

**mPowerinc MP840 Fixed  
Electroc Hemical Gas  
Detectors**



# mPowerinc MP840 Fixed Electroc Hemical Gas Detectors User Guide

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**mPowerinc MP840 Fixed Electroc Hemical Gas Detectors**



## Product Information

### Specifications

- Product Name: VOXI EC Fixed Electrochemical Gas Detector
- Model: MP840
- Version: Rev 1.2 (March, 2024)

## Product Usage Instructions

### User Interface

The user interface allows for easy interaction with the gas detector. Follow on-screen prompts and indicators to navigate through the settings and readings.

### Installation

1. Locate a suitable mounting position for the gas detector, ensuring it is easily accessible for maintenance.
2. Connect the necessary power supply and communication cables according to the provided installation guide.
3. Securely mount the gas detector following the recommended guidelines to ensure proper functioning.

### Operation

#### Standard Operation

1. Power on the gas detector using the designated button or switch.
2. Allow the device to initialize and start monitoring the surrounding air for gas presence.
3. Interpret the readings displayed on the screen or through connected devices for gas detection alerts.

#### Programming using Hand-held Remote

1. Use the hand-held remote to access advanced settings and configuration options.
2. Follow the programming guide to set specific parameters based on your requirements.

## **Maintenance**

Regular maintenance is essential for optimal performance of the gas detector. Follow the manufacturer's guidelines for filter and sensor replacements to ensure accurate readings.

## **Troubleshooting**

If you encounter any issues with the gas detector, refer to the troubleshooting section of the user manual for guidance on resolving common problems.

## **FAQ**

### **Q: How often should the VOXI monitor be calibrated?**

A: The monitor must be calibrated if it does not pass a bump test, when a new sensor has been installed, or at least once every 180 days, depending on use and sensor exposure to poisons and contaminants.

## **Read Before Operating**

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining or servicing this product. The product will perform as designed only if it is used, maintained and serviced in accordance with the manufacturer's instructions. The user should understand how to set the correct parameters and interpret the obtained results.

## **WARNINGS!**

- Never operate the monitor when the cover is removed.
- Remove the monitor cover only in an area known to be non-hazardous.
- Use only mPower's sensor and accessories. Substitution of components will impair suitability for intrinsic safety and void warranty.
- The instrument should be calibrated after installation before initial use and checked by exposing it to a known concentration calibration on a regular basis.
- Ensure that the gas inlet is not blocked.
- Make sure that all filters are clean and replaced on a regular basis.
- Remove the sensor only if necessary for repair. Zero and span calibration are required once the sensor is removed and re-inserted or replaced.

## **Special Conditions for Safe Use**

The VOXI monitor must be calibrated if it does not pass a bump test, when a new sensor has been installed, or at least once every 180 days, depending on use and sensor exposure to poisons and contaminants.

## **General Information**

The VOXI EC MP840 is a point-type toxic gas transmitter designed modularly with smart electrochemical sensor

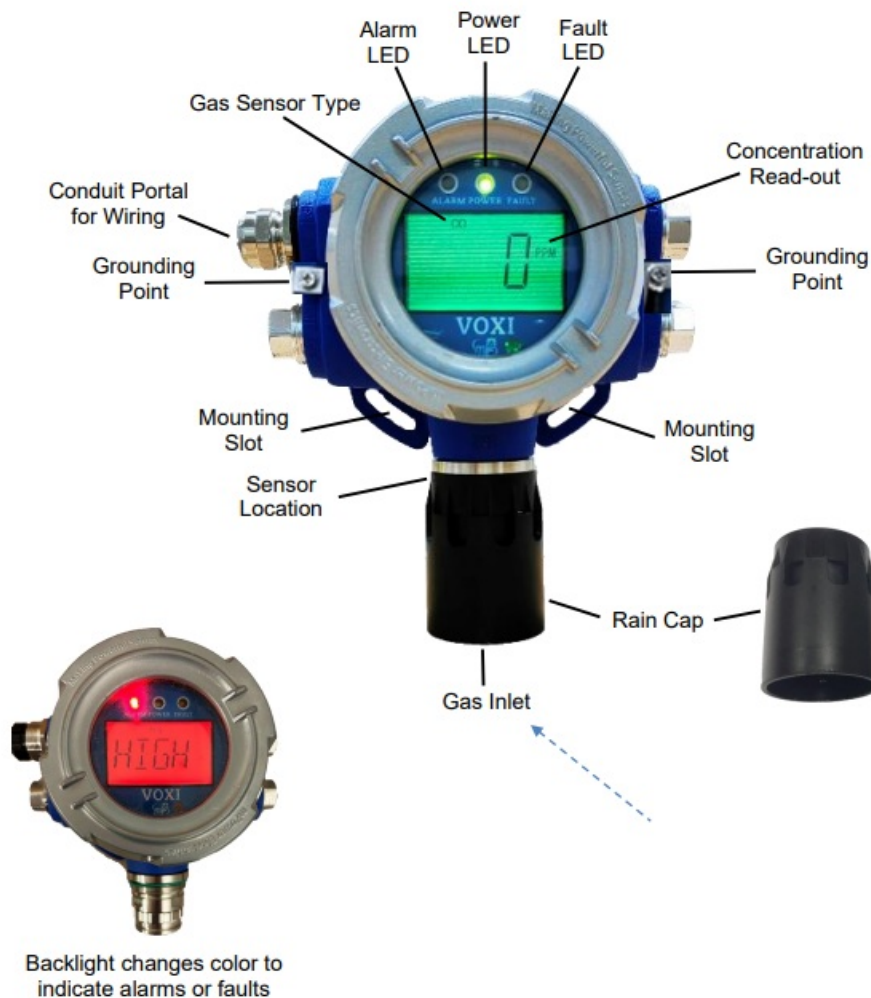
technology and an integral flameproof enclosure for fixed applications. The versatile platform offers more than 10 sensor options with auto-zeroing and offline calibration. Three-wire 4-20 mA analog and RS485 digital (for Modbus) signal outputs are standard. Three sets of programmable relays allow triggering of external alarms such as a siren or visual beacon. Various applications include oil & gas, petrochemical, chemical, metallurgical, pharmaceutical, semiconductor, environmental monitoring, and other industry facilities.

## **Key Features**

- Selection of more than 10 chemical gas types
- Smart modules with sensor identification and manufacturing data
- Sensor diagnosis, temperature compensation and auto-zeroing
- LCD with backlight that changes color according to alarm condition
- Calibration due date notification
- 3 Wires for 4-20 mA and RS485 ModBus output
- Infrared remote programmer for settings, calibrations and adjustments
- Error codes for easy troubleshooting
- Recoverable factory settings
- Overrange protection, reverse polarity protection
- IP-67 rating
- IECEx certification

## **User Interface**

The VOXI user interface consists of one large LCD Display showing the gas concentration, a power status LED, alarm LEDs, and a fault indicator LED. Calibration is performed and operating parameters are entered using a handheld IR remote programmer.



## Installation

### WARNINGS!

- The VOXI EC has CNEX and IECEx certifications for use in hazardous gas locations. Check for certification requirements before installing.
- The VOXI EC has NO HAZARDOUS GAS CERTIFICATION when used with 16/3SOOW cable for oil and water.
- Before installation, ensure that all power is disconnected.
- Before removing the monitor cover for service, disconnect the power supply and ensure that the area free of combustible gases and vapors.
- For European locations, installation must comply with EN-60079-14.
- The instrument should be calibrated after installation before initial use and checked by exposing it to a known concentration calibration gas on a regular basis.
- Remove the sensor only if necessary for repair. Zero and span calibration are required once the sensor is removed and re-inserted or replaced.

## Mounting

### Mounting Location

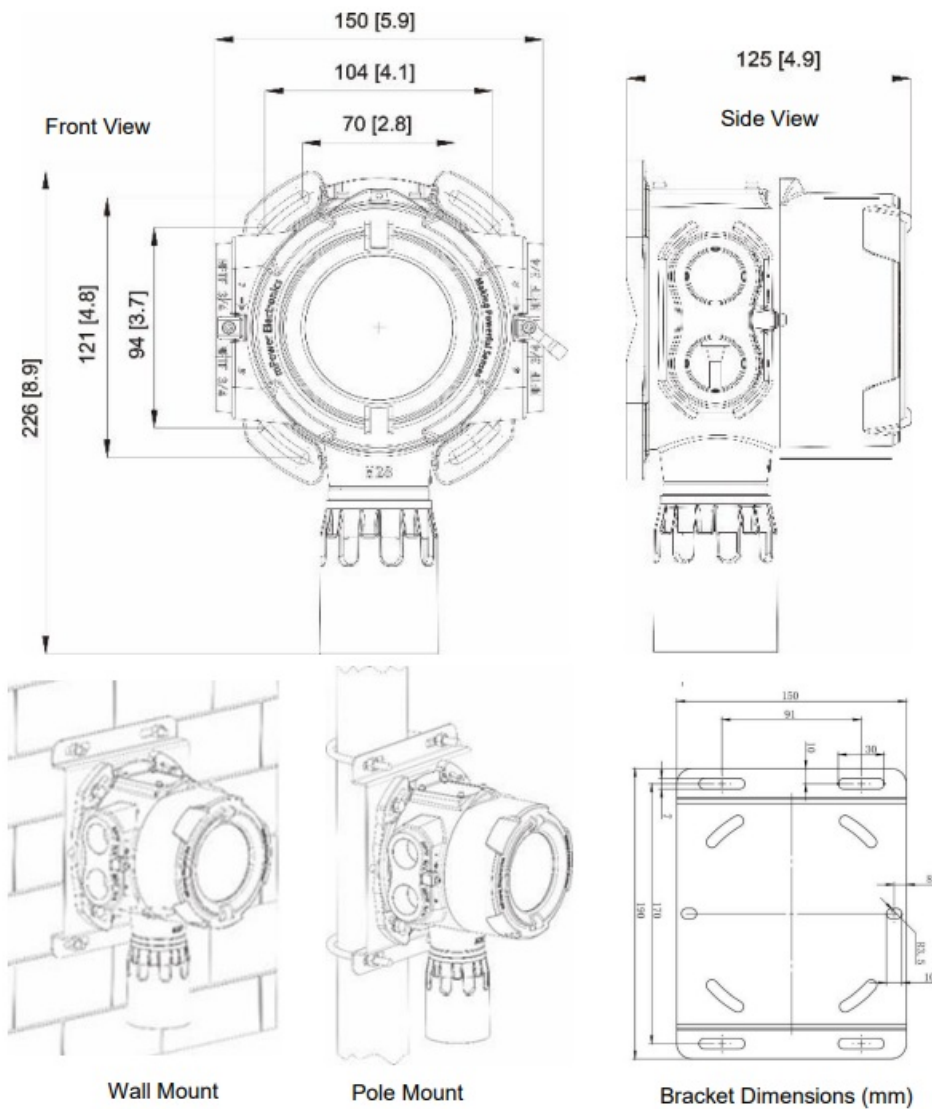
Because the VOXI EC samples by diffusion, it should be installed directly in the area to be measured.\*1 For an

entire room to be monitored, there is a reliance on good air circulation within the room, since the VOXI can only measure in the immediate vicinity of its inlet. If the VOXI must be mounted remotely, the gas must be pumped to the inlet because it has no sampling pump of its own.

## Mechanical Mounting Options

The VOXI EC is designed for wall mount or pole mount using the screw holes provided, centered 5.25 inches or 134 mm apart. An optional mounting bracket (P/N M024-3003-000) is available that allows the unit to be offset about 1 cm from the wall or pole. If mounted outdoors, ensure that the gas inlet is directed downwards and the raincap is installed to minimize the chance of precipitation entering the sensor inlet. The shape and dimensions of VOXI are shown in the figure below:

\*1 Future VOXI EC versions that have certifications will be able to be installed and operated in hazardous-gas locations, but because the housing cannot be opened for service in the presence of flammable gases, the VOXI EC is easier to maintain if installed in a non-hazardous location or an area that can be vented to remove hazardous gases before opening the housing.



## Rain Cap

If mounted outdoors, the rain cap should be installed to reduce the chance of precipitation ingress. If mounted indoors, the rain cap may be removed.



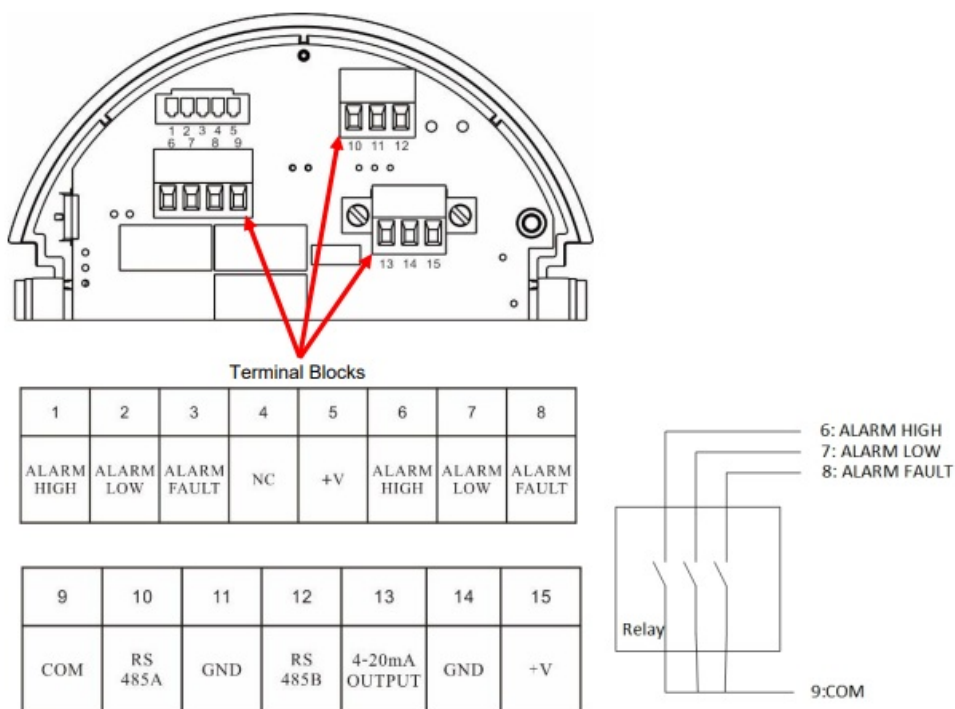
## Electrical Connections

### Internal Wiring

Four openings are provided in the explosion-proof housing, covered by hex-head plugs which can be removed to attach conduit for remote wiring, alarm beacon, antenna, and/or other wire connections. For internal connections, unscrew and remove the cover by first loosening the lock screw located on the side, using an Allen wrench. Pinch the buckles on both sides of the instrument assembly to release and then lift it out. Unplug the sensor plug from the PC board.



The schematic below shows the internal wiring connections. Insert the wire through the conduit hole and connect to the corresponding pin numbers of the three terminal blocks on the bottom of the assembly. These blocks accept 12AWG to 24AWG wire (0.2 to 4.0 mm<sup>2</sup>). Input power requirements are <5W, 12-30 VDC and should be connected between Terminals 14-GND and 15-V+.



Alarm outputs on Terminals 6-9 are normally-open dry contacts that close on alarm. The 4-20 mA output should be connected to Terminals 13 and 14. RS485 should be connected to terminals 10 & 12, and terminal 11 is for the RS485 shielding line. The +V terminals 5 and 15 are equivalent and internally connected, as are GND terminals 11 and 14.

### Grounding

The internal ground point is shown in the left figure below. An external ground wire (AWG11 recommended) should be connected to the VOXI housing (right figure below).



## Maximum Wiring Length

The maximum signal transmission distance can be estimated from the resistance of the shielded cable, allowing for a maximum of 150  $\Omega$ , as shown below (actual maximum distance may vary).

| Cross-sectional Area |     | Resistance ( $\Omega$ /yd) |        | Maximum Distance (miles ) |
|----------------------|-----|----------------------------|--------|---------------------------|
| mm <sup>2</sup>      | AWG | Wire                       | Loop   |                           |
| 1.0                  | 17  | 0.0165                     | 0.0329 | 2.6                       |
| 1.5                  | 15  | 0.0110                     | 0.0220 | 3.9                       |
| 2.5                  | 13  | 0.0067                     | 0.0135 | 6.3                       |

## WARNING!

The VOXI EC has NO HAZARDOUS GAS CERTIFICATION when used with 16/3SOOW cable for oil and water.

## Baseline 4 mA Signal Adjustment

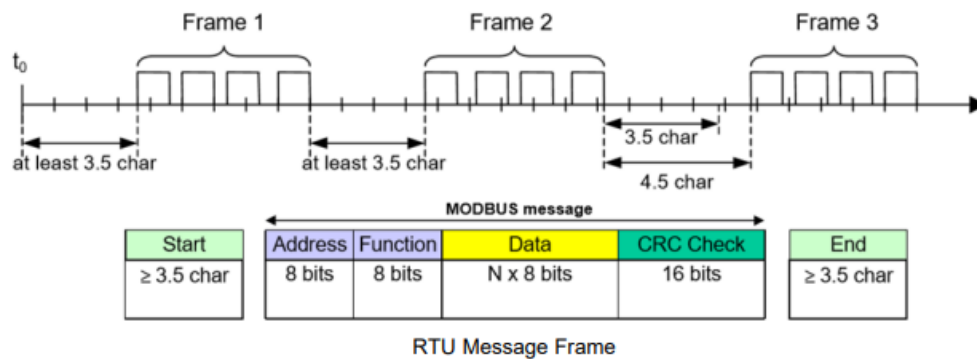
If sending the 4-20 mA signal to a remote controller, during the field installation the VOXI EC analog output should be adjusted. See VOXI EC Field Service section below for procedures.

## MODBUS Message RTU Framing

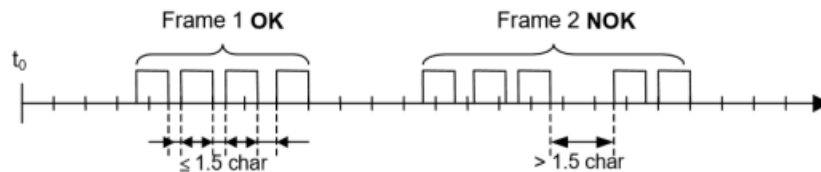
The VOXI uses RTU framing for MODBUS messages. The following is an excerpt of the MODBUS over Serial Line Specification and Implementation Guide v1.02 (Dec.2006) with more information available at <http://www.modbus.org/> and <http://www.modbus.org/specs.php> :

A MODBUS message is placed by the transmitting device into a frame that has a known beginning and ending point. This allows devices that receive a new frame to begin at the start of the message, and to know when the message is completed. Partial messages must be detected and errors must be set as a result. In RTU mode, message frames are separated by a silent interval of at least 3.5 character times. In the following sections, this time interval is called t<sub>3,5</sub>.





The entire message frame must be transmitted as a continuous stream of characters. If a silent interval of more than 1.5 character times occurs between two characters, the message frame is declared incomplete and should be discarded by the receiver.

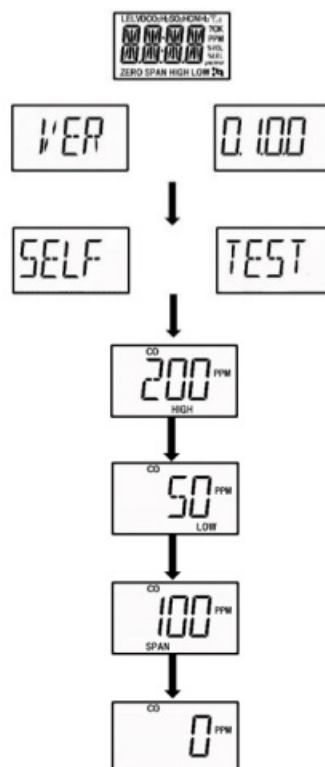


Remark: The implementation of RTU reception driver may imply the management of a lot of interruptions due to the t1.5 and t3.5 timers. With high communication baud rates, this leads to a heavy CPU load. Consequently, these two timers must be strictly respected when the baud rate is equal to or lower than 19200 Bps. For baud rates greater than 19200 Bps, fixed values for the 2 timers should be used: it is recommended to use a value of 750  $\mu$ s for the inter-character time-out (t1.5) and a value of 1.750 ms for inter-frame delay (t3.5)

## Operation

### Standard Operation

Once installed and power is turned on, the VOXI EC cycles through a start-up sequence (below).



After start-up, the VOXI EC samples the gas by diffusion and runs continuously to measure the toxic gas (or

oxygen), display the concentration readout and any alarms, and send any output and alarm signals to external devices. When an alarm level is exceeded, the Alarm LED flashes and the display backlight changes color.

## Programming using Hand-held Remote

Configuring and calibrating the VOXI EC is done using a handheld remote programmer. There is no magnetic key or other means of programming the VOXI EC directly. Communication with the transmitter functions from up to 3 m (10 ft) distance when directed straight at the transmitter display instead of from an angle.

### WARNING!

- VOXI EC monitoring is turned off during communication with external devices.
- Perform programming and calibrations only during times known to be free of toxic or combustible gases and vapors.

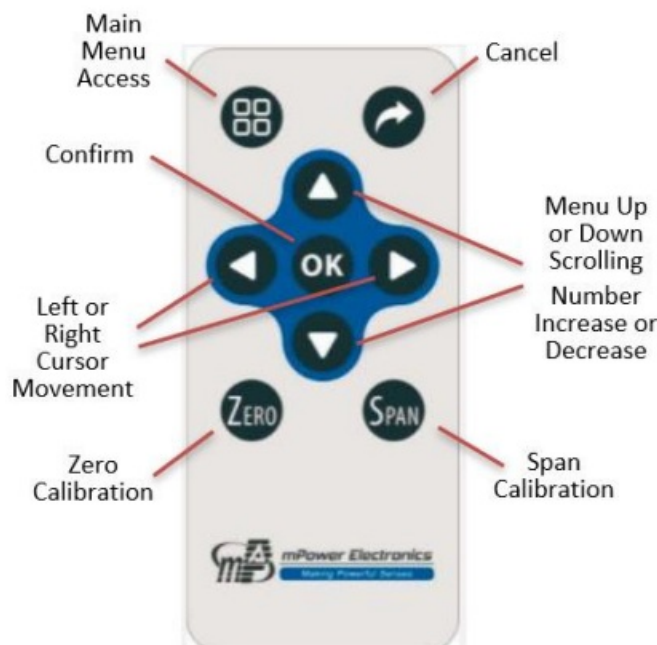
## Battery Installation

The remote programmer uses a CR2025 3V battery or equivalent. To remove or replace the battery, place the unit face down, push the retaining hook inward and slide out the battery holder



## User Interface

Press the Main Menu Access button on the Remote Programmer to display the user interface on the VOXI LCD. Program operations can be selected using the cursor movement arrows. Short-cut operations can be conducted using the Zero and Span buttons to quickly perform routine zero and span calibrations. The firmware is factory-set and currently cannot be changed by the user.



## Navigating Menus and Sub-menus

Press the Main Menu Access button and use the Up and Down arrows to scroll through the menu. Use the Right and Left arrows to enter or exit a menu item. When entering numerical values, use the Left or Right arrows to move the cursor, and the Up and Down arrows to increase or decrease the values. When the cursor is moved to the "OK", press OK to save or enter. To exit a sub-menu, press the cancel key. To exit the Main Menu, scroll down to the EXIT screen and press OK. The display will also automatically return to concentration readings after about a minute of non-use.

Enter the menu:



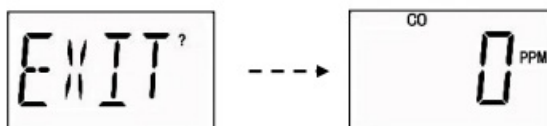
Enter the password and press OK:



Scroll through the menu:



Exit the menu:



## BASIC and ADVANCED Menus

### There are two menus

- Basic Menu is accessed using default Password 0000. This allows basic field operations such as calibration, setting alarm levels, and communication with PC for firmware upgrades.
- Advanced Menu is accessed using default Password 8888. This allows access to additional advanced features such as changing passwords, changing concentration units, setting location ID, etc.

### The Basic Menu and sub-menus are listed below

| Display     | Main Menu                                      | Sub-Menu 1 | Sub-Menu 2 | Sub-Menu 3     |
|-------------|--|------------|------------|----------------|
| <b>CAL</b>  | Calibration                                    | Zero Calib | Span Calib | Set Span Value |
| <b>ALM</b>  | Set Alarm Limits                               | Low Alarm  | High Alarm |                |
| <b>COMM</b> | Communicate to PC (Factory & Service use only) |            |            |                |
| <b>EXIT</b> | Exit   |            |            |                |

The table below lists all Advanced Menus and their sub-menus.

| Display     | Main Menu                                      | Sub-Menu 1      | Sub-Menu 2       | Sub-Menu 3     |
|-------------|--|-----------------|------------------|----------------|
| <b>CAL</b>  | Calibration                                    | Zero Calib      | Span Calib       | Set Span Value |
| <b>ALM</b>  | Set Alarm Limits                               | Low Alarm       | High Alarm       |                |
| <b>CF</b>   | Set Correction Factor                          |                 |                  |                |
| <b>PSWD</b> | Set Password                                   | Basic Password  | Adv. Password    |                |
| <b>UNIT</b> | Set Concentration Unit                         |                 |                  |                |
| <b>BPS</b>  | Set Baud Rate                                  |                 |                  |                |
| <b>4_20</b> | 4-20 mA Adjust                                 | 4 mA Adjustment | 20 mA Adjustment |                |
| <b>SITE</b> | Set Site ID                                    |                 |                  |                |
| <b>RST</b>  | Reset to Default Values                        |                 |                  |                |
| <b>COMM</b> | Communicate to PC (Factory & Service use only) |                 |                  |                |
| <b>EXIT</b> | Exit Programming                               |                 |                  |                |

The Advanced Main Menu path is shown below



#### Calibration (CAL)

Perform zero and span calibrations. See the following Calibration Section for details.

#### Alarm (ALM)

Set the numerical values for the low and high alarm limits.

#### Correction Factor (CF)

A correction factor can be used when the calibration gas is different from the measured gas.

#### Password (PSWD)

Change the passwords for either Basic or Advanced configurations.

#### Unit (UNIT)

Gas concentration units can be set to ppm (parts per million) or  $\mu\text{mol/mol}$  (micromole per mole). For oxygen the

only unit is % by volume.

### **Baud Rate (BPS)**

The Baud Rate options are 4800, 9600 and 19200 bps and should be set to match that used in the MODBUS messaging protocol.

### **Analog Output (4\_20)**

If sending the 4-20 mA signal to a remote controller, during the field installation the VOXI analog output baseline should be adjusted. Read the current on terminal 13 using an ammeter while adjusting the raw counts. The default values are 530 counts for 4 mA (0 ppm) and 2600 counts for 20 mA. No gas needs to be applied during these operations.

### **Site ID (SITE)**

Label the station or location.

### **Reset (RST)**

Reset all parameters to their default values.

### **Communication (COMM)**

Communication to PC for firmware upgrade, sensor firmware change, Modbus setting, etc. This feature requires special software currently available only to authorized service centers.

## **Default Settings**

| Sensor | Span Value‡         | Low Alarm‡ | High Alarm‡ |
|--------|---------------------|------------|-------------|
| O2     | 0 %Vol O2 (100% N2) | 19.5 %Vol  | 23.5 %Vol   |
| CO     | 1000 ppm            | 35 ppm     | 50 ppm      |
| H2S    | 25 ppm              | 10 ppm     | 20 ppm      |
| SO2    | 5 ppm               | 5 ppm      | 10 ppm      |
| HCN    | 10 ppm              | 5 ppm      | 10 ppm      |
| NH3    | 100 ppm             | 25 ppm     | 50 ppm      |
| Cl2*   | 10 ppm              | 0.5 ppm    | 1 ppm       |
| NO*    | 25 ppm              | 10 ppm     | 20 ppm      |
| NO2*   | 5 ppm               | 3 ppm      | 5 ppm       |
| PH3*   | 5 ppm               | 1 ppm      | 4 ppm       |
| ETO*   | 20 ppm              | 10 ppm     | 20 ppm      |


Default settings subject to change – always check instrument. \*Check sensor availability

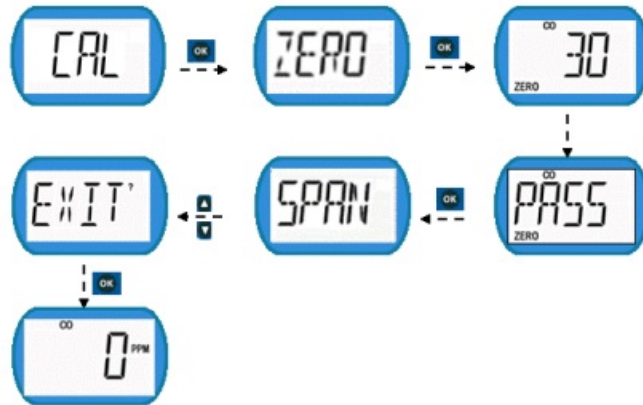
## **Calibration**



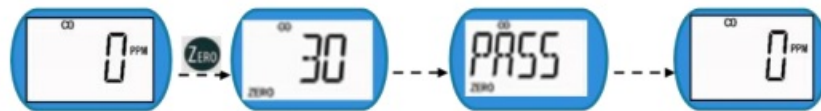
1. Before calibration, it is good practice to examine the inlet filter and replace as needed.
2. Zero Calibration: Scroll to the CAL ZERO menu. Alternatively, press the short-cut “Zero” button on the programmer. Supply clean air to the inlet. If the VOXI EC is mounted in an area where ambient air contains

detectable concentrations of gases, attach the calibration cup and supply clean gas (air) directly from a cylinder fitted with a fixed-flow regulator of about 0.3-0.6 LPM. If no calibration cap is available, the rain cap may be used. Connect the zero gas directly to the rain cap.

3. For Oxygen sensors, the zero gas is ambient air (20.9% O<sub>2</sub>) and 0% O<sub>2</sub> is set using pure N<sub>2</sub> during span calibration (see below)
4. Click 'OK' to initiate the 30-second count-down timer, after which Pass or Fail is displayed. Click 'OK' to move to Span or continue to Exit.
5. To abort, press  during the count-down
6. Span Calibration: Scroll to the CAL SET menu and ensure that the Span Gas setting matches the concentration of the gas in the calibration cylinder.




Or, using the short-cut Zero button on the remote programmer:



7. For Oxygen sensors, set the span value to 0% O<sub>2</sub> to calibrate with pure N<sub>2</sub>. This N<sub>2</sub> span must be done at least once upon installation. The default span setting is 18% O<sub>2</sub>, but this reading (or any other value except 0% O<sub>2</sub>) is not used for calibration, only as calibration check to ensure it reads within typical error limits. The 0% O<sub>2</sub> calibration need not be done frequently because it typically does not change significantly for the life of the sensor, and small changes do not affect readings in the breathing are range near 20.9%. Thus, an 18% O<sub>2</sub> calibration check after a 20.9% air zeroing is usually adequate, unless working in inert gases near 0% O<sub>2</sub>.
8. Scroll to the CAL SPAN sub-menu. Alternatively, press the short-cut "Span" button on the programmer. Attach the calibration cup and supply span gas directly from a gas cylinder fitted with a fixed-flow regulator of about 0.3-0.6 LPM to the inlet. Click 'OK' to initiate the count -down timer, after which Pass or Fail is displayed. The count-down time depends on the type of sensor and ranges from about 45 to 180 seconds.



9. To abort, press  during the count-down.
10. Use of fixed-flow regulators below 0.3 LPM or above about 0.6 LPM will cause poor calibration. A regulator with flow higher than 0.6 LPM can be used if an open T fitting is placed in line between the regulator and VOXI EC inlet to allow excess gas flow to escape without being forced through the instrument.
11. The Calibration Interval should be at least every 6 months. However, the interval must be defined by the user and may be shorter because it depends on the application and local conditions. We recommend starting with

weekly bump tests to check the response of the sensor and need for filter changes, and then increasing the length of time between checks and calibrations as experience is gained in the application. In all cases calibration should be performed at least every 180 days. See mPower TA Note 3 for more details.

## Maintenance

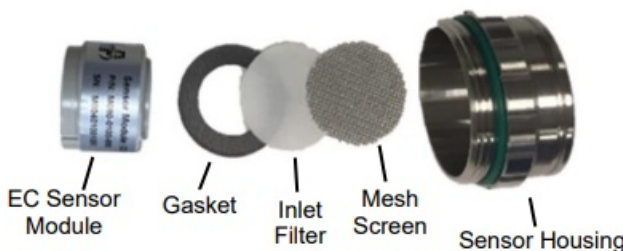
The VOXI EC requires regular filter replacement and possibly sensor replacement if used in areas of high dust or condensation. Sensor life is typically 1-3 years depending on sensor type.

### Filter Replacement

If the inlet filter is dirty or clogged, discard it and replace it with a new filter. Dirty filters can be recognized by symptoms such as:

- Visible filter discoloration
- Visible moisture accumulation
- Weak sensor response

We recommend filter replacement every month, and more frequently, possibly weekly, when used under very dusty or wet conditions. Remove the rain cap (if used) and unscrew the metal sensor housing. Remove the mesh screen and filter, replace the old filter with a clean one, and reassemble the mesh and sensor housing.



**IMPORTANT!** The VOXI EC should not be operated without a filter. Operation without a filter may damage the instrument and shorten the life of the sensor.

### Sensor Replacement

#### **WARNING!**

Replace sensor only in non-hazardous environments.

Remove the rain cap, metal sensor housing, and other components as described above for filter replacement. Grasp the grey sensor module and carefully pull out to remove the sensor. Insert a new sensor module, and reassemble in reverse order.

**IMPORTANT!** Always perform a full calibration after removing a sensor

### LCD or Circuit Board Replacement

The entire LCD/Circuit board assembly must be replaced as a unit as they cannot be separated, as follows:

1. Open the housing and remove the cover and circuit board/LCD assembly as described in Section 3 for wiring.  
Disconnect the wiring plugs



2. Replace the Circuit Board/LCD assembly and re-assemble in reverse order.



## Troubleshooting

| Problem                  | Possible Reasons & Solutions   |
|--------------------------|--|
| Error Code E001          | <b>Reason:</b> Firmware does not support model type<br><b>Solution:</b> Install the correct firmware   |
| Error Code E002          | <b>Reason:</b> Sensor Error<br><b>Solution:</b> Check or replace the sensor  |
| Error Code E003          | <b>Reason:</b> Different (supported) sensor type installed<br><b>Solution:</b> Install the original type sensor. Or if type change is desired, restart power and confirm sensor type change upon queries SEN CHG? and SURE?  |
| Error Code E004          | <b>Reason:</b> Sensor is unsupported or not match factory setting<br><b>Solution:</b> Replace sensor with a supported type or upgrade to firmware that supports the sensor   |
| Error Code E005          | <b>Reason:</b> Calibration data invalid and no default factory calibration data<br><b>Solution:</b> Calibrate properly or return unit for factory calibration  |
| Readings abnormally High | <b>Reasons:</b><br>Dirty filter(s). Dirty sensor module. Excessive moisture or water condensation. Incorrect calibration. Cross-sensitive gases present.<br><b>Solutions:</b><br>Replace filter(s). Clean or replace sensor module. Calibrate the unit. Install in area without cross-sensitive gases. |
| Readings abnormally Low  | <b>Reasons:</b><br>Dirty filter(s). Weak or dirty sensor. Incorrect calibration.<br><b>Solutions:</b><br>Replace filter(s). Replace sensor module. Calibrate the unit.   |
| Lost password            | <b>Solutions:</b> Call Technical Support at <a href="tel:408-320-1266">408-320-1266</a>  |



For replacement parts please contact an authorized mPower Service Center.

## 4-20 mA Alarm Signals

To aid in troubleshooting, in addition to display text and LEDs, the 4-20 mA output identifies some alarms, as follows

| 4-20 mA Signal | Condition  |
|----------------|--|
| 0 mA           | Off or booting up during the start-up sequence.  |
| 1 mA           | Warm up mode (for certain sensors like IR or some reactive toxic gases)  |
| 2mA            | Any "FAULT" condition that may cause a bad output from the sensor, or potential threat to impact sensor output, including:<br><br>1) Hardware failures: including pump, sensor, any other hardware failures. Low input voltage, main power lost (if with backup battery), sensor NEG, sensor removed, etc.<br><br>2) CAL failure |
| 3mA            | Transmitter is in menu, including in "Cal" mode during Zero or Span Cal  |
| 4~20mA         | 4mA: Sensor reading 0<br><br>20mA: Sensor reading full scale   |
| 22mA           | Over-range fault when reading is 10% over full scale.  |

NOTE: If a Cal Failure has been corrected with a good calibration after the cause is corrected, everything should proceed normally. If parts are replaced while the transmitter is off, it should still be in Cal Failure until a good calibration is performed after restart. Exception: If the sensor is replaced and the calibration data are stored on the sensor microprocessor, then it will likely reboot with no fault. However, it will still be preferable to perform a good calibration for the local ambient atmosphere and conditions

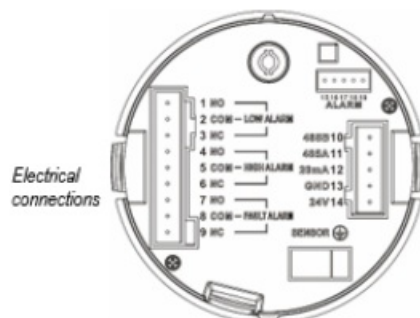
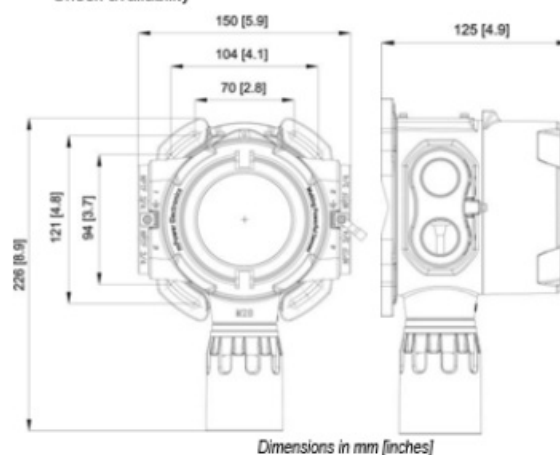
## Technical Specifications

## Detector Specifications /Sensor Options

|                       |   |
|-----------------------|---|
| Size                  | 8.9 x 5.9 x 4.9 in (226 x 150 x 125 mm)   |
| Weight                | 5.7 lbs. (2.6 kg)   |
| Sensors               | Electrochemical sensor modules  |
| Calibration           | Two-point calibration (zero & span)   |
| Response Time         | 30 to 120s ( $t_{90}$ varies with sensor type)  |
| Temperature           | -40° to +131°F (-40° to +55°C)<br>-40° to +158°F (-40° to +70°C) intermittent   |
| Humidity              | 10% to 95% Relative Humidity (non-condensing)   |
| Pressure              | 86 to 106 kPa (0.85 to 1.05 atm)  |
| Power                 | <1W; 10-30 VDC supply   |
| Sampling              | Diffusion   |
| Display               | 4-digit segmented LCD   |
| Configuration         | Via remote infrared programmer  |
| Outputs               | Analog: 4-20 mA (3 wires)<br>Digital: RS-485<br>ModBus<br>3 Relays<br>Wireless ISM 915MHz (optional) 1 mile line of sight |
| Alarms                | LCD & LED flashing,<br>external strobe and horn (optional)  |
| Housing               | Explosion-proof aluminum alloy  |
| Housing Entries       | 4 Conduit entries 3/4" NPT<br>1 Port M28x1 fitting  |
| Installation          | Pipe bolt and wall mount  |
| IP Rating             | IP-67   |
| EMI/RFI               | Compliant with EMC Directive 2014/30/EU   |
| Safety Certifications | IECEx Ex db ia IIC T6 Gb<br>Ex ia tb IIIC T80°C Db<br>CNEX Ex d IIC T6  |
| Installation          | Pipe holding, wall mount  |
| Warranty              | 2 Years on CO & H <sub>2</sub> S sensors, 1 year on others  |

| Sensor                               | Range      | Resolution |
|--------------------------------------|------------|------------|
| O <sub>2</sub> (Oxygen) Lead Free    | 0-30%Vol   | 0.1%Vol    |
| CO (Carbon Monoxide)                 | 0-500 ppm  | 1 ppm      |
|                                      | 0-1000 ppm | 1 ppm      |
|                                      | 0-2000 ppm | 1 ppm      |
| H <sub>2</sub> S (Hydrogen Sulfide)  | 0-200 ppm  | 0.1 ppm    |
|                                      | 0-1000 ppm | 1 ppm      |
| SO <sub>2</sub> (Sulfur Dioxide)     | 0-20 ppm   | 0.1 ppm    |
| H <sub>2</sub> (Hydrogen)            | 0-1000 ppm | 1 ppm      |
| HCN (Hydrogen Cyanide)               | 0-100 ppm  | 0.1 ppm    |
| NH <sub>3</sub> (Ammonia)            | 0-100 ppm  | 1 ppm      |
|                                      | 0-1000 ppm | 1 ppm      |
| CO (H <sub>2</sub> -resistant) *     | 0-1000 ppm | 1 ppm      |
| NO (Nitric Oxide) *                  | 0-250 ppm  | 1 ppm      |
| NO <sub>2</sub> (Nitrogen Dioxide) * | 0-20 ppm   | 0.1 ppm    |
| Cl <sub>2</sub> (Chlorine) *         | 0-50 ppm   | 0.1 ppm    |
| PH <sub>3</sub> (Phosphine) *        | 0-20 ppm   | 0.01 ppm   |
|                                      | 0-1000 ppm | 1 ppm      |
| ETO (Ethylene Oxide) *               | 0-100 ppm  | 1 ppm      |

\* Check availability



## Standard

- Gas Transmitter with Sensor installed
- Rain Shield & Calibration Cap

## Infrared Remote Programmer

- Mounting Parts
- Quick Start Guide
- Calibration Certificate

## Optional

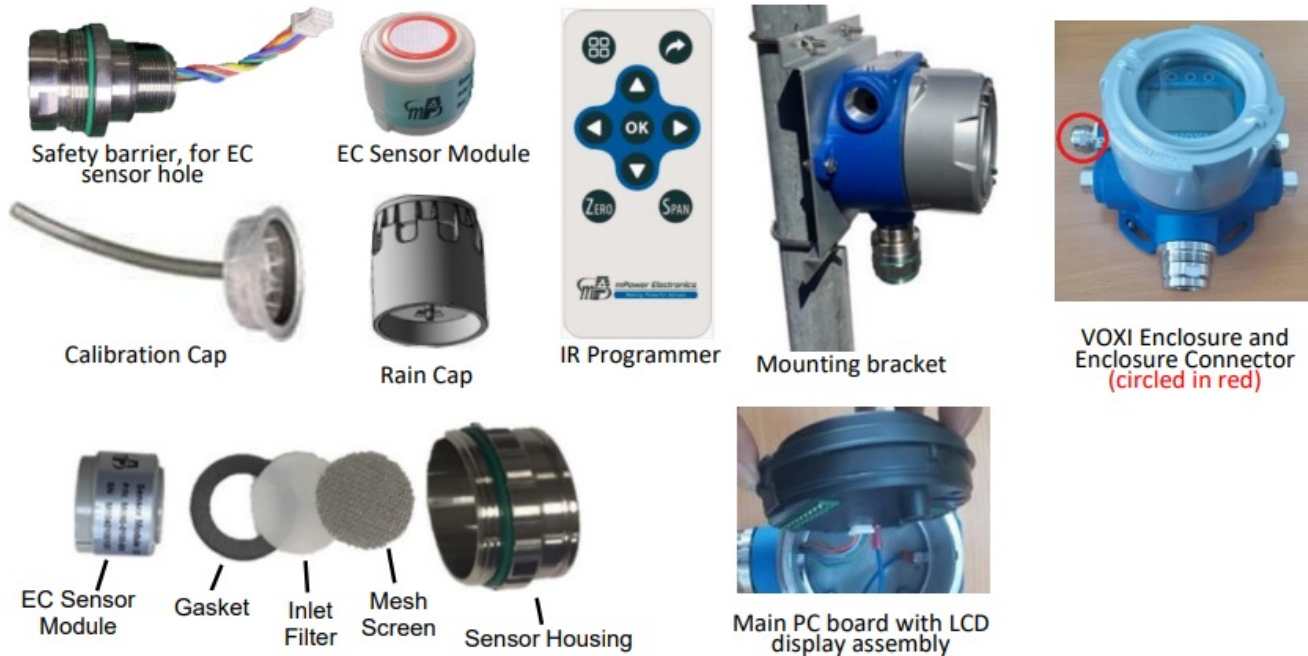
- Strobe and Horn with 3/4" NPT Fitting

All specifications are subject to change without notice. Please check for updates at [www.mpowerinc.com](http://www.mpowerinc.com)

## Replacement Parts

| Description   | Part Number           | List Price<br>* |
|---|-----------------------|-----------------|
| IR Bluetooth Remote Programmer MP220 for VOXI EC/LEL                            | M024-0901-000         | \$60.00         |
| Mounting Kit for VOXI EC/LEL  | M024-3003-000         | \$60.00         |
| Rain/Mud/Splash Cap for VOXI EC/LEL   | M024-3006-000         | \$15.00         |
| Calibration Cap for VOXI EC/LEL   | M024-3005-000         | \$10.00         |
| Inlet Filters for VOXI EC (pack of 10)  | M024-2017-010         | \$20.00         |
| Metal mesh screens for VOXI EC (pack of 10)                                     | M024-2016-010         | \$35.00         |
| Rubber sensor gaskets for VOXI EC (pack of 10)                                  | M024-2018-010         | \$10.00         |
| Sensor housing cap for VOXI EC (with O-Ring)                                    | M024-3007-000-SR<br>P | \$30.00         |
| Enclosure , explosion-proof, for VOXI EC/LEL incl. housing bottom, top & O-ring | M024-3008-000         | \$200.00        |
| Enclosure connector, 3/4" NPT for VOXI EC/LEL                                   | M490-0146-000         | \$20.00         |
| Safety Barrier, for VOXI EC, with EC sensor cable                               | M024-3001-000-SR<br>P | \$120.00        |
| Replacement circuit board/LCD Assembly for VOXI LEL                             | M026-3001-000         | \$250.00        |
| Replacement circuit board/LCD Assembly for VOXI EC                              | M024-3002-000         | \$250.00        |
| Power Supply, 120-240VAC to 24-VDC, 1 W, with US wall plug                      | M500-0039-000         | \$35.00         |

Prices subject to change. Check the latest Price Guide for current pricing



## Technical Support and mPower Contacts

### mPower Electronics Inc.

- 2910 Scott Blvd. Santa Clara, CA 95054
- Phone: [408-320-1266](tel:408-320-1266)
- Fax: [669-342-7077](tel:669-342-7077)
- [info@mpowerinc.com](mailto:info@mpowerinc.com)
- [www.mpowerinc.com](http://www.mpowerinc.com)

## Documents / Resources

|  |   |
|--|---|
|  | <p><a href="#">mPowerinc MP840 Fixed Electrochemical Gas Detectors</a> [pdf] User Guide<br/> MP840 Fixed Electrochemical Gas Detectors, MP840, Fixed Electrochemical Gas Detectors, Hemical Gas Detectors, Gas Detectors, Detectors</p> |
|--|---|

## References

- [User Manual](#)

[Manuals+](#). [Privacy Policy](#)

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