CS-RS

MONOXIVENT®
Source Capture Systems

Remote Sensor User Manual

Gas detection device

E3Point Network Gas Monitor User Manual

Model Key:
Monoxivent - CS-RS = Honeywell E3Point

Installation questions:

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Symbol Definitions

The following table lists the symbols used in this document to denote certain conditions:

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user, often in terms of performing a task.
	REFERENCE _ INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. CAUTION: Symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING: Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death. WARNING symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.

Table of Contents

Introduction

E^{3}Point is: **E**nergy Management, **E**fficiency, and **E**conomic value.

E^{3}Point is a toxic or combustible gas detection system that integrates the best functionalities from well-known Honeywell Analytics products, such as the 201T and 301M), Although new and innovative, E^{3}Point is still compatible with the features offered in these products.

The E^{3}Point gas detection system combines a gas sensor (electrochemical or catalytic type), a control unit, a buzzer, a relay, and RS-485 in one reliable and robust product. The polycarbonate housing is resistant to rust, dents and corrosion.

The E3Point network platform supports different protocols over an RS-485 link, such as Modbus or BacNet MS/TP master. It is well suited for commercial use in certain outdoor environments, and indoor environments, such as parking garages and mechanical rooms.

The E^{3}Point can be mounted on a wall, in a standard electrical box or on a duct using a custom duct mount enclosure. Installation is both economical and efficient because it is achieved in 3 easy steps (mounting, wiring and power-up). Units are shipped with custom network diagrams, indicating the most effective places to mount units within the gas detection or BAS network.

Installation

Locating the Sensor

Since the E³Point units are shipped with custom network diagrams that indicate best locations for installation, the remaining considerations are installation height and detection objectives. If the primary application is the fastest possible leak detection, mount the sensor near the potential leak sources. As a result, the indicated concentration may not be representative of personnel exposure and easy access for the required calibration and maintenance could be compromised.

Air Currents: If there are fans, wind, or other sources of air movement, gases may tend to rise or collect in certain areas of a facility. The local air currents should be assessed to aid in selecting the sensor location. Air convection can often be more important in determining gas concentration areas than factors of Vapor Density.

Gas Emission Sources: As a rule, at least one sensor should be located in close proximity to each point where an emission is likely to occur.

> ⚠ **CAUTION:** Because each sensor can only "report" what it is seeing at the moment, it is very important that the sensor be located where leaks are most likely to occur.

Installation Height

Detected Gas		Relative Density (air = 1)	Installation Height
CO	Carbon monoxide	0.968	1–1.5 m (3–5 ft.) from floor
H_2S	Hydrogen sulfide	1.19	30 cm (1 ft.) from floor
*NO_2	Nitrogen dioxide	1.58 (cold)	30 cm -1 m (1–3 ft.) from ceiling
O_2	Oxygen	1.43	1–1.5 m (3–5 ft.) from floor
COMB	Most combustibles are heavier than air; methane and hydrogen are exceptions. Sensors for gases that are heavier than air should be installed approximately 30 cm (1 foot) from the floor. For combustibles that are lighter than air, sensors should be installed 30 cm (1 foot) from the ceiling, close to the potential leak source.		

* May differ in certain applications. Hot NO_2 from exhaust systems is lighter than ambient air.

> ⚠ **WARNING:** Some materials such as, but not limited to, tetraethyl lead, silicones, some sulfur, phosphorus, and chlorinated compounds may have a poisoning effect resulting in a loss of sensitivity.

Wall Mounting

Mounting is usually done on concrete walls or columns, but the unit can be mounted on any vertical surface. The housing is designed with spacers on the back to allow moisture to flow behind the housing without affecting the unit.

- Mounting holes are located inside the housing. Open the unit to access mounting holes.

- Drill and mark the holes, as shown:

    - Width 11.1 cm (4 3/8") apart (if mounting directly to wall)

    - Height 8.3 cm (3.281")
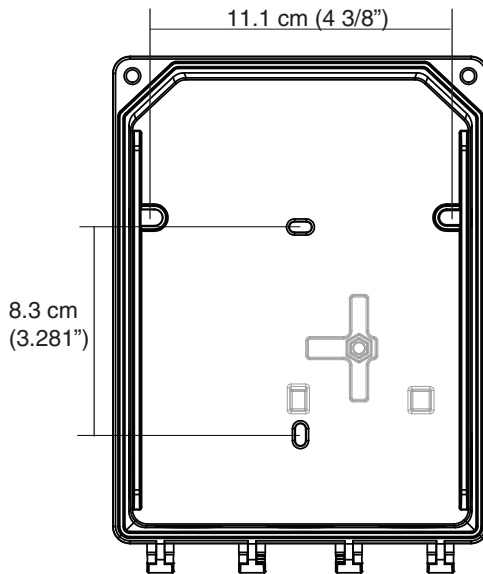
Figure 1. Unit Dimensions

- Pre-drill mounting holes from the back of the unit as needed.

- Securely mount the unit using the appropriate screws and anchors. The unit is designed to use #6 screws. Tighten to 8.7 in-lb (1 Nm) maximum.

- Close the unit's cover and tighten screws to 29.7 in-lb (3 Nm) maximum.

- Do not remove PC board when removing knockouts.

- Knockout on the back of the unit is not for conduit entry.

General Mounting Considerations:

- Must be easily accessible for calibration and maintenance.
- Mount the sensor close to the potential leak source for fastest possible leak detection.
- If personnel protection is the primary application, mount in the "breathing zone" (1–1.5 m from the ground, within the range of a person's respiration area).
- Protect sensor from water, excessive humidity, and wash-down.
- Take air movement and ventilation patterns into account.
- To prevent electrical interference, keep sensor and wire runs away from mercury vapor lights, variable speed drives, and radio repeaters.
- Protect sensor from physical damage (fork lifts, etc.).
- Do not mount the sensor over a door in a refrigerated area.
- For highly critical locations, more than one sensor should be installed in each room.

Very Important:

- **Never** mount sensor flat on a ceiling.
- **Never** mount sensor on a vibrating surface.

Duct Mounting

Special Duct Mount Installation

This option works best for airflows between 500–4000 ft./min.

The E³Point must be duct mounted using the custom box provided with the duct mount version. All of the components housed within the box are factory assembled.
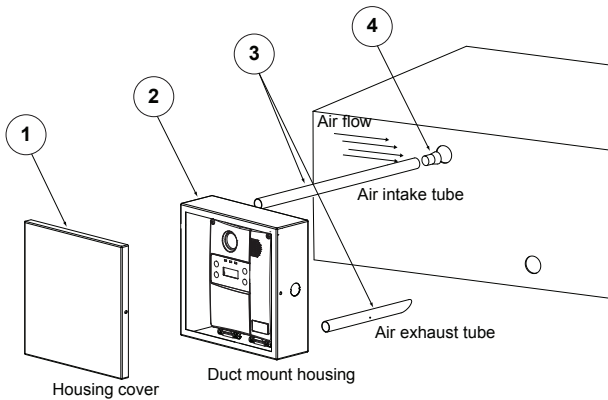
Figure 2. Duct Mounting

1. Select the location for the unit.

2. Measure and mark the holes for intake and exhaust tubes.

3. Drill the holes for the sampling tubes (ensure holes are large enough for the plug).

4. Affix intake and exhaust tubes to the mounting box.

5. Insert the tubes into the holes of the ducting.

> Ensure to orient the air holes on the air intake tube to face the airflow.

6. Screw the mounting box onto the duct.

7. Remove the desired knock out (depending on where cables will enter box) and affix appropriate conduit.

8. Run wiring through conduit and duct mount box to unit and connect wires according to *__Wiring__*.

9. Screw cover onto the E³Point and replace the cover on the mounting box.

Wiring

Guidelines

Electrical wiring must comply with all applicable codes. Operating conditions and site equipment that may be of concern should be discussed with local operating personnel to determine if any special needs should be considered.

Ground the shield at the main control panel. Connect the shield wire in the sensor terminal block labelled **shield**. Tape all exposed shield wire at the sensor to insulate it from the enclosure.

Electrical Power: 24 VDC/VAC nominal, 0.35 amp maximum. Either AC or DC may be connected to the terminal block.

Wire: Signal wiring should be done with #20-24 AWG shielded twisted pair cable Belden 9841 or similar. Network units should have no more than 2,000 ft (600 m) of #22 AWG wire. Smaller gauge sizes are limited by the same resistance limit.

Power wiring should be sized by local codes, but never less than #20 AWG, 120 VAC wiring should be #14 or #12 AWG.

Main Circuit Board Connections
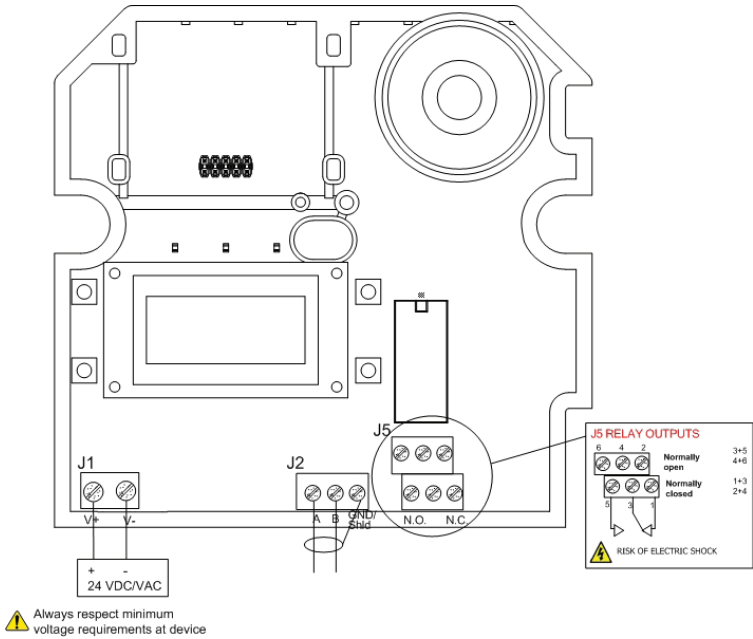
Figure 3. Main Circuit Board Connections

- Connect power wiring to terminal J1

- Connect Communication wiring to terminal J2

- Connect external device (ventilator, strobe, etc) to relay terminal J5

Installation Test

Once the unit has been mounted and all wiring connections are complete, a test of the unit's functions is recommended. It is necessary to access the unit's programming menus to perform the test:

- Power up the unit and allow 5 minutes for the warm-up procedure to complete (allow 15 minutes warm-up for O_2 sensor).

- Press the **enter** key on the front touchpad.

- The LCD displays the Password login screen. See *Password*.

Once in the programming menus, use the arrow key to scroll to the TestMode option. See *TestMode Menu*.

The TestMode menu performs a test of all functions on the unit. All outputs are activated according to their failsafe mode, relay setting, and buzzer setting. All functions are activated simultaneously for a maximum of 3 minutes (or until the user cancels the test) to ensure the unit is operating correctly.

ℹ️	The unit does not detect gas during the TestMode procedure.

Once all functions are confirmed in good working order, the unit is completely functional.

Should any function fail the test, verify that all connections are correctly wired and re-test.

Operation

The E³Point gas detection system is factory configured to conform to specific standards. It is designed to be operational after physical installation and warm-up procedures.

Start-Up Procedure

Before applying power, check all wiring for continuity, shorts, grounds, etc. After power-up, ensure the LEDs below are operational as follows:

Figure 4. E³Point LED

LED	Description	Display Mode
I/O	Power	Always on = Normal operation
		Always off = microcontroller fault or no power
		Blinking (twice per second) = self-test
1	Built-in sensor Alarm A	Always on = Alarm A triggered
		Slow blink = Alarm B/C triggered (1 blink/second)
		Fast blink = Fault (4 blinks per second)
		Always off = normal operation
2	Transmit	Blinks for communication and is always on when transmitting
		Always off = normal operation

When the unit is first powered up, sensors undergo a 5 minute warm-up (15 minutes for the O_2 sensor), during which time the unit displays **Warm-Up**.

Allow the sensor to operate for 12 hours with the enclosure sealed prior to testing the sensors. This will give the sensor time to reach thermal equilibrium to the external and internal temperatures while in operation.

User Interface

The E³Point gas detector is equipped with a 2 line, 8 character LCD screen that displays reading information and serves as an interface for programming functions and calibration.
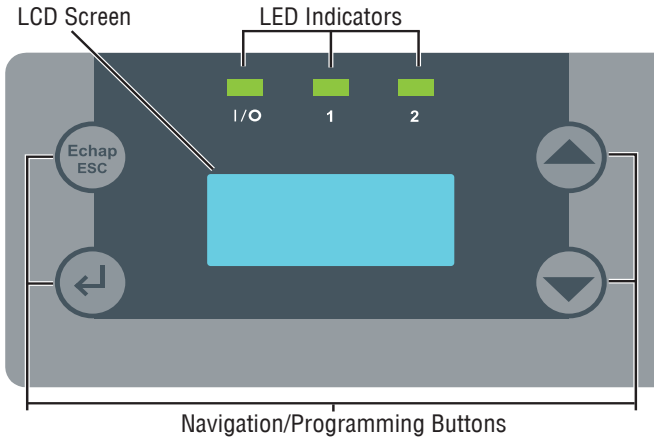

Figure 5. E³Point Buttons

The LCD screen displays the readings in real time, including the type of gas detected, the concentration, and measurement value (% or ppm).

ECHAP ESC	Cancel a modification or exit a menu.
↵	Access the programming menus or confirm a selection.
▲ ▼	Navigate through the menu options or increment or decrement values.

Using the Programming Menus

The programming menus provide a series of options that let you customize your gas detection system. Press the **enter** key to access the programming menus. If no buttons are pressed for 2 minutes, the unit exits programming mode to normal operation.

⚠	**Caution:** Only qualified, knowledgeable personnel should use the programming functions of this unit. Factory settings conform to specific standards (see *Specifications*): any changes made to Alarm Levels may affect manufacturer's stated standards compliance.

Main Menu Options List

Each of the menu options listed provides access to further sub-menus. Consult the following pages of this manual for menu use instructions.

Menu Option	Description
Network	Defines device address, baud rate, BACnet ID, or communication protocol.
Display	Provides a choice of discrete display.
Relay	Defines whether the relays will be latched, failsafe, or activated.
Buzzer	Provides a choice between activated or silenced.
Alarm	Allows configuration of various alarm levels.
Restore	Restores the device's factory configured calibration settings.
Temp	Sets the maximum temperature level.
SetZero	Sets the sensor zero.
SetSpan	Calibrates the sensor span.
TestMode	Simulates events for testing purposes without affecting sensor readings (used during installation).
Memory	Reserved for authorized Honeywell Analytics technicians' only.
Quit?	Exits the programming menus and returns the device to normal operation mode.

Password

Access to the programming menus is password protected. The Password screen displays after enter is pressed.

```
Password
   AA
```

- Press the arrow key (up or down) to change the first letter to **H**.

- Press the **enter** and use the arrow keys to change the second letter to **A**.

- Press **enter** to confirm the password and access the menus.

- Use the arrow keys to scroll through the menu options.

- In the event of an entry error, the unit reverts to normal display mode. Restart the login process.

Network Menu

The Network menu contains several sub-menu options: Address, BaudRate, BACnet ID, and Protocol. Use the arrow keys to scroll to the desired option and press **enter** to select:

```
* Menu *
Network
```

Address: Use the arrow keys to increase or decrease the address value (from 001 to 254 in Modbus or 1 to 127 in BACnet) and press **enter** to confirm the desired address

BaudRate: Use the arrow keys to scroll through predefined baud rates (4800, 9600, 19200, 38400, 57600, 76800) and press **enter** to select.

Only 9600 baud is supported when the Modbus protocol is selected.

BACnetID: Use the arrow keys to increase the value to the desired BACnet ID and press **enter** to confirm.

Protocol: Use the arrow keys to scroll to desired communication rotocol (Modbus, 201T emu, BACnet) and press **enter** to confirm.

Display Menu

The Display menu allows users to select the display language (English or Français) and whether the unit display screen will be in Discrete mode or not. In Discrete mode, the screen powers off after 3 minutes of inactivity (activating the keypad will turn the screen back on).

```
* Menu *
Display
```

- Press **enter** from the main Display menu. The screen displays **Language**, or press an arrow key to display **Discrete**. Press **enter** to select.

- In the Language screen, use the arrow keys to scroll to **Francais** or **English** and press **enter** to select.

```
Display
Language
```

- In the Discrete screen, use the arrow keys to scroll to **Yes?** or **No?** and press **enter** to select.

```
Display
Discrete
```

Relay Menu

The Relay menu allows users to select if the relays will be **Latch**, **Failsafe**, or **Activated**. Press **enter** to access the Relay menu options.

```
* Menu *
Relay
```

- Use the arrow keys to scroll to the desired option and press **enter** to select one of the following four options:

```
Relay
Latch
```

Latch: Keeps relays on even after an event has returned to normal. Use the arrow keys to select **Yes** or **No** and press **enter** to confirm the setting. Once a latched relay is activated, press and hold a keypad button for 5 seconds to return relays to their normal position (if trigger condition has resolved).

Failsafe: Relays will be on in normal conditions but will de-energize during a shutdown or when an alarm is triggered. In the Failsafe menu, use the arrow keys to select either **Yes** or **No** and press **enter** to confirm.

> ℹ️ Because the network controller also controls failsafe settings, it will perform the reverse of any locally configured settings.

Activate: If the unit is configured with the Modbus or BACnet communication protocol, these options are replaced with Network. This menu option is inactive (no action can be taken from this option) as this function is managed by the network controller.

SetDelay: Allows users to specify a **Before** and **After** delay period for relay alarm activation and deactivation.

```
SetDelay
Before
```

• In the SetDelay menu, use the arrow keys to display either **Before** or **After** and press **enter** to select.

```
Before
000 sec
```

• In the **Before** (or **After**) screen, use the arrow keys to increase the delay in seconds (10 second increments, maximum of 360). When the desired value is reached, press **enter** to confirm.

```
SetDelay
Yes
```

• Press **enter** again to confirm the SetDelay (or use the arrow keys to select **No** and cancel the procedure).

> ℹ️ Programming Delay, Failsafe, and Latch functions directly on the E³Point Network transmitter is NOT recommended, because local settings will override network settings. These functions should typically be programmed directly from the Network Control device.

Buzzer Menu

The Buzzer menu allows users to select whether or not the built-in audible alarm can be silenced by pressing a keypad button and which events will activate the buzzer.

```
* Menu *
Buzzer
```

- Press **enter** in the main Buzzer menu screen. The Buzzer screen displays either **Activate** or **Silence**.

- Use the arrow keys to scroll to the desired option and press **enter** to select.

```
Buzzer
Activate
```

If **Silence** is selected, the buzzer can be deactivated (without affecting the event) by pressing and holding any key on the unit for 5 seconds.

Select **Activate** to display available menu options:

Network: If the unit is configured with the Modbus or BACnet communication protocol, these options are replaced with Network. No action can be taken from this option: it simply informs you that the buzzer is controlled by the network master device.

Disable: Only available if the unit is configured to emulate a 201T (previous generation of Honeywell Analytics gas detectors for toxic and combustible gases).

🛈	When the E³Point is configured in 201T EMU mode, the controller device controls the relay and buzzer together; they cannot be controlled separately.

Alarm Menu

<table>
<tr>
<td>⚠️</td>
<td>CAUTION: Only qualified, knowledgeable personnel should use the programming functions of this unit. Factory settings conform to specific standards (see Specifications): any changes made to Alarm Levels may affect manufacturer's stated standards compliance.</td>
</tr>
</table>

The Alarm menu allows users to define alarm levels that are different from factory settings. See **Specifications**. Press **enter** to access the Alarm menu options.

```
* Menu *
Alarm
```

- Use the arrow keys to scroll to the **Alarm A**, **B**, or **C** option and press **enter** to select. The screen displays the default alarm level.

```
Alarm
A
```

- Use the arrow keys to increase or decrease the value to the desired level and press **enter**.

```
Alarm A
0025 PPM
```

<table>
<tr>
<td>ℹ️</td>
<td>When alarm settings are modified by the customer, the new values are stored in the main device and do not need to be modified again when a sensor is replaced.</td>
</tr>
<tr>
<td>⚠️</td>
<td>CAUTION: If a different type of sensor catridge is installed, the previously stored values will no longer be valid and must be corrected.</td>
</tr>
</table>

- The next screen displays the hysteresis value. Use the arrow keys to increase or decrease the value and press **enter**.

```
Hyst A
-05
```

- The Hyst(eresis) screen displays. This value, added to the alarm level, will tell the unit at which level to deactivate the alarm (e.g. Alarm level A is 25 ppm, minus a hysteresis level of -05, gives a deactivation level of 20 ppm). Use the arrow keys to increase or decrease the value and press **enter**.

- A confirmation screen displays. Press **enter** to confirm.

```
SetAlarm
   Yes
```

The screen briefly displays a success message and returns to the main menu option.

Restore Menu

⚠️ **CAUTION:** Only qualified, knowledgeable personnel should use the Restore function of this unit. Factory calibration settings conform to specific standards: any changes made may affect manufacturer's stated standards compliance.

The Restore menu allows users to restore all calibration information to factory configured settings. Press **enter** to access the Restore menu.

```
* Menu *
Restore
```

- Use the arrow keys to scroll to **Yes** or **No** and press **enter** to select.

```
Restore
  Yes
```

The screen briefly displays a success message and returns to the main menu option.

```
Restore
Success
```

Temp Menu

The Temp menu lets users define the maximum temperature for the device temperature alarm, which can be used to activate a device connected to the relay.

```
* Menu *
Temp
```

Press **enter** to access the Temp menu, then select either **Disable** or **Enable**.

```
Temp
Enable
```

- Use the arrow keys to select the reading value, either **oC** or **oF** (Celsius or Fahrenheit), and press **enter** to select the underlined value. This affects local display only and is not stored in memory—it is simply a conversion aid.

```
Limit
oC
```

- Use the arrow keys to increase or decrease the value to the desired level and press **enter**.

```
Limit
50oC
```

An alarm will be triggered when the temperature reaches the specified level and **Temp Limit** will displays on the screen.

> The temperature measured represents the unit's internal reading and may differ from external temperatures by up to 10°C.
>
> The unit does not display temperature readings.

Set Zero Menu

⚠️ **Only use the Set Zero function when the unit no longer displays zero. See** *Periodic Inspection and Maintenance*.

This option allows users to set the sensor zero. Scroll to the Set Zero main menu option and press **enter** to begin.

- Before starting calibration, connect the regulator to the appropriate cylinder (nitrogen for all sensors except the combustible sensor, which uses air).

- Adjust the flow rate to the indicated rate.

- Connect the tubing from the regulator to the sensor calibration cap.

- Let the gas flow for at least 3 minutes before starting calibration.

- In the main Set Zero screen, press **enter** to begin.

```
* Menu *
Set Zero
```

- The next screen requests confirmation. Use the up or down buttons to display **Yes** and press **enter** to confirm.

```
Set Zero
  Yes
```

A confirmation screen briefly displays and the zero calibration begins.

A success or failure message displays and the screen returns to the main menu option.
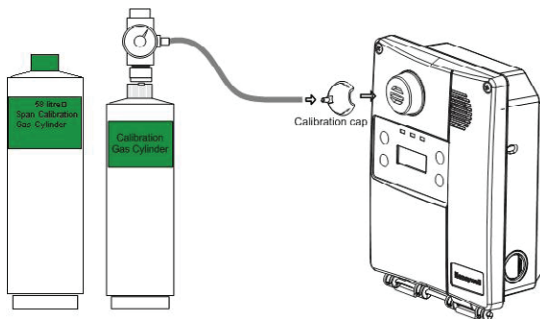

Figure 6. Calibration Setup

Set Span menu

⚠	**WARNING:** If the calibration gas concentration exceeds alarm setpoints, alarms will be triggered. Either change alarm levels so the alarms are not triggered or put the entire system in service mode so no external equipment (lights, fans, ventilators, buzzers) are not activated.
⚠	Use the Set Span function only when inspection or calibration maintenance indicates that it is necessary. Refer to *Periodic Inspection and Maintenance*.

This option allows users to calibrate the sensor's span. In the main Set Span screen, press **enter** to begin.

```
* Menu *
Set Span
```

- Before starting the calibration, connect the regulator to the gas cylinder.
- Adjust the flow rate to 0.5 L/min.
- Connect the tubing from the regulator to the sensor calibration cap See *Figure 6. Calibration Setup*.
- Allow the gas to flow for at least 3 minutes before starting the calibration.

⚠	If the gas is not allowed to flow for at least 3 minutes, it will affect the calibration accuracy.

The Set Gas screen allows you to specify the span calibration gas concentration value.

```
Set Gas
200 ppm
```

- Use the arrow keys to increase or decrease the value and press **enter** to select. The next screen requests confirmation.

```
Set Span
Yes
```

- Press **enter** to confirm, or use the arrow keys to scroll to **No** to cancel. The screen displays the concentration during calibration.

```
Set Span
198 ppm
```

A success or failure message displays and the screen returns to the main menu option.

TestMode Menu

The TestMode menu performs a test of all functions on the unit. All outputs are activated according to their failsafe mode, relay setting, and buzzer setting. All functions are activated simultaneously for a maximum of 3 minutes, or until the user cancels the test. The unit does not detect gas during this TestMode procedure. Press **enter** to access the TestMode.

```
* Menu *
TestMode
```

- Use the arrow keys to scroll to **Yes** or **No** and press any key to begin the test sequence

```
TestMode
Yes
```

- To cancel the test, press **enter** at anytime when **Stop** displays.

```
TestMode
Stop
```

Quit Menu

The Quit menu exits the programming functions and returns the screen to its normal display. Press **enter** to exit the programming function or use the arrow keys to continue scrolling through the options.

```
* Menu *
 Quit?
```

Memory Menu

> **This menu is reserved for Honeywell Analytics authorized technician use only. It contains no modifiable values or information for the user. Changing the values may damage the unit.**

Specifications

Technical Specifications

Input power:	24 VAC nominal, 17-27 VAC, 50/60 Hz, 0.35 A 24 VDC nominal, 20-38 VDC
Relay output :	1 DPDT relay, 5A @ 250 VAC
Communication:	RS485 Modbus, BACnet MS/TP master
Operating environment:	Commercial, indoor
Operating temperature range:	H_2S, NO_2, O_2, Comb.: -40 to 50°C (-40°F to 122°F) CO: -20 to 50°C (-4°F to 122°F) Available option CO: -40 to 50°C (-40°F to 122°F)
Operating humidity range:	15 to 90% RH non-condensing
Resolution:	CO = 1 ppm O_2 = 0.1% vol. H_2S = 0.1 ppm, NO_2 = 0.1 ppm CH_4, H_2, C_3H_8 = 0.1% LEL
Operating altitude:	Maximum 2000 m (6562 ft.)
Audible alarm:	>85 dB at 3 m (10 ft) minimum
Display:	8 character, 2 line LCD
Visual indicators:	Green LED: Power Amber LED 1: Alarm/Fault Amber LED 2: Transmission
Enclosure:	Polycarbonate
Dimensions (H x W x D):	20.56 x 14.90 x 6.72 cm (8.09 x 5.87 x 2.65 in.)
Certifications:	CSA C22.2 No. 61010-1, UL61010

E^{3}Point Detection Specifications

Sensor Type	Gas	Range	Detection unit	Alarm A Level	Alarm A Hysteresis	Alarm B Level	Alarm B Hysteresis	Alarm C Level	Alarm C Hysteresis	Accuracy at 25°	Display Resolution	Maximum Overload
Electrochemical	CO	0/250	ppm	25	-5	100	-20	225	-20	3%	1 ppm	500 ppm
Electrochemical	O_2	0/25	%	19.5	0.5	22.0	-0.5	22.5	-0.5	3%	0.1%	100 %vol
Electrochemical	H_2S	0/50	ppm	10.0	-1.0	15.0	-1.0	20.0	-5.0	3%	0.1 ppm	150 ppm
Electrochemical	NO_2	0/10	ppm	0.7	-0.1	2.0	-1.0	9.0	-1.0	3%	0.1 ppm	1000 ppm
Catalytic combustion	(CH_4)	0/100 (5.0% v/v)	% LEL	25.0	-5.0	50.0	-5.0	90.0	-5.0	3%	0.1%	100 %LEL
Catalytic combustion	(H_2)	0/100 (4.0% v/v)	% LEL	25.0	-5.0	50.0	-5.0	90.0	-5.0	3%	0.1%	100 %LEL
Catalytic combustion	(C_3H_8)	0/100 (2.1% v/v)	% LEL	25.0	-5.0	50.0	-5.0	90.0	-5.0	3%	0.1%	100 %LEL

LEL values in accordance to IPCS

Accuracy is the difference in means of 10 calibration measurements at mid-range and 10 measurements at mid-range, at 25 °C and 45% RH. This difference is presented as a calculated percent of full scale.

Maximum Overload is the cell exposure to gas concentration that may result in permanent damage to the cell.

Sensor Over Range

- Sensor over range occurs whenever the detected gas concentration level is higher than the full scale value of the sensor.

- When an over range condition occurs, the LCD displays "OVRRANGE" and the buzzer sounds for 50 milliseconds once every 10 minutes.

- The LED blinks once per second normally but twice per second during an over range condition.

- When the gas concentration falls back within the full scale range of the cell, the buzzer is silenced and the LCD displays the current concentration.

- On network units (301C systems, for example), the over range warning states are available through warning flag #Z when connected to a BACnet building automation system. Over range warning states are available through the reliability property of the sensor analog input object (AIO).

- After an over range occurrence, the LCD will display an asterisk appended to the concentration level in this form:

    xxxPPM*

    where "xxx" is the current gas level. For combustible and oxygen sensors, this will appear as "xx.x%*", where "xx.x" is the percent of full scale.

- To clear the asterisk from the display, press the ESC key for 8 seconds.

	NOTE: If the system has experienced an over range condition, the sensor should be bump tested to verify that it still responds to the presence of gas. It should also be recalibrated at the next maintenance interval. See *Periodic Inspection and Maintenance*.

Standard Parts List
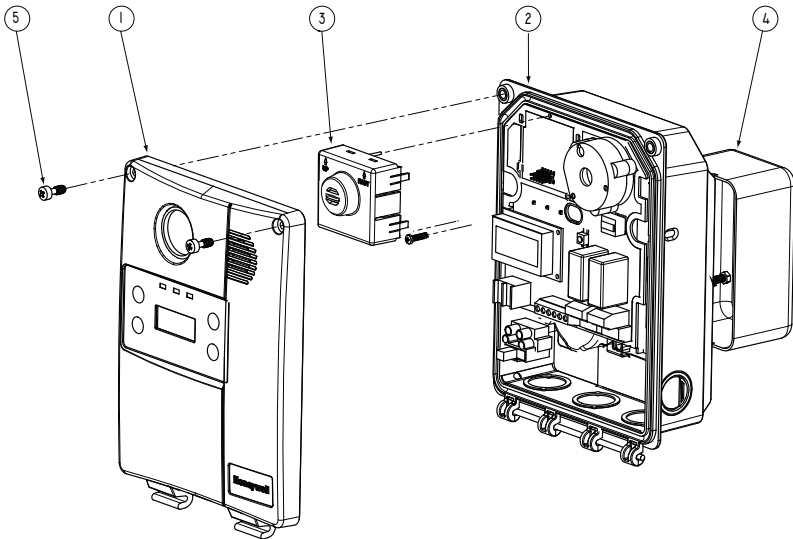
Figure 7. Parts of the E³Point

Item #	Description
1	E³Point cover
2	E³Point housing base
3	Main sensor assembly
4	Large rectangular J-box (not included)
5	Captive screw 10-32 x ½" (tamper-proof screw also available)

> To change a sensor cartridge, disconnect all power to the device, pull out the "smart sensor" cartridge, and press the replacement cartridge into place. Be sure TOP/HAUT is toward the top of the unit. Once the Smart Sensor is firmly in place, reconnect power. *Use caution when pressing the Smart Sensor cartridge into place to avoid bending the pins*.
>
> Please see ***Using the Programming Menus*** in the Alarm Menu section for special instructions for sensor changing gas types.

Duct Mount Parts List
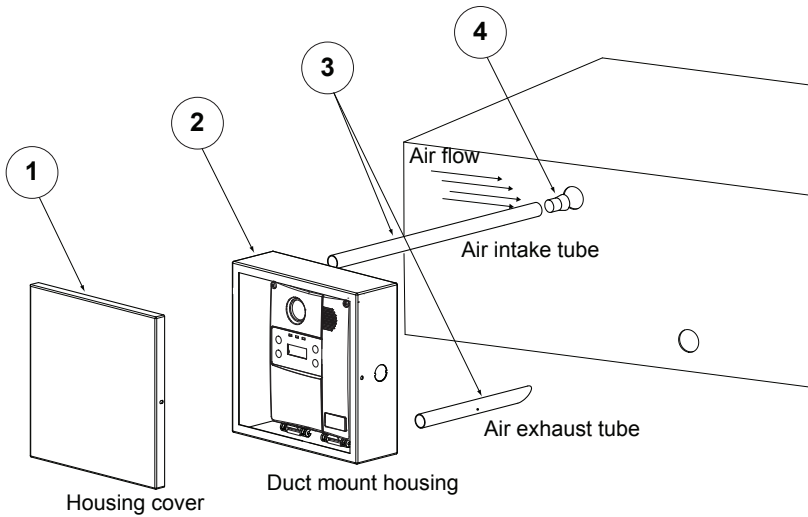
Figure 8. Parts of the Duct Mount

Item #	Description
1	E³Point duct mount assembly cover
2	E³Point duct mount assembly base
3	Air intake and exhaust tubes
4	Plug (for air intake tube)

Periodic Inspection and Maintenance

This unit requires regular inspection, including gas tests. The frequency is determined by the operating conditions that includes extreme temperatures, exposure to contaminants, or gas. Inspect the unit at least every 6 months.

Contact a Honeywell sales or service representative for information about maintenance. Calibration kits with instructions are available from Honeywell.

Maintenance

The unit will provide years of service with minimal care.

- Visually inspect at regular intervals to ensure optimum operating condition (no breakage, sensor filter not blocked or clogged, etc.).

- An accurate log of all maintenance, gas tests, and calibrations must be maintained for the proper service of this product.

- Do not expose the sensor to high pressure water spray. Sensors should not be exposed to solvents.

- Clean the exterior with a soft, damp cloth. Do not use solvents, soaps, or polishes.

- Do not immerse the unit in liquids.

Sensor Life Span

Sensor life span may be affected by certain operating conditions or by exposure to concentrations higher than the detection range.

Sensor Type	Life Span Specifications (typical)
CO	6 years, normal use at temperatures > -10°C
H_2S	2 years, in air
NO_2	2 years, in air
O_2	2 years until readings are at 85% of original 20.9% input
COMB	2 years, in air

Annex A - BACnet and Modbus Objects

The E[3]Point can be factory configured with optional communication types: BACnet or Modbus. Each of these communication protocols has its own specific objects.

Honeywell recommends appropriate measures be taken to ensure security since BACnet and Modbus are not inherently secure. The installer takes all responsibility for protecting the controller from malicious network traffic.

BACnet Configuration

The E[3]Point is an MSTP Master Device and supports Dynamic Device Binding (WHOIS/IAM), which is part of BACnet protocols DM-DDB-B and DM-DOB-B (see the ***Protocol Implementation Conformance Statement*** section for details).

BACnet Objects Descriptions

Each measurement type has Analog Input (AI), Analog Value (AV), Binary Output (BO) and Binary Value (BV) objects. The table below defines each object and lists the default setting:

Type	Name	Description	Read/ Write
AI	Conc.	The gas reading	R
AV	Alr A	The level at which Alarm A will be triggered	R/W
AV	Hyst A	Alarm A hysteresis offset (Alr A + Hyst A = level at which alarm is deactivated)	R/W
AV	Alr B	The level at which Alarm B is triggered	R/W
AV	Hyst B	Alarm B hysteresis offset (Alr B + Hyst B = level at which alarm is deactivated)	R/W
BV	Hi Temp Fault	Temperature High Level limit	R
BO	Relay	Actual buzzer status (on or off)	R/W
BO	Buzzer	Actual relay status (on or off)	R/W

Modbus Registers Description

MODBUS (RTU)	
Number	**Description**
21	Reading value
23	Divisor of reading value to obtain concentration
26	Sensor status
27	High temp warning status
34	The level at which Alarm A is triggered
35	Alarm A hysteresis offset (Alr A + Hyst A = level at which alarm is deactivated)
36	The level at which Alarm B is triggered
37	Alarm B hysteresis offset (Alr B + Hyst B = level at which alarm is deactivated)
38	The level at which Alarm C is triggered
39	Alarm C hysteresis offset (Alr C + Hyst C = level at which alarm is deactivated)
61	Temperature High Level limit
66	Actual buzzer status (on or off)
70	Actual relay status (on or off)

The E³Point must not be written to as this could compromise the gas detection function.

Troubleshooting

If the E³Point network gas monitor encounters errors, the LCD will display a 2-digit error code. The following table provides an explanation of these codes. **Contact Technical Services if any of these error codes display**.

Error Code	Description
01	Main board eeprom error
02	Main board power error
03	Sensor board eeprom error
04	Sensor board eeprom uninitialized
05	Sensor board ADC failure
06	Sensor board ADC high saturation/clipping
07	Sensor board ADC low saturation/clipping
08	Sensor span gain not calibrated
09	Sensor not responding to span calibration
10	Sensor unstable while in span calibration
11	Sensor span gain too high
12	Sensor span gain too low
13	Sensor baseline not calibrated
14	Sensor baseline offset too high
15	Sensor baseline offset too low
16	Sensor reflex test (self-test) failed. See **_Sensor Overload_** in Specifications.
17	Sensor end of life reached
18	Sensor due for calibration
19	Temperature sensor ADC signal too high
20	Temperature sensor ADC signal too low
21	Power overload caused by the presence of two high-power sensors
22	Remote sensor communication error

If an O_2 sensor displays 0% and is in Alarm A status when no nitrogen is present, the sensor may be missing or defective. Contact Technical Services.

BACnet Protocol Implementation Conformance Statement

Date: 2008-11-05

Vendor Name: Honeywell
Product Name: E3Point
Product Model Number:
Applications Software Version: 1.0
Firmware Revision:
BACnet Protocol Revision: 1.0

Product Description:

BACnet Standardized Device Profile (Annex L) :

- ☐ BACnet Operator Workstation (B-OWS)

- ☐ BACnet Building Controller (B-BC)

- ☐ BACnet Advanced Application Controller (B-AAC)

- ☐ BACnet Application Specific Controller (B-ASC)

- ☑ BACnet Smart Sensor (B-SS)

- ☐ BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K): Data Sharing

- ☐ Data Sharing-ReadProperty-A (DS-RP-A)

- ☑ Data Sharing-ReadProperty-B (DS-RP-B)

- ☐ Data Sharing-ReadPropertyMultiple-A (DS-RPM-A)

- ☑ Data Sharing-ReadPropertyMultiple-B (DS-RPM-B)

- ☐ Data Sharing-ReadPropertyConditional-A (DS-RPC-A)

- ☐ Data Sharing-ReadPropertyConditional-B (DS-RPC-B)

- ☐ Data Sharing-WriteProperty-A (DS-WP-A)

- ☑ Data Sharing-WriteProperty-B (DS-WP-B)

- ☐ Data Sharing-WritePropertyMultiple-A (DS-WPM-A)

- ☐ Data Sharing-WritePropertyMultiple-B (DS-WPM-B)

- ☐ Data Sharing-COV-A (DS-COV-A)

- ☐ Data Sharing-COV-B (DS-COV-B)

- ☐ Data Sharing-COVP-A (DS-COVP-A)
- ☐ Data Sharing-COVP-B (DS-COVP-B)
- ☐ Data Sharing-COV-Unsolicited-A (DS-COVU-A)
- ☐ Data Sharing-COV-Unsolicited-B (DS-COVU-B)

Scheduling

- ☐ Scheduling-A (SCHED-A)
- ☐ Scheduling-Internal-B (SCHED-I-B)
- ☐ Scheduling-External-A (SCHED-E-B)

Trending

- ☐ Viewing and Modifying Trends-A (T-VMT-A)
- ☐ Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)
- ☐ Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)
- ☐ Trending-Automated Trend Retrieval-A (T-ATR-A)
- ☐ Trending-Automated Trend Retrieval-B (T-ATR-B)

Network Management

- ☐ Network Management-Connection Establishment-A (NM-CE-A)
- ☐ Network Management-Connection Establishment-B (NM-CE-B)
- ☐ Network Management-Router Configuration-A (NM-RC-A)
- ☐ Network Management-Router Configuration-B (NM-RC-B)

Alarm and Event Management

- ☐ Alarm and Event-Notification-A (AE-N-A)
- ☐ Alarm and Event-Notification Internal-B (AE-N-I-B)
- ☐ Alarm and Event-Notification External-A (AE-N-E-B)
- ☐ Alarm and Event-ACK-A (AE-ACK-A)
- ☐ Alarm and Event-ACK-B (AE-ACK-B)
- ☐ Alarm and Event-Alarm Summary-A (AE-ASUM-A)
- ☐ Alarm and Event-Alarm Summary-B (AE-ASUM-B)
- ☐ Alarm and Event-Enrollment Summary-A (AE-ESUM-A)
- ☐ Alarm and Event-Enrollment Summary-B (AE-ESUM-B)

- ☐ Alarm and Event-Information-A (AE-INFO-A)
- ☐ Alarm and Event-Information-B (AE-INFO-B)
- ☐ Alarm and Event-LifeSafety-A (AE-LS-A)
- ☐ Alarm and Event-LifeSafety-B (AE-LS-B)

Device Management

- ☐ Device Management-Dynamic Device Binding-A (DM-DDB-A)
- ☑ Device Management-Dynamic Device Binding-B (DM-DDB-B)
- ☐ Device Management-Dynamic Object Binding-A (DM-DOB-A)
- ☑ Device Management-Dynamic Object Binding-B (DM-DOB-B)
- ☐ Device Management-DeviceCommunicationControl-A (DM-DCC-A)
- ☐ Device Management-DeviceCommunicationControl-B (DM-DCC-B)
- ☐ Device Management-Private Transfer-A (DM-PT-A)
- ☐ Device Management-Private Transfer-B (DM-PT-B)
- ☐ Device Management-Text Message-A (DM-TM-A)
- ☐ Device Management-Text Message-B (DM-TM-B)
- ☐ Device Management-TimeSynchronization-A (DM-TS-A)
- ☐ Device Management-TimeSynchronization-B (DM-TS-B)
- ☐ Device Management-UTCTimeSynchronization-A (DM-UTC-A)
- ☐ Device Management-UTCTimeSynchronization-B (DM-UTC-B)
- ☐ Device Management-ReinitializeDevice-A (DM-RD-A)
- ☐ Device Management-ReinitializeDevice-B (DM-RD-B)
- ☐ Device Management-Backup and Restore-A (DM-BR-A)
- ☐ Device Management-Backup and Restore-B (DM-BR-B)
- ☐ Device Management-List Manipulation-A (DM-LM-A)
- ☐ Device Management-List Manipulation-B (DM-LM-B)
- ☐ Device Management-Object Creation and Deletion-A (DM-OCD-A)
- ☐ Device Management-Object Creation and Deletion-B (DM-OCD-B)

☐ Device Management-Virtual Terminal-A (DM-VT-A)

☐ Device Management-Virtual Terminal-B (DM-VT-B)

Segmentation Capability :

☐ Segmented requests supported	☐ Window Size_____
☐ Segmented responses supported	☐ Window Size : Take maximum Windows size supported by the other device

Standard Object Types Supported

Analog Input Analog Value Binary Value Binary Output Device	For all objects: 1) Cannot be dynamically createable using CreateObject service 2) Cannot be dynamically deletable using DeleteObject service 3) No optional properties supported 4) No additional writable properties exist 5) No proprietary properties exist 6) No range restriction

Data Link Layer Options:

☐ BACnet IP, (Annex J)

☐ BACnet IP, (Annex J), Foreign Device

☐ ISO 8802-3, Ethernet (Clause 7)

☐ ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)

☐ ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s)

☑ MS/TP master (Clause 9), baud rate(s): 4800, 9600, 19200, 38400, 57600, 76800

☐ MS/TP slave (Clause 9), baud rate(s): 9600

☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):

☐ Point-To-Point, modem, (Clause 10), baud rate(s):

☐ LonTalk, (Clause 11), medium:

☐ Other:

Device Address Binding:

Is static device binding supported? (this is currently necessary for two-way communication with MS/TP slaves and certain other devices).

☐ Yes   ☑ No

Networking Options:

☐ Router, Clause 6 - List all routing configurations,
e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.

☐ Annex H, BACnet Tunneling Router over IP

☐ BACnet/IP Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices?

☐ Yes   ☑ No

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

☑ ANSI X3.4	☐ IBM/Microsoft DBCS	☐ ISO 8859-1
☐ ISO 10646 (UCS-2)	☐ ISO 10646 (UCS-4)	☐ JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:

Limited Warranty

Limited Warranty

Honeywell Analytics, Inc. warrants to the original purchaser and/or ultimate customer ("Purchaser") of Honeywell products ("Product") that if any part thereof proves to be defective in material or workmanship within one (1) year, such defective part will be repaired or replaced, free of charge, at Honeywell Analytics' discretion if shipped prepaid to Honeywell Analytics at 3580 rue Isabelle, suite #100, Brossard, Quebec, Canada, J4Y 2R3, in a package equal to or in the original container. The Product will be returned freight prepaid and repaired or replaced if it is determined by Honeywell Analytics that the part failed due to defective materials or workmanship. The repair or replacement of any such defective part shall be Honeywell Analytics' sole and exclusive responsibility and liability under this limited warranty.

Re-Stocking Policy

The following re-stocking fees will apply when customers return products for credit:

15% re-stocking fee will be applied if the product is returned within 1 month following the shipping date

30% re-stocking fee will be applied if the product is returned within 3 months following the shipping date.

A full credit (less re-stocking fee) will only be issued if the product is in perfect working condition. If repairs are required on the returned product, the cost of these repairs will be deducted from the credit to be issued.

No credits will be issued beyond the three month period.

Exclusions

If gas sensors are part of the Product, the gas sensor is covered by a twelve (12) month limited warranty of the manufacturer.

If gas sensors are covered by this limited warranty, the gas sensor is subject to inspection by Honeywell Analytics for extended exposure to excessive gas concentrations if a claim by the Purchaser is made under this limited warranty. Should such inspection indicate that the gas sensor has been expended rather than failed prematurely, this limited warranty shall not apply to the Product.

This limited warranty does not cover consumable items, such as batteries, or items subject to wear or periodic replacement, including lamps, fuses, valves, vanes, sensor elements, cartridges, or filter elements.

Warranty Limitation and Exclusion

Honeywell Analytics will have no further obligation under this limited warranty. All warranty obligations of Honeywell Analytics are void if the Product has been subject to abuse, misuse, negligence, or accident or if the Purchaser fails to perform any of the duties set forth in this limited warranty or if the Product has not been operated in accordance with instructions, or if the Product serial number has been removed or altered.

Disclaimer of Unstated Warranties

The warranty printed above is the only warranty applicable to this purchase. All other warranties, express or implied, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose are hereby disclaimed.

Limitation of Liability

It is understood and agreed that Honeywell Analytics' liability, whether in contract, in tort, under any warranty, in negligence or otherwise shall not exceed the amount of the purchase price paid by the purchaser for the product and under no circumstances shall Honeywell Analytics be liable for special, indirect, or consequential damages. The price stated for the product is a consideration limiting Honeywell Analytics' liability. No action, regardless of form, arising out of the transactions under this warranty may be brought by the purchaser more than one year after the cause of actions has occurred.