rpb® GX4 GAS MONITOR
INSTRUCTION MANUAL

rpb® GX4 GAS MONITOR

CONTENTS

Read all instructions and warnings before using this product.
Keep this manual for future reference.

INTRODUCTION

The RPB® GX4, model 08-400, tests the quality of compressed breathing air for Carbon Monoxide and other gases*. Compressed Air is supplied to the unit through the sampling hose at a constant flow to the sensors for continuous analysis.

KEY FEATURES:
- Multiple gasses monitored simultaneously
- Traceability of gas levels, temperature, alarms, air flow, sensor checks and more
- Internal web server for remote monitoring, reviewing logs and printing reports
- 3 inch LCD display and 6 buttons to easily navigate the menus
- Exterior lights and alarms
- Auxiliary output for external alarms, strobe lights or solenoids
- Tamper switch sealed inside of unit
- Robust protective housing
- Mounts to a Radex filtration system
- Optional wall mount bracket
- Optional protective travel case.

The monitor must be supplied with Grade D air and must be free of oil and water to prevent contamination of the sensors. A micro-mist filter prior to the Radex air filtration system is recommended to protect the GX4 and the operator(s). Check with your local regulatory bodies for more information on local requirements.

The monitor operates at 12 volts DC and can be used with either the 110/240v AC Adaptor (P/N: 08-430) or the 12v cable with Battery Clips (P/N: 08-431). The unit is designed to operate in temperature ranges of 14° to 120F (-10 to +50C) and Humidity levels of 5% - 99% (no condensation).

The RPB® GX4 when used with the Carbon Monoxide Sensor Cartridge (P/N: 08-420-01) satisfies the requirements of OSHA rule 29 CFR 1910.134 for carbon monoxide monitoring.

RPB® Safety provides maintenance service through its service centers. In some locations RPB® has units available for hire while your unit is being serviced. Contact our Customer Service Department on 1-866-494-4599 or email: customerservice@rpbsafety.com

* Visit rpbsafety.com for a list of available gas sensors.

WARRANTY
This RPB® Safety product is covered by a manufacture's warranty of 1 year. The manufacturer warranty covers defects in material, workmanship and does not cover damage caused by misuse or abuse. RPB® Safety's only obligation and your exclusive remedy shall be to repair, replace or refund the purchase price of such parts or products upon the presentation of proof of purchase. Maximum liability is in no case to exceed the value of the RPB® Safety Product involved.

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!WARNINGS!

1. When correctly installed and maintained, the RPB® GX4 monitors the level of relevant gasses in the breathing air. It DOES NOT remove any gasses from the air.

Only gasses relating to the inserted cartridges can be detected. Ensure you install all necessary cartridges for your application.

2. Do not use this unit until you have been trained in its operation by a qualified individual appointed by your employer. Failure to adhere to the user's instruction manual could result in serious injury or death.

3. Leave work area immediately if the monitor alarm sounds, check air source and wait until alarm mode stops. If it continues, verify sensor calibration or change your air source.

4. The RPB® GX4 model 08-400 is not approved for use in hazardous or explosive atmospheres.

5. Do not cover the warning alarms that are attached to the unit.

6. Regular testing of the alarm and cartridges is required to detect system failures and calibration. Always wear hearing protection when testing the alarm.

7. Do not open the monitor casing. The unit is sealed closed and equipped with a tamper switch. If the tamper switch is activated and/or the seal is broken it will void all warranties.

8. Only remove replaceable parts as listed in the parts and accessories. Do NOT remove any part of the GX4, especially the air inlet fitting or the power and auxiliary receptacles under any circumstances. Removing any part will void all warranties.

*Should the need arise, the unit must be returned to RPB® Safety to perform any repairs.

9. Sensors may contain sulfuric acid or other hazardous chemicals which are poisonous, can cause burns or eyesight loss. Do not allow contact with skin or eyes. If eyes are exposed to the chemicals flush thoroughly and seek medical attention. Always wash hands thoroughly after handling a sensor cartridge.

10. RPB® Safety cannot accept any liability of whatsoever nature arising directly or indirectly from the use or misuse of RPB® Safety products, including purposes that the products are not designed for.

11. RPB® Safety is not liable for damage, loss or expense resulting from the failure to give advice or information or the giving of incorrect advice or information, whether or not due to RPB® Safety's negligence or that of it's employees, agents or subcontractors.

SETUP

BEFORE YOU USE YOUR GX4.

Unpack the unit from the shipping carton and remove the shrink wrap from the sensor cartridge. Read all instructions and warnings that are included with the unit. Dispose of the removed packaging responsibly making sure there is nothing important left inside.

REGISTRATION:

Go to: http://go.myrpb.com/GX4-Reg to register your GX4 and be notified of software updates and important product information.

UPDATES

The GX4 firmware should be updated regularly to ensure you have access to the latest features and maintain compatibility with the latest cartridges. Visit http://go.myrpb.com/GX4-Update for information on the latest software and how to upgrade your unit.

SENSOR CHECK:

Checks should be performed when a new cartridge is installed and monthly thereafter. This will insure the cartridge is within calibration and providing adequate protection.

Follow the Sensor Check instructions on page 17 to check the calibration of the cartridges. If the cartridge is no longer within calibration, follow the instructions for removing it and replace it with a new cartridge.

LOCATION

Place the GX4 in a place that:
- The alarm can be heard
- Is protected from water and impact
See mounting instructions on pg. 8.

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SETUP (CONTINUED)

WIFI CONNECTION

To unleash the full power of the GX4, it is recommended to connect it to the internet via the built-in wireless network transceiver. This connection allows easy firmware upgrades and the unit hosts a website available to devices on that network. Use the website to stream real-time gas levels, search through logs or print reports.

The GX4 can operate in two wireless modes. To select a mode in the Menu go to Network and then Mode. Use the arrow keys to switch between modes and press OK to select a mode. The unit will restart and resume operation in this network mode.

HOTSPOT MODE:

Use to connect directly to your GX4 when you do not have access to an existing network.
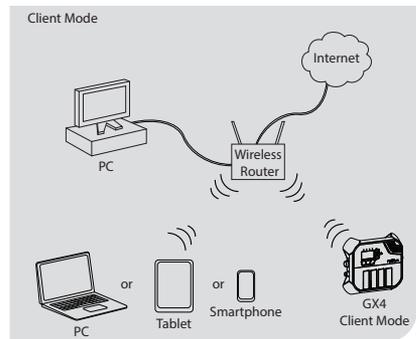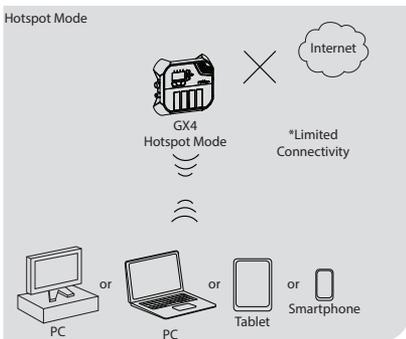- The GX4 Hotspot Mode does not connect to the internet.
- Devices can only connect to one GX4 in Hotspot Mode at a time.
- For multiple GX4s, disconnect from one before connecting to another.

Note: Although multiple devices can connect, the GX4 is not a router. When in Hotspot Mode your device can only communicate to the host GX4.

CLIENT MODE:

Use when you have access to a wireless network {IEEE 802.11 b/g/n}.
- The GX4 must be connected to the same network as your PC/Tablet/Smartphone
- Access the GX4 website through your internet browser.
- Multiple GX4s can be connected in Client Mode to the same network and each individual GX4 website can be viewed on a seperate web browser page.

Hotspot Mode — Internet — GX4 Hotspot Mode — *Limited Connectivity — PC or PC or Tablet or Smartphone

Client Mode — Internet — PC — Wireless Router — PC or Tablet or Smartphone — GX4 Client Mode

To configure your network see page 15.

WEBSITE

The GX4 has an internal website that can be accessed by internet enabled devices. This allows the user to view information about the unit and change settings such as the network connection. This is your portal to access the full potential of the GX4.

To access the website for your GX4 from your internet connected device:

In Hotspot mode:
- Browse to http://192.168.1.3/
In Client mode:
- Locate the IP Address for your unit in the "About" menu.
- Make sure the GX4 and your internet enabled device are on the same network.
- Type the IP address into your internet browser, http://<IP Address>/

Features

The internal GX4 website provides the following features:
Dashboard Page
- Status of the unit (Power, Alarm, Auxiliary...)
- Network Configuration
    - Change Wireless mode (Off, Client, Hotsport)
    - Change settings or connect to a different network
- Status of each cartridge
    - Type of gas being monitored
    - Current reading
    - Last validation date
    - Expiration date, and more
Logs
- Select a date(s) to view logs from
- Logs show events such as alarms, sensor checks, warnings, etc.
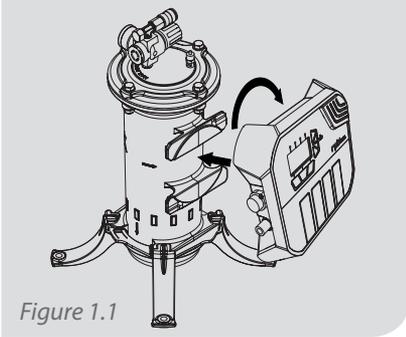- Export visible logs as a CSV file for all logs or main events
Certificate of Calibration
- Printable report of the last sensor checks for each cartridge
- To save as a PDF, use a PDF printer driver or a browser with PDF functionality
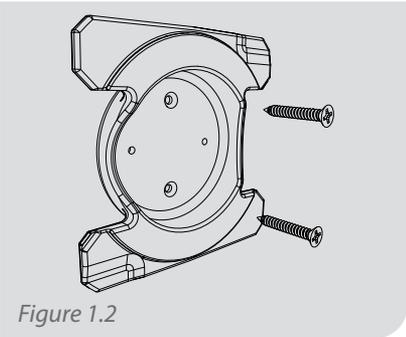
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SETUP (CONTINUED)
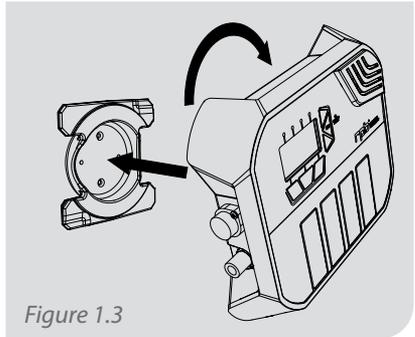
MOUNTING TO A RADEX® FILTRATION UNIT

Figure 1.1

Position the monitor so that the green brackets on the back line up with the mounting bracket on the side of the RADEX® , turn clockwise until the monitor clicks into place.

MOUNTING TO A WALL BRACKET

Figure 1.2

Figure 1.3

Use the wall bracket (P/N: 08-231) and appropriate screws to secure the wall mounting bracket to a suitable wall.

Position the monitor so that the green brackets on the back line up with the mounting bracket, turn clockwise until the monitor clicks into place.

CONNECT THE AIR SUPPLY
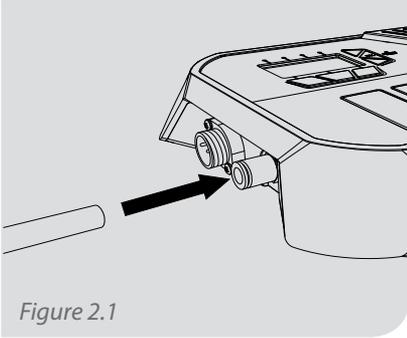
Figure 2.1

Figure 2.2

Insert the 3/8" O.D. Air Supply Hose (P/N: 08-428) into the push-lock fitting on the left side of the monitor. To disconnect, press the outside ring of the push-lock and pull the hose out. Note: Hose can be trimmed to the desired length.
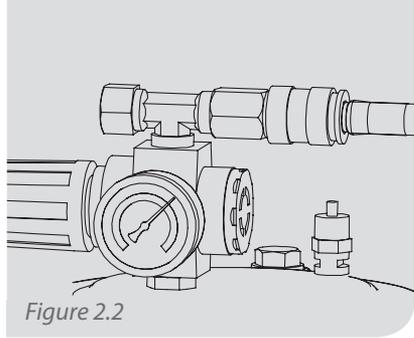
Connect the air supply hose to a Grade D air source regulated to between 7 to 80 PSI (50-550 kPa). Maximum air flow is achieved at 20 PSI.
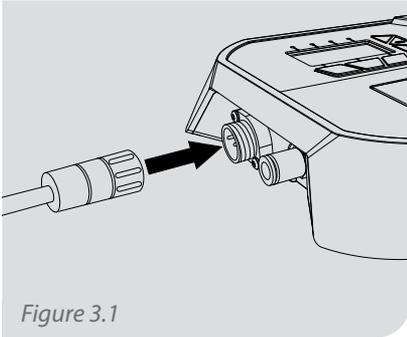
CONNECTING THE POWER SUPPLY

Figure 3.1

Figure 3.2

Connect the power supply by screwing it onto the receptacle on the left side of the unit (next to the air inlet fitting.) Plug the AC Adaptor into a power source.
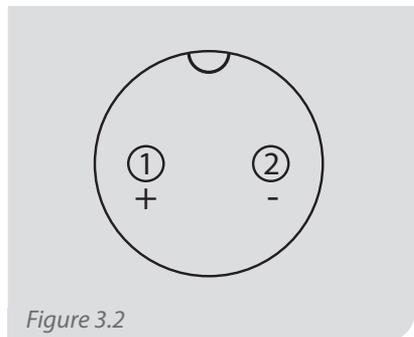
When using Battery Clips (08-431), connect:
- Black = Negative
- Red = +12V (± 0.5V)

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SETUP (CONTINUED)

CONNECT THE EXTERNAL ALARM

Figure 4.1

1. **Brown** - 12V DC
2. **Blue** - Alarm Out
3. **Black** - Ground
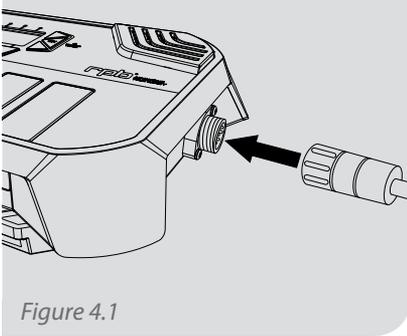4. **White** - Alert Out
5. **Green** - OK Out

Figure 4.2

If using an external alarm device, connect the plug into the auxiliary outlet. The use of an external alarm is recommended when the GX4 cannot be seen or heard by the operator. The external alarm should be located near the work area to alert the operators of the status.

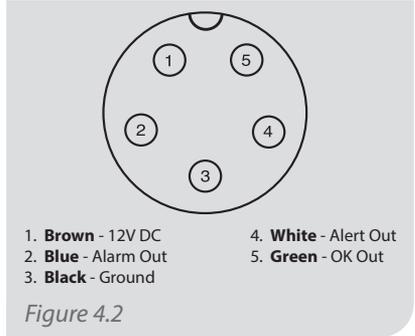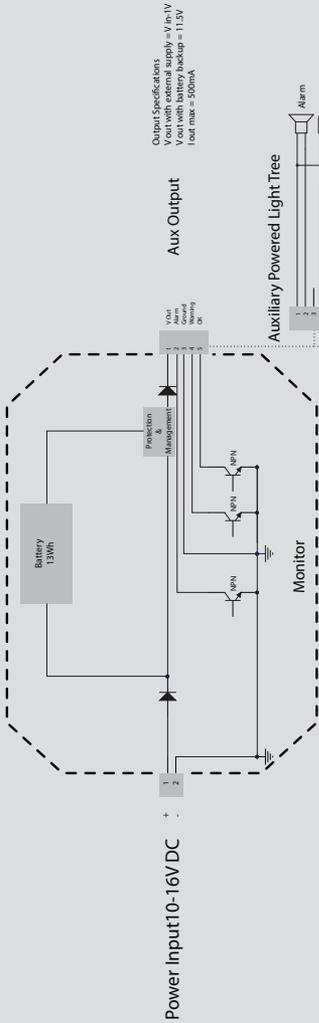Alternatively, the auxiliary can control a shut off valve, or other safety device.

To configure your own external device, use the bare end AUX cable (08-434). It is recommended to use a qualified electrician when wiring to ensure you do not damage the electrodes.
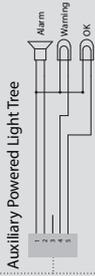
- Incorrectly wiring your auxiliary can permanently damage your unit.
- Always use a qualified electrician.
- Damage to the auxiliary is not covered under the manufacturer's warranty.
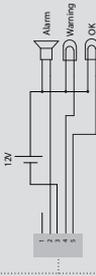
EXTERNAL WIRING DIAGRAM

Power Input 10-16V DC

Battery 13Wh

Protection & Management

Monitor

NPN

V out
Alarm
Ground
Warning
OK

Aux Output

Output Specifications
Vout with external supply = V in -1V
Vout with battery backup = 11.5V
Iout max = 500mA

Auxiliary Powered Light Tree

Alarm
Warning
OK

External Powered Light Tree

12V
Alarm
Warning
OK

Recommended Failsafe

The following system provides the most fail safe protection:
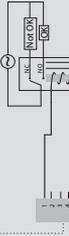
NC
NO
Not OK
OK

Connect the coils of a relay (12 VDC, SPDT) to ports 1 and 5 of the GV4 auxiliary receptacle. Connect your equipment into either the "OK" or "Not OK" positions of the circuit to alert users of potential dangers.

Pin	Function	Voltage	Current
1	V_{out}	$(V_{in} - 1)$ V / 11.5V on Battery	500 mA
2	Alarm	12V DC	750 mA
3	Ground	12V DC	1,500 mA
4	Warning	12V DC	750 mA
5	OK	12V DC	750 mA

Note:
External ground must match that of the power supply. (08-430 has a floating ground, so will adjust to suit.)
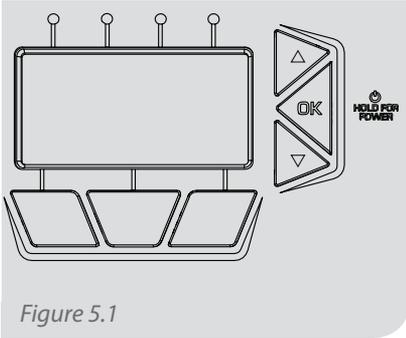
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OPERATION

POWER ON

Figure 5.1

To turn the unit on, press and hold the "OK" button until the "rpb" logo appears on the screen.
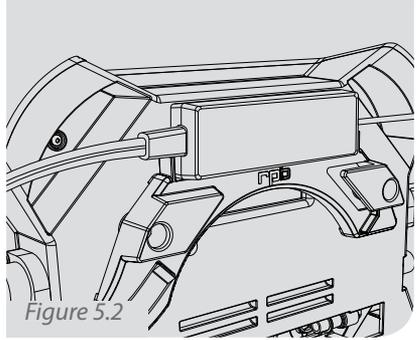

Figure 5.2

Tip: you can store the AC Adaptor between the tabs on top of the mounting bracket.
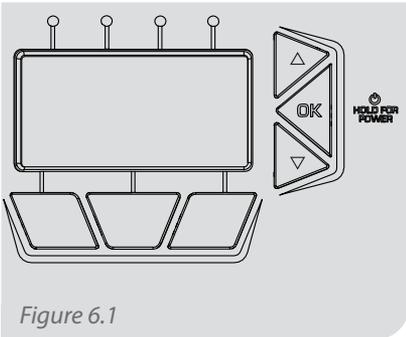
POWER OFF

Figure 6.1

Press and hold the "OK" button and the unit powers down.

OPERATION (CONTINUED)
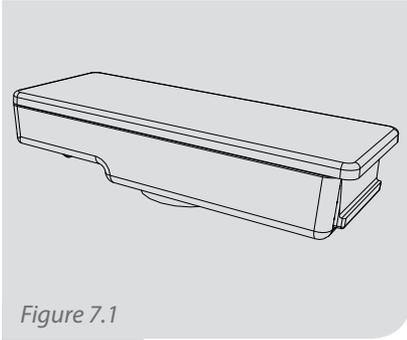
GAS DETECTION CARTRIDGES

Figure 7.1

Figure 7.2

The gas detection sensors are supplied in individual cartridges. Select the cartridge for each gas you wish to detect at the correct alarm threshold for your region.
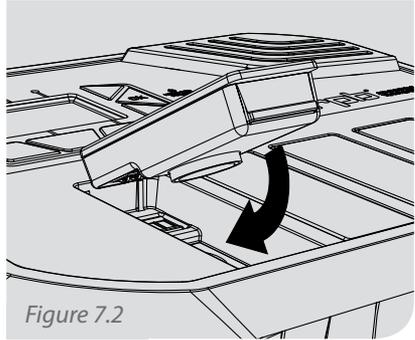
Visit rpbsafety.com for a list of available sensors.

Insert the cartridge into any of the 4 slots in the monitor. First locate the top end so the tabs line up, then push the bottom until it clicks.
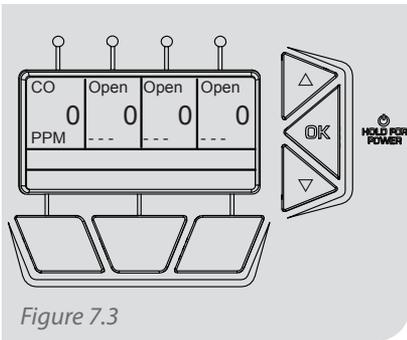

Figure 7.3

Figure 7.4

The cartridge will appear on the screen in the box that correlates to the slot it was placed in. The corresponding light above the screen will glow red or green to indicate the status.
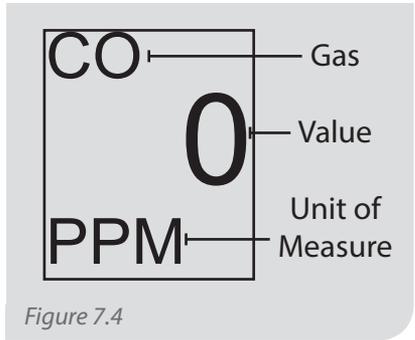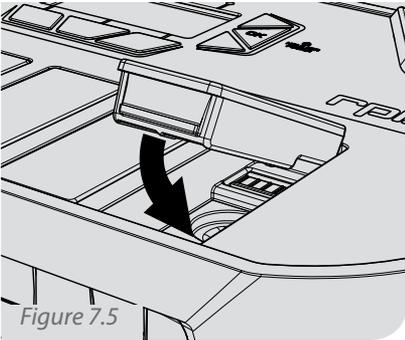
Each cartridge is represented by a box on the home screen. Each box shows the gas type, units of measure and the current reading.
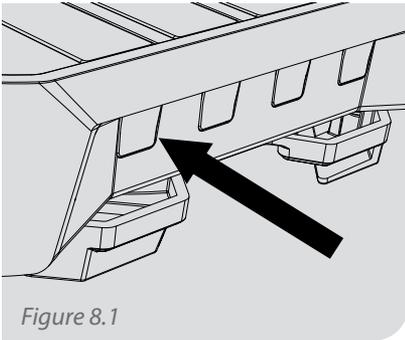
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OPERATION (CONTINUED)

Figure 7.5

Each monitor comes with 3 blank cartridges. These should be placed into slots that are not currently being used to protect the electrical contacts and air supply manifold.

REMOVE CARTRIDGE

Figure 8.1

Figure 8.2

To remove a cartridge, press the corresponding release button and the cartridge will "pop up".
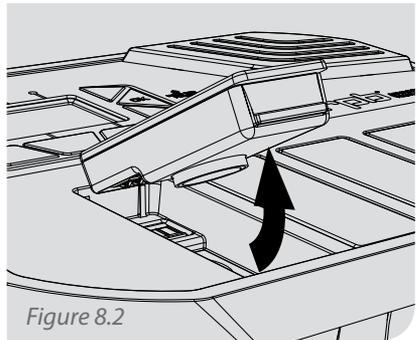
Lift the edge of the cartridge to remove it fully from the monitor. Replace with a new cartridge or a blank sensor cartridge.

MENUS

ABOUT
Unit Status, Owner Information, Network, Power, and Device information. Owner information can be entered via the web interface.

DEVICE INFORMATION
Displays information such as:
- Serial Number
- Firmware Version
- UUID/MAC address

SENSORS
Sensor cartridge information on each. Browse each cartridge for:
- Last date checked
- Expiration Date
- Type of gas sensor
- Safe/alarm range
- Date of Manufacture
- Total run time

More information about each cartridge can be found in the web interface.

SENSOR CHECK WIZARD
Follow the onscreen prompts to check the calibration of your sensor cartridges.

NETWORK SETTINGS
Configure a WiFi connection or change advanced IP settings.

When connecting the GX4 to a network you may be prompted to enter the network name (SSID) and the wireless password. If you do not know these, contact your network administrator or the documentation that came with your wireless router.

The IP settings are set automatically by default. To manually change the settings go to the network settings menu and enter the desired settings:
- IP Address
- Subnet Mask
- Default Gateway
- DNS Address

DATE
To ensure continuity of the logs, the date is automatically set by the server. The clock has a dedicated 10 year battery.

TIME
The time can be changed to display the current time zone and day light savings time. The logs are recorded in UTC/GMT and display according to your settings.

UNITS
The units of measure can be changed between Metric and Imperial.

ALARM AND AUXILIARY
Test the alarm and check the status of the auxiliary.

DEVICE SOFTWARE
Factory reset of firmware settings. Note: Logs are not erased during a factory reset.

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SENSOR CHECK

The gas sensor cartridges come pre-calibrated, but they should be checked regularly to ensure they are still calibrated within government regulations.

Select "Menu" -> "Sensors" -> "Check Sensors", then follow the prompts on the display menu to run a Sensor Check on each cartridge.

You will need:
- Zero Air Bottle (08-460) containing 20.9% Oxygen in Nitrogen
- Control Air Bottle(s) specific to the gas of the cartridge(s) being checked
- Calibration Kit (08-450) to connect the bottles to the GX4

IMPORTANT: Alarms will be disabled. You must confirm the monitor is not in use. Always wear P.P.E. when working with compressed air and hazardous gases.

Calibration Gas should be supplied between 1 and 4slpm or via a pressure regulator. Using the 08-461 and 08-451, up to 40 calibration checks can be performed.
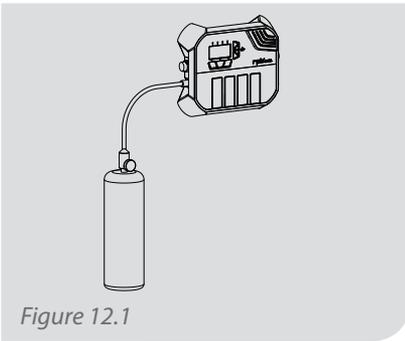

Figure 12.1
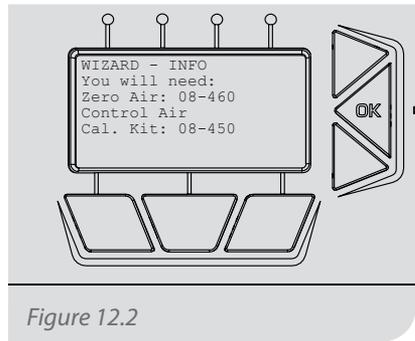

Figure 12.2

Connect the test air bottles to the air inlet.

Figure 12.2 is an example of the on-screen display during a sensor check.

The unit will confirm if the cartridge(s) are still in calibration or not. If the cartridge(s) pass, you may proceed to checking the next cartridge(s) or using the monitor. If the cartridge(s) are no longer in calibration, replace the cartridge(s) with a new one(s).

Sensor Checks are recorded into the Logs and Certificates can be generated using the web interface.

SENSOR CHECK (CONTINUED)

SENOR CHECK OPERATION

DO NOT REMOVE THE CARTRIDGES
DURING A SENSOR CHECK.

1. Disconnect air supply.

2. Press the "Menu" button.

3. Select "Sensors".

4. You will need: Zero Air: 08-460,
    Control Air (select depending on
    type of sensor being checked).
    Calibration Kit: 08-450

5. Ensure you are wearing proper P.P.E.

6. Agree to disable the alarms.

7. Select Control Gas type.

8. Connect gas and open the valve.

9. Start the test.

10. Test pass or fail.

11. Close the valve and disconnect the
    Air.

12. Connect Zero Air and open the
    valve.

13. Close the valve and disconnect the
    Zero Air.

14. If the sensor failed, remove it from
    the unit and replace it with a new
    cartridge.

15. Reconnect to the air supply to
    resume regular operation.

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ALARMS

The alarm will sound in the following scenarios:
- Concentration of any gas being monitored exceeds the allowable limits set by the cartridge
- Software becomes unresponsive
- Air supply is lost
- Cartridge is missing
- Battery is low

The screen will display which gas and cartridge is detecting the alarm. Also, the light above the affected slot on the screen will turn red.

The alarm can be silenced by pressing the "Silence" hot key button under the screen. This will silence the alarm for 30 seconds. If the gas concentration is still above the allowable limit the alarm will sound again.

All alarms and silence events are recorded in the event logs.

It is recommended that an external alarm system be wired to the Auxiliary outlet.

CARTRIDGE REMOVAL

Upon removal of a cartridge, a warning message will appear on the screen. If a response to this warning is not made within 30 seconds, the alarm will sound. This is a safety feature to detect a cartridge coming out of the unit unintentionally.

BATTERY

Although the GX4 is designed to be run on external power, it has a built in Lithium Polymer battery. The battery is intended for backup purposes in the event of a power failure.

Under normal operation the monitor can run for up to 24 hours on battery power.

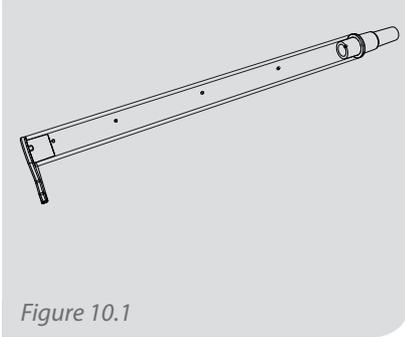The status of the battery is shown on the home screen as per Fig. 9.1

Plugged In/ Charging | Fully Charged | Battery Low

Figure 9.1
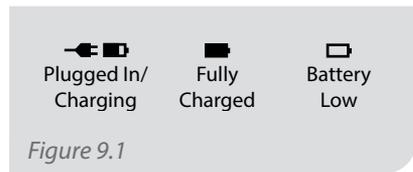
Note:
The unit requires 10 seconds to read the battery level after the unit is turned on.

MAINTENANCE

## MANIFOLD CHECK AND REPLACE

Figure 10.1

Figure 10.2

In the back of the GX4, there is a manifold (to distribute the air to the sensors) comprised of a clear tube with endcaps. This needs to be checked regularly to ensure it is clear of oil and debris. Note: Evidence of oil indicates an air supply issue that needs to be resolved.
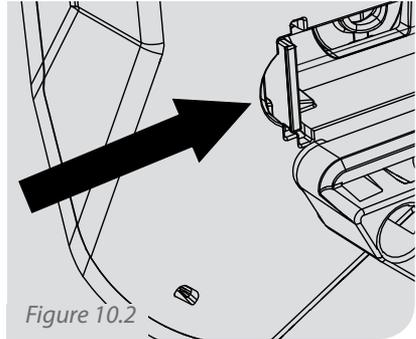
To remove the manifold for inspection, press in the green clip so it can be pulled out through the notches of the monitor case.

Figure 10.3
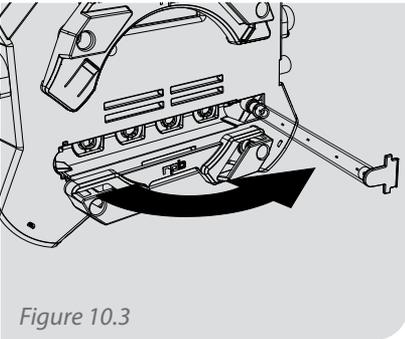
Figure 10.4

Rotate the manifold so it is sticking straight out from the back of the monitor.
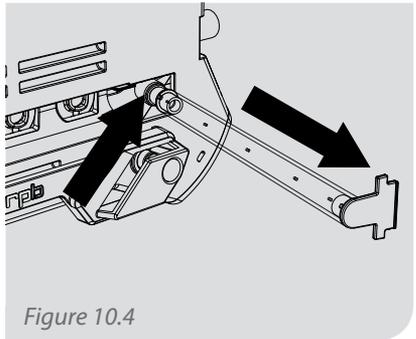
At the base of the manifold is a push-lock fitting with a green ring. Pull out the manifold while pushing on the ring.
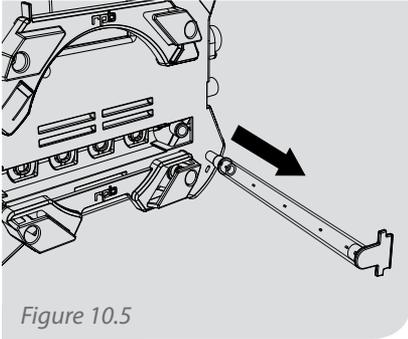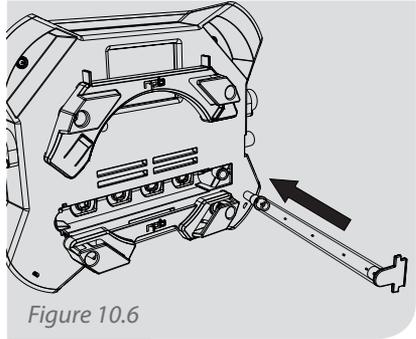
Figure 10.5

Figure 10.6

After removing the manifold, inspect it from all sides to make sure all of the holes are clear and that there is no oil or debris inside of the tube. DO NOT DISASSEMBLE THE MANIFOLD. If there is oil or debris inside of the manifold a replacement manifold (P/N: 08-422) must be used.

To replace the manifold, insert the tapered end into the green ring of the push-lock fitting inside the back of the monitor. Orient the holes in the manifold towards the sensors.

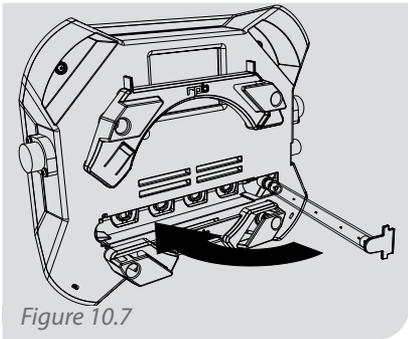**REPLACE MOUNTING BRACKETS**

Figure 10.7

Figure 11.1

Rotate the manifold into the back of the monitor so the clip goes into the notches on the back of the monitor making sure it is securely clipped in.
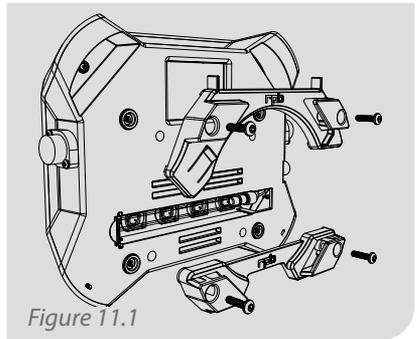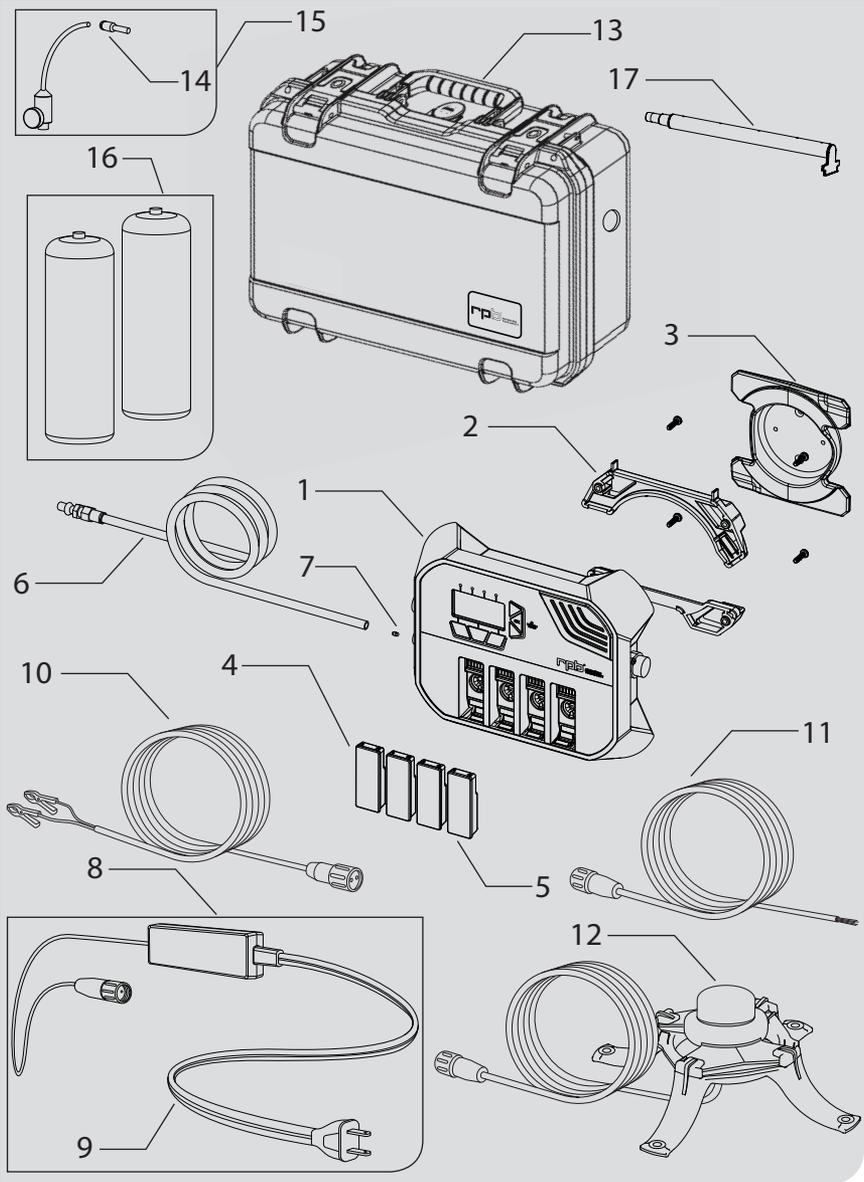
If the Mounting Brackets (P/N: 08-425) break, you can replace them by removing the two screws securing each bracket. Remove the broken bracket and replace with a new bracket. Secure the new bracket with the provided (UNC 10-24 x ¾") screws.

NOTES

rpb GX4 GAS MONITOR

PARTS AND ACCESSORIES

PARTS LIST

Item Number	Description	Part Number
1	GX4 Gas Monitor with mounting brackets	08-410
2	Mounting Brackets (Pair)	08-425
3	Wall Mounting Bracket	08-231
4	Carbon Monoxide Sensor 10ppm	08-420-01
	Carbon Monoxide Sensor 5ppm	08-420-02
5	Blank Cartridge	08-420
6	Air Supply Hose and One Touch Connector	08-428
7	M5 Inlet Filter, Sintered Brass	08-429
8	AC Adaptor and Power Cord - USA	08-430
	AC Adaptor and Power Cord- UK	08-430-UK
	AC Adaptor and Power Cord - AU/NZ	08-430-AU
	AC Adaptor and Power Cord- EU	08-430-EU
9	Power Cord - US	09-021
	Power Cord - UK	09-021-UK
	Power Cord - AU/NZ	09-021-AU
	Power Cord - EU	09-021-EU
10	Battery Clips	08-431
11	AUX Cable, Bare Ends w/50ft. Cable	08-434
12	AUX Strobe Light w/50ft. Cable	08-435
	AUX Strobe Light w/Alarm w/50ft. Cable	08-436
	AUX Field Install Jack	08-437
	Power Field Install Jack	08-438
13	Heavy Duty Field Case	08-424
14	Calibration Adaptor	08-450
15	Calibration Regulator Kit1.5slpm, incls. 08-450	08-451
16	34L Zero Air and 20ppm CO Cylinders	08-229
	Grade D Calibration Kit (CO2, CO, O2, N2)	08-463
17	Manifold Tube	08-422

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