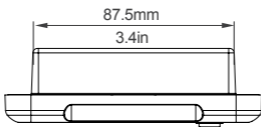
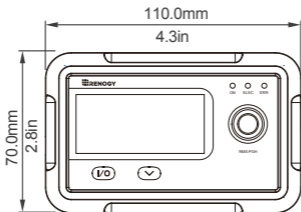
⑥ Front Cover Plate

⑦ Mounting Holes

⑧ RJ45 Communication Port

⑨ RJ12 Communication Port

Dimensions



■ Additional Components

- **RJ45 Communication Cable**

The RJ45 Communication Cable (5m/16.4ft) is used to connect the monitoring screen to the "COMM" port for data transmission.



- **RJ12 Communication Cable**

The RJ12 Communication Cable (5m/16.4ft) is used to connect the monitoring screen to the "REMOTE" port for power supply.



- **Self-tapping Screws (4)**

The Self-tapping Screws (M2.9*13mm) are used to fix the monitoring screen on the mounting surface.



Installation

WARNING

BEFORE drilling, make sure there are no electrical component or other obstacles that may interfere with installation on the other side of the mounting surface.

CAUTION

Before installation, check to make sure the power is working properly. Resolve any issues before installation of monitoring screen and cable.

The RMS-PGH requires a flush mount installation. The RMS-PGH's faceplate will be flush with the mounting surface and the body of the meter.

■ Preparation

Before installing the monitoring screen, it is recommended to have the following tools available:

- Pencil
- Drill
- Jigsaw
- Phillips screwdriver

■ Choosing an Installation Location

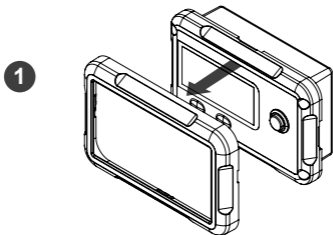
NOTE

The following are recommendations for installation. There will be multiple mounting methods depending on users' applications.

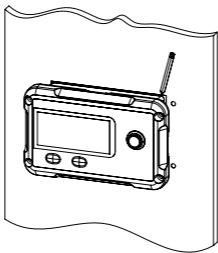
Please choose a clean, dry, protected and easily accessible indoor location to install the monitoring screen. It is recommended to mount the monitoring screen at eye level for easy access to the battery information and operation buttons. The RJ45/RJ12 Communication ports on the monitoring screen are accessible from the back of the unit. Clearance of at least 2 inches (50 mm) behind the unit is recommended to allow for the bending radius of the RJ45/RJ12 Communication Cables that connect to the monitoring screen.

■ Mounting the Monitoring Screen

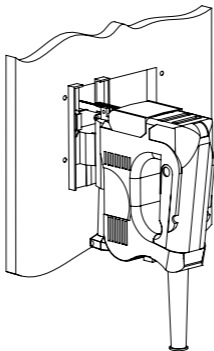
1. Remove the snap-fit Front Cover Plate from the monitoring screen.
2. Use the monitoring screen as a template to mark the screw holes and trace the cut-out area on the mounting surface with a pencil.
3. Cut out a rectangle area for the monitoring screen on the mounting surface with a jigsaw. You may also use the cut out dimension specified after Step 2.
4. Pre-drill four screw holes on the mounting surface with a drill.
5. Place the monitoring screen into the cut-out area and align the mounting holes on the monitoring screen with the pre-drilled screw holes.
6. Affix the monitoring screen on the mounting surface with the included four self-tapping screws.
7. Re-attach the snap-fit Front Cover Plate to the monitoring screen.



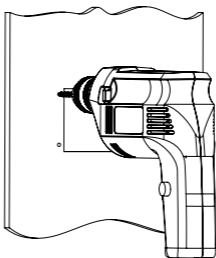
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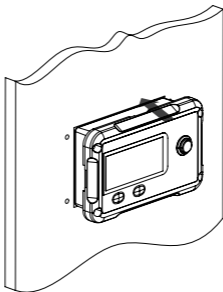
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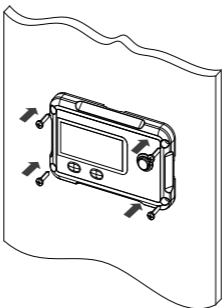
Cutout Dimensions

(L x H x W): 86.7 x 58.02 x 19.8mm

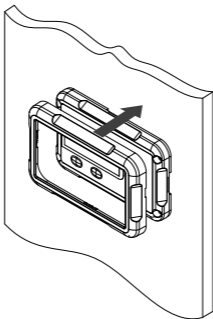
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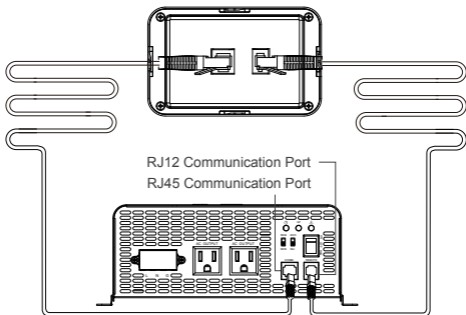
■ Connecting to the PGH Inverter series

The RMS-PGH will operate when the PGH Inverter is in the ON or REM position. Only in the REM position, will the RMS-PGH be able to manually turn the inverter ON/OFF in addition to monitoring the inverter.

In order to read the parameters of the inverter correctly,

1. The switch must be in the ON or REM position and the COMM port correctly connected to the RJ45 cable.
2. The REMOTE port is correctly connected to the RJ12 communication cable

Changing the frequency (50/60Hz) or the power mode (Normal/Eco) will need to be done physically on the inverter. The inverter then needs to be rebooted for the changes to take effect on the monitoring screen.




Operation

NOTE

The communication cables need to be connected correctly in order to read the parameters of the inverter correctly.

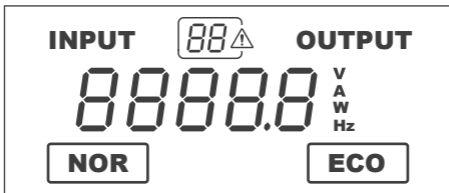
Changing the frequency or the power mode (Normal/Eco mode) will need to be done on the inverter and then the inverter rebooted for the changes to take effect on the monitoring screen

☑ The following key is used to navigate through the screen parameters

The following  key allows you to switch between input and output parameters

■ LCD Information


• Overview




NOTE

The RMS-PGH is ONLY compatible with PGH Inverter Series.


• **Voltage (V)**

Input	Output
The voltage indicates the DC Input voltage of the battery bank. Volts will be in DC	The voltage indicates the AC Load Voltage. Volts will be AC
	

• **Current (A)**

Input	Output
-	The real-time current flowing from the inverter to the AC appliances. Current will be AC amps
	

• **Watts (W)**

Input	Output
-	The real-time watts flowing from the inverter to AC Appliances. Watts is calculated based on AC Values
	

NOTE

The RMS-PGH will not calculate the watts below 100 watts. Instead the following code will display depending on the watts

Output	
L2 w	AC Watts < 50W
L1 w	50W < AC Watts < 100W

- **Frequency (Hz)**

The monitoring screen will only be able to monitor the working mode. To change the output frequency the DIP switch needs to be physically selected on the unit BEFORE turning on the inverter.

Input	Output
-	Displays the frequency of the inverter output to operate AC appliance

- **Error Code**



The error code indicates potentially abnormal conditions of the inverter. During normal operation this will not display on the screen.

Error Code	Parameter
01	Battery Under-Voltage Warning
02	Battery Over-Voltage Warning

NOTE

The error code will flash, and the inverter will beep the alarm. Upon the battery reaching the error state, the monitor screen will shut down just like the inverter.

• **Normal / ECO Mode**

The PGH inverter features a power saving mode (ECO) to conserve battery power. The monitoring screen will only be able to monitor the working mode. To operate in ECO or Normal working mode, the DIP switch needs to be physically selected on the unit BEFORE turning on the inverter. The normal (NOR) icon will be on the left and the Eco Mode(ECO) icon on the right.



888.8 Hz

NOTE

Under ECO mode, the inverter senses the output for a load greater than 50W. Loads under 50W will not be powered and the inverter will stay idle.

• LED Indicators

LED	Color	Behavior	Parameter
ON	Green	Solid	The inverter is powered on in normal mode
		Slow Flash	The inverter is powered in ECO mode detecting a load to power >50W
ELEC	Yellow	Solid	GFCI Trip
ERR	Red	Solid	Fault

Troubleshooting

Indicator	Potential Issue	Troubleshoot
Error Code 01, ERR LED Lit	Input voltage below 11V	Use a multimeter to check the voltage of the battery bank. Disconnect any loads and charge the battery back up.
Error Code 02, ERR LED Lit	Input voltage is above 15V	Use a multimeter to check the voltage of the battery bank. Disconnect any loads if any and make sure you're only using 12V battery bank systems.

Monitor screen shutdown	Inverter under-voltage protection	Use a multimeter to check the voltage of the battery bank to make sure you're above 11V. Disconnect loads if any and make sure you're only using 12V battery bank systems.
	Inverter over-voltage protection	Use a multimeter to check the voltage of the battery bank to make sure you're below 15V. Disconnect loads if any and make sure you're only using 12V battery bank systems.
	Inverter overheats	Allow inverter to cool down
		Check for adequate ventilation
		Reduce the load on inverter
	Operating equipment draws too much power	Use a higher wattage inverter or use a lower powered device
Inverter is short circuited	Disconnect the inverter and turn off the ON/OFF switch to reset	
Yellow LED Lit - Inverter shut down	GFCI tripped	Disconnect appliances and turn off the ON/OFF switch to reset
Monitor Screen does not turn on	Incorrect wiring	Make sure the RJ12 cable is connected to the REMOTE port and the RJ45 communication cable is connected to the COMM port.

Technical Specifications

Electrical Specifications

Model	RMS-PGH
Supply Voltage	5VDC
Supply Current	30mA
Power Consumption	< 1W
Operating Temperature Range	-4 °F ~113 °F / -20 °C ~45 °C
Voltage Accuracy	±0.1V
Current Accuracy	±0.1A
Certification	FCC Part 15 Class B, CE, RoHS

Mechanical Specifications

Communication Port	RJ45, RJ12
Display	Backlit LCD
User Interface	2 key input, 1 main power switch
Mounting System	Wall Mount
Dimension	2.8*4.3*1.3 inch 70*110*31.8 mm
Weight	0.14 lbs / 62 g
Mounting Screw	2.9*13mm
RJ45 Wire Length	16.4 Ft / 5m
RJ12 Wire Length	16.4 Ft / 5m

FCC Compliance:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must withstand any interference received, including interference that may cause undesired operation.

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Renogy reserves the right to change the contents of this manual without notice.

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