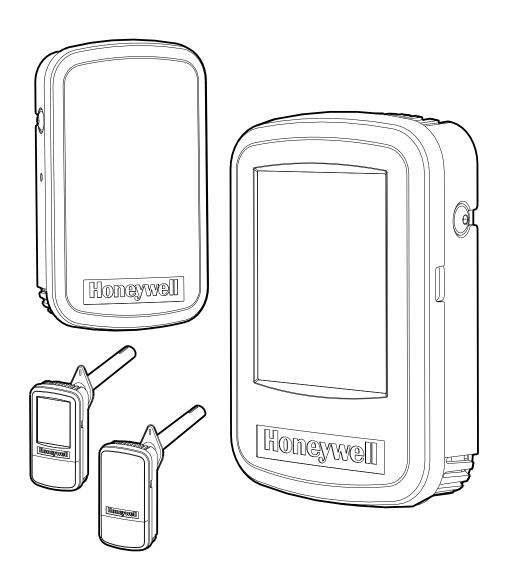
IAQPoint2[™] Indoor Air Quality Monitor





Technical Manual

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Introduction

The IAQPoint2 indoor air quality monitor features a simple-to-use, customizable touchscreen display along with triple monitoring of indoor air quality parameters (carbon dioxide or volatile organic compounds, plus temperature and humidity) and facilitates demand-controlled ventilation. The IAQPoint2 monitor can increase energy efficiency in commercial buildings by triggering fan activation as a standalone solution or via a building automation system.

Honeywell Analytics' IAQPoint2 monitor replaces the IAQPoint and 90DM4 models. The monitor has been designed for ease of installation and versatility in use. CO₂ or volatile organic compound concentrations can be measured for demand-controlled ventilation. Temperature and relative humidity can also be monitored, eliminating the need for additional indoor air quality sensors. The display model features a highly-customizable graphical touchscreen display.

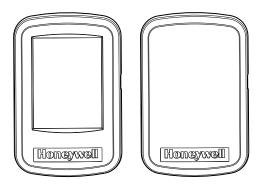


Figure 1. For wall-mounted applications: touchscreen display (left) and non-display models (right)

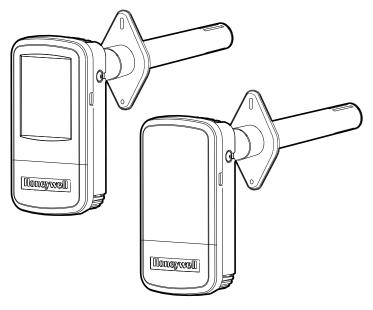


Figure 2. For duct-mounted applications: touchscreen display (left) and non-display models (right)

Air Quality

Traditional carbon dioxide sensors do not respond to changes in air quality caused by odors, cigarette smoke, and other volatile organic compounds. This graph illustrations the relationship between CO₂ levels and concentrations of volatile organic compounds in a typical meeting room.

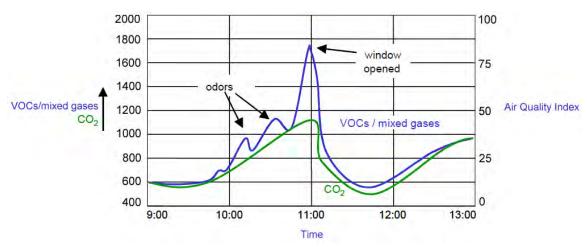


Figure 3. Air quality measurement in a meeting room

This chart shows common sources of indoor pollutants.

VOC Concentrations Corresponding to 0-2,000 ppm CO ₂					
Compound	Formula	Range* (ppm)	Source		
Carbon monoxide	СО	0-10	Car exhaust, fuel-based heating, cooking appliance, smoking		
Methane	CH₄	0-200	Natural gas		
Propane	C ₃ H ₈	0-20	Fuel-based heating, cooking appliances, cleaners		
Ethyl alcohol	C ₂ H ₆ O	0-3	Cosmetics, cleaners, disinfectants, detergents, paints, coatings, breath		
Acetaldehyde	C ₂ H ₄ O	0-20	Adhesives, coatings, plastics, lubricants, ripening of fruits		
Methyethylketone	C ₄ H ₈ O	0-20	Adhesives, coatings, plastics, lubricants		
Toluene	C ₇ H ₈	0-5	Paints, coatings, cleaners, detergents, smoking, polyurethane lacquers		

^{*}corresponding concentration range based on lab measurements at gas mixing system with synthetic air at 50% rH and RT.

Danger/Warning/Caution/Notes

ADANGER

Danger messages address situations that could result in loss of life.

AWARNING

Warning messages address situations that could result in injury or critical damage to the monitor.

ACAUTION

Caution messages address situaltions that could result in damage to the monitor.

A NOTE

Notes relate helpful information.

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Glossary

Term	Description	
ABC	Automatic Baseline Correction	
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers	
aldehyde	a type of organic compound	
AWG	American Wire Gauge; smaller numbers equate to larger wire diameters	
BACnet	Building Automation and Control Networking Protocol	
CA-24	California Code of Regulations, Title 24	
CE	Conformité Européenne ("European Conformity")	
CO ₂	carbon dioxide	
CSA	Canadian Standards Association	
fpm	feet per minute	
HVAC	Heating, Ventilation, and Air Conditioning	
hysteresis	a lag in response to a system's input	
IAQ	indoor air quality	
IEC	International Electro-technical Commission	
IP rating	Ingress Protection Rating; the protection provided by an electrical enclosure	
MS/TP	master/slave token passing	
LED	light-emitting diode	
LPM	liters per minute	
PF	power factor, the ratio of real to apparent power	
PICS	BACnet Protocol Implementation Conformance Statement	
ppm	parts per million, a measure of concentration	
rH	relative humidity	
RTU	remote terminal unit, a type of Modbus digital communications	
setpoint	the desired value in a closed-loop feedback system	
slide switch	a small rocker-type component capable of interrupting an electrical circuit that plugs into a dual in-line package (DIP) on a printed circuit board.	
UL	Underwriters' Laboratory	
VOC	volatile organic compound	

Configurations

The base configuration of the IAQPoint2 monitor:

- CO₂ or VOC sensor
- analog output (4-20 mA or 0-10 V)
- wall mount
- no display



Figure 4. IAQPoint2 base configuration

The monitor is also available with an LCD touchscreen display with either analog output or digital output. The monitor can be configured with any combination of these features:

- Wall mounted or duct mounted,
- With or without an LCD touchscreen display,
- With a CO₂ sensor or a VOC sensor,
- With or without an rH/temp sensor,
- With or without a relay, and
- With one of these communication options:
 - 1. Analog, 0-10 VDC or 4-20 mA (selectable onsite by the installer)
 - 2. Modbus/BACnet (mutually exclusive, selectable onsite by the installer)

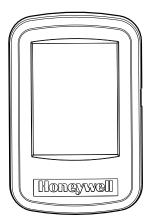


Figure 5. IAQPoint2 display configuration

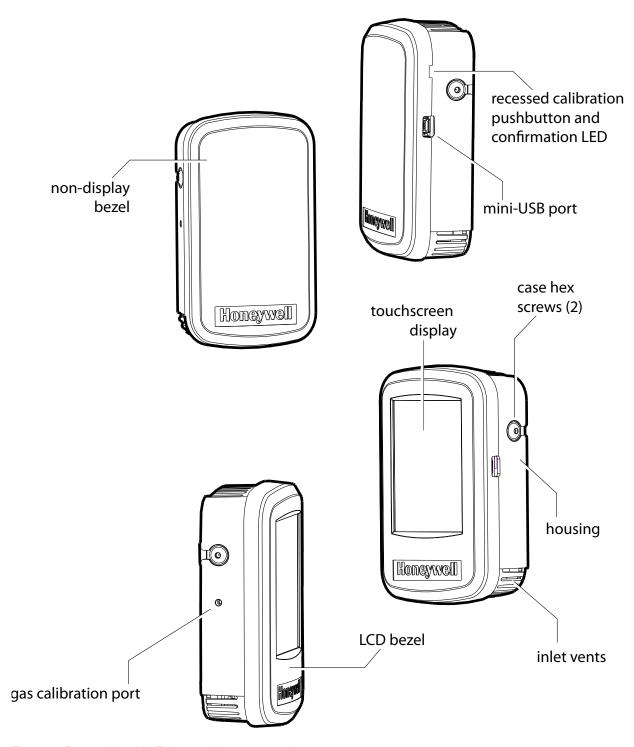


Figure 6. Parts of the IAQPoint2 wall-mount monitors

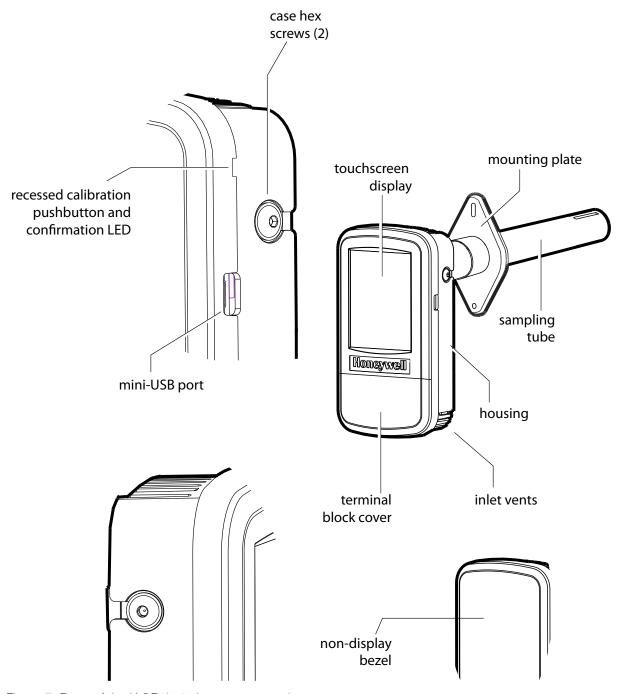
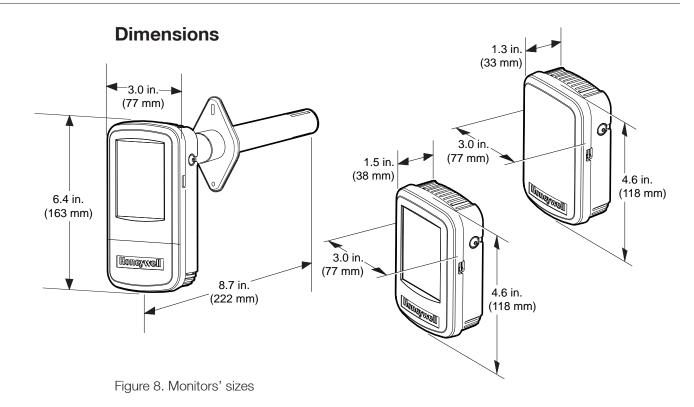


Figure 7. Parts of the IAQPoint2 duct-mount monitors



Wiring and installation

IAQPoint2 models are available for wall-mounting or duct-mounting. Wall-mount units can be installed on standard single-gang junction boxes. Locate the monitor in an area easily accessible by a technician. Avoid locations in which the monitor will be subjected to vibration or rapid temperature fluctuations. Follow local regulations and site requirements. Position wall-mounted monitors at least 10 feet (3 meters) from any air intakes or outlets. Install duct-mounted monitors in returnair ducts (not in supply-air ducts).

IAQPoint2 analog models are configured to source current only.1

The monitor is supplied as part of an installation kit containing:

- IAQPoint2 monitor
- backplate
- two plastic anchors w/screws
- 5/32 inch Allen wrench
- Quick Start Guide (one page, paper)

An optional calibration kit is also available. The kit contains:

- test gas
- M-502875: 0.5LPM Regulator for 58 & 103L Cylinders
- M-502877: 0.5LPM Regulator for 17L Cylinders
- M-501038: CAL GAS 17L CYLINDER NITROGEN (N2)
- M-501011: CAL GAS 103L CYLINDER NITROGEN (N2)
- M-501010: CAL GAS 103L CYLINDER 1,000 PPM CO2 BAL N2
- M-500989: CAL GAS 103L CYLINDER 2,000 PPM CO2 BAL N2
- M-512438: CALIBRATION ADAPTER IAQPOINT
- M-508808: CAL KIT TUBING 6 FEET 1/8 I.D. X 1/4 O.D.

¹ Wiring labels are of EIA485 standard.

Tools needed:

- drill
- drill bit
- #2 Phillips and 1/8 inch (3 mm) straight screwdrivers
- wire strippers

ACAUTION

The IAQPoint2 Air Quality Monitor is not designed for industrial applications or for use in hazardous locations.

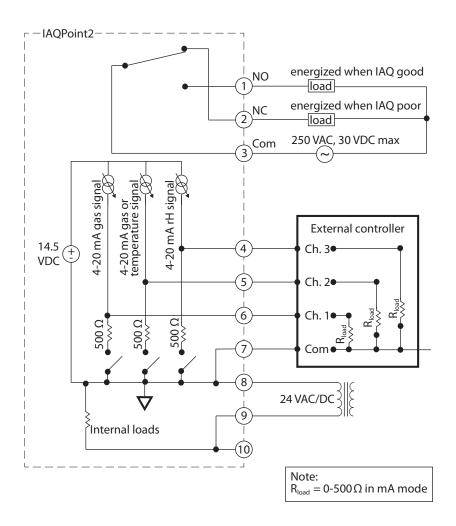


Figure 9. Wiring schematic

Digital models of the IAQPoint2 monitor should be wired as indicated on the label. Note that the meaning of the A and B symbols for EIA/RS-485 wiring varies among vendors. Terminal 6 corresponds to BACnet '+', the Modbus 'D1' and the EIA/RS-485 'B'. Terminal 5 corresponds to BACnet '-', the Modbus 'D0', and EIA/RS-485 'A'.

ADANGER

Line voltages may be present on the relay terminals.

Wall-mounting procedure

The monitor can be mounted onto a wall by following this procedure. Monitors with the optional temperature sensor must be mounted in a location with relatively still air.

- 1. Center the mounting plate over the wires from the wall with the mounting holes.
- 2. With a pencil, mark the locations for the two mounting holes. Typical mounting hole distances are shown in this illustration.

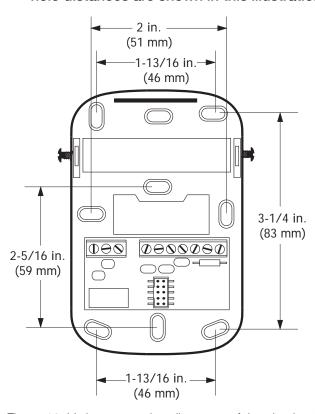


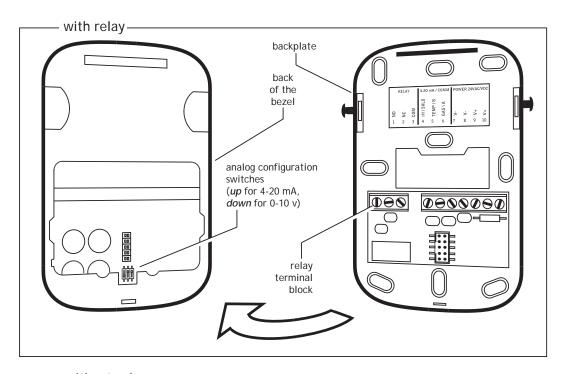
Figure 10. Various mounting distances of the nine backplate mounting holes

- 3. Drill a hole in the wall at each of the marks.
- 4. Insert a plastic anchor into each of the holes until they are flush with the wall.
- 5. Thread the wires through the back of the backplate. Refer to the wiring illustrations on the following pages for various configurations.
- 6. Attach the backplate to the wall by screwing the supplied metal screws into the plastic anchors. Torque installation screws to 11 in-oz (79 Nmm).
- 7. Connect each of the wires to the corresponding terminals on the backplate, as shown in the following illustration.
- 8. Set the slide switches according to the configuration of the monitor. (Slide the switches up for milliamps or down for volts.)²
- 9. Align the bottom of the bezel with the mounted assembly and rotate the top into place. Press firmly until it snaps.
- 10. Torque the case hex screws to 7-10 oz-in (0.59-0.85 Nm).

² The monitor has an internal 500 ohm termination resistor. Default output is mA..

A NOTE

The image does not auto-rotate. Mount the monitor so that the image is displayed right-side up.



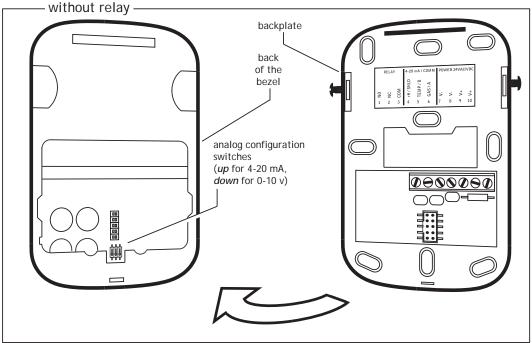
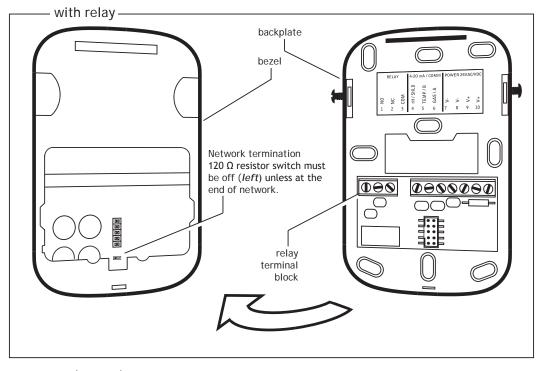


Figure 11. Wiring the analog wall-mounted monitor



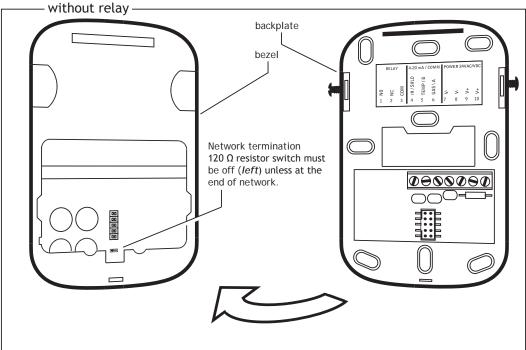


Figure 12. Wiring the digital wall-mounted monitor

Duct-mounting procedure

The monitor can be mounted on a rectangular duct at least 7 in. × 7 in. (18 cm × 18 cm) or a round duct at least 24 inches (61 cm) in diameter by two sheet metal screws which are supplied in the installer's kit. Do not mount the monitor on the top or bottom of a duct. (The sampling tube is designed for horizontal installation.)

Installation kit:

- IAQPoint2 monitor
- backplate
- Two metal screws
- Quick Start Guide (one page, paper)

Optional calibration kit (see page 11 for details)

Tools needed:

- drill
- hole saw
- drill bit
- #1, #2 Phillips, and 1/8 inch (3 mm) straight screwdrivers
- wire strippers

Procedure:

- 1. Make a 1 ¹/₁₆-inch (27 mm) hole in the duct at the desired sampling location.
- 2. Position the duct-mount bracket over the hole.
- 3. With a pencil, mark the locations for the two mounting holes.
- 4. Drill a hole in the duct at each of the marks.
- 5. Attach the mounting plate to the duct with the supplied sheet metal screws. Torque the screws to 11 in-oz (79 Nmm).
- 6. Slide the sampling tube through the mounting bracket up to the collar (shown in the following illustration).

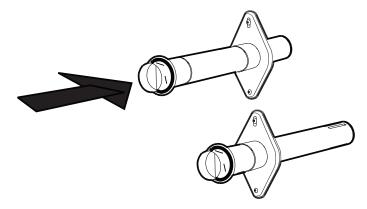


Figure 13. Positioning the sampling tube in the mounting plate

7. Torque the case hex screws to screws to 7-10 oz-in (0.59-0.85 Nm).

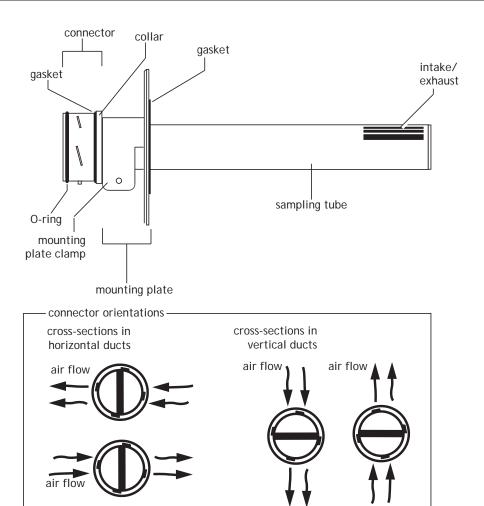


Figure 14. Sampling tube and mounting plate

- 8. Rotate the sampling tube until the divider shown in the cross-section illustration above is perpendicular to the flow of air in the duct.
- 9. Lightly lubricate the connector O-ring with water to facilitate installation.
- 10. Position the connector on the back of the monitor on the sampling tube connector and twist a quarter-turn counter-clockwise. A tight fit is normal (the O-ring on the sampling tube provides a snug seal with the monitor). The monitor will snap into position when it is securely attached to the sampling tube.



The display does not auto-rotate. Mount the monitor so that the display is right-side up and wires enter the two conduit holes from the bottom.

- 11. Tighten the mounting plate clamp screws.
- 12. Conduit is attached to the bottom of the monitor in the same manner as standard electrical junction boxes. Refer to the wiring illustrations on the following pages for various configurations.
- 13. Install the terminal block cover.



For accurate measurements, there must be air movement in the duct.

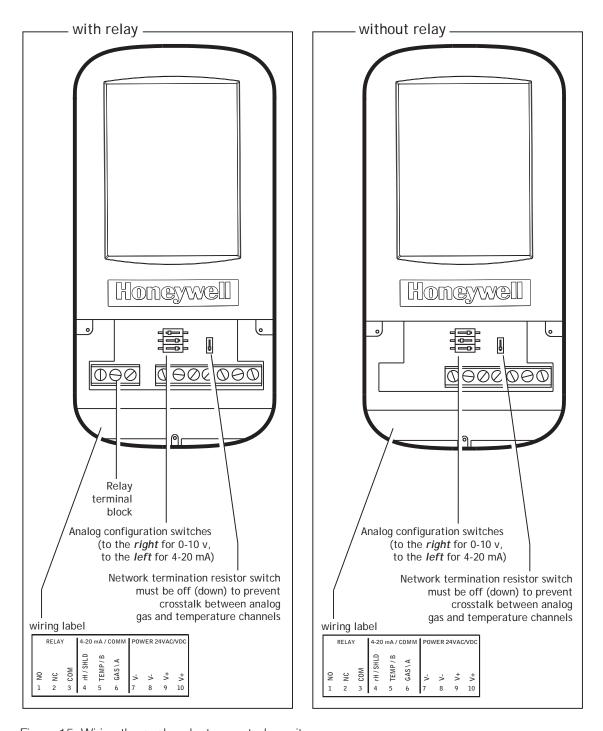


Figure 15. Wiring the analog duct-mounted monitor

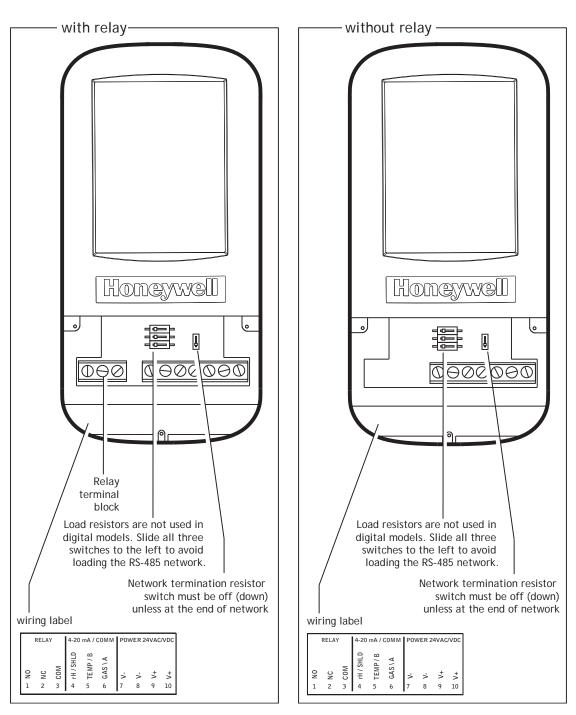


Figure 16. Wiring the digital duct-mounted monitor

Operation

First power-up

No calibration of the CO₂ or VOC sensors is required at startup. The monitor will immediately begin operation with the default parameters discussed in the *Menus* section. If desired, the monitor can be calibrated, however. Calibration procedures are described beginning on page 40.



NOTE

Expect some slight variability in the monitor's output when initially powered up. The sensors will fully stabilize after two to three weeks.

Commissioning

CO₂ Configurations

With Automatic Baseline Correction (ABC) enabled

When the monitor is first powered up with ABC enabled (the default is ABC on), no calibration is required. ABC monitors the background CO₂ levels and makes adjustments to the baseline calibration once every 24 hours. Within three weeks, the CO₂ sensor will adjust to the environment and be performing at the specified accuracy. No further adjustment or calibration of the CO₂ sensor is required.

With ABC disabled

This section applies to display models only. For applications in which ABC is disabled, the monitor must be calibrated at least annually to accommodate any drift due to the environment in which it is installed and to compensate for the sensor electronics.

When the monitor is first powered up with ABC disabled, allow it to operate for 24 hours in the environment in which it will be used. If necessary, check the accuracy of the sensor by applying a known concentration of test gas, following the instructions in this manual for proper calibration procedures.

Temperature and relative humidity

The monitor's internal temperature will stabilize about twenty minutes after first being powered up. The monitor provides the capability to calibrate temperature and humidity sensor readings. If, after the system has stabilized, it is determined that a temperature offset is required, follow the instructions in this manual for proper calibration procedures.

VOC Configurations

The VOC sensor used with the IAQPoint2 monitor requires no calibration but allow it fifteen minutes to warm up each time power is applied. The sensor will use the air in which it is powered up as the baseline. The VOC sensor will adapt to the environment in which it is installed.



NOTE

If the monitor is installed in an area with a chronically high level of VOCs, it will use that level to establish its baseline. It will then report a high VOC level only when the concentration rises above this baseline. It will recalibrate the baseline when chronic VOCs are abated.

LCD touchscreen monitors

The user will be presented with one of two interfaces, depending on the password that is entered. Figure 20 in the *Menus* section is a map of all of the IAQPoint2 monitor's interface options. Exact options will vary depending on the configuration of the unit.



Do not use excessive pressure on the touchscreen.

Warm-up

Monitors equipped with CO₂ sensors require a warm-up period at room temperature and 30-70% relative humidity. Typically, this takes about 1 minute and is never more than 15 minutes. They will self-calibrate in two the three weeks. VOC sensors also require warm-up periods of up to 15 minutes after an initial baselining with clean air. They will self-calibrate in a week.

The ABC algorithm

calibration strategy.

ABC (Automatic Baseline Correction) keeps track of the sensor's lowest reading over a 7½-day interval and slowly adjusts for any long-term drift that is detected as compared to the expected fresh air value of 400 ppm CO₂.

Do not perform delivery inspections or performance verification tests concerning sensor reading accuracy immediately after installation. Rough handling and transportation can result in a reduction in the accuracy of sensor readings. Over time, however, the ABC function will adjust the readings back to the accurate numbers.

The non-display unit is configured with ABC enabled. No calibration is required. Contact a Honeywell Analytics representative for advice regarding a proper

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Output levels

Models without the optional temperature/humidity sensor will report gas concentrations on channel 2 identically to channel 1.

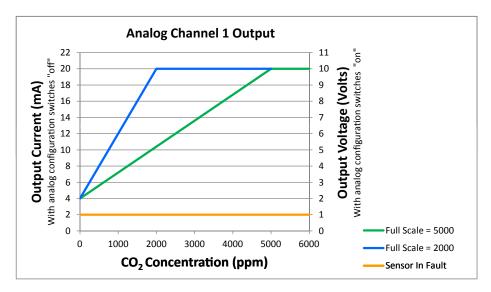


Figure 17. CO₂ current and voltage output levels

Models with the TRH sensor can be configured to do this via the *Configure > Configure Outputs > mA Ch2 Function* menu. The analog current output will go to 2.0 mA or 1.0V if a fault occurs. External equipment should be configured to respond to this signal by providing maximum ventilation.

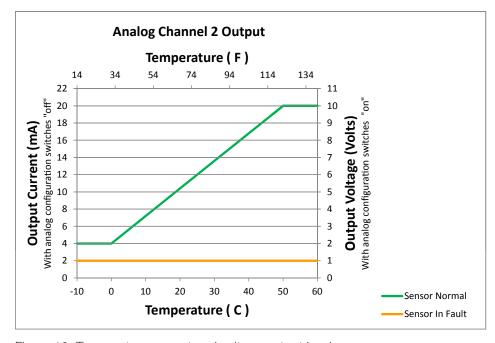


Figure 18. Temperature current and voltage output levels

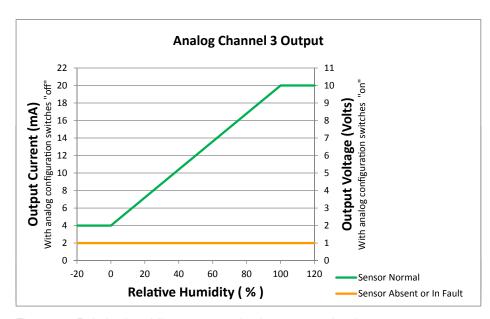


Figure 19. Relative humidity current and voltage output levels

Menus

The IAQPoint monitor's menus can be navigated using this menu map. Each of the screens is discussed in detail on the following pages.

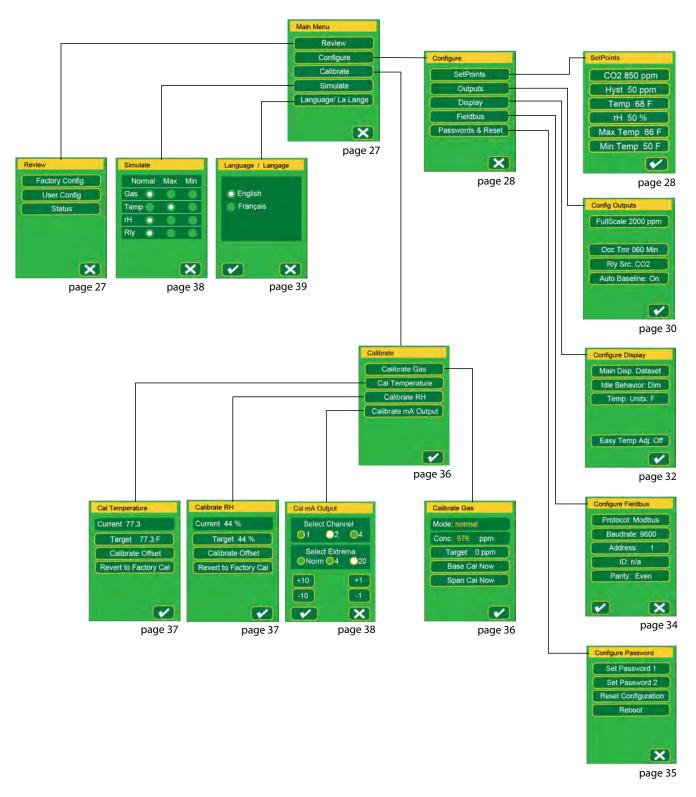


Figure 20. The IAQPoint2 Air Quality Monitor menu map

The contents of some menus vary depending on the configuration of the monitor and on which password was entered. Those variations are noted in the appropriate sections.

Menu naming conventions

Menus are navigated by pressing the appropriate buttons. Active buttons are indicated by yellow borders. These buttons will be identified by placing them in brackets, for example, if the instruction is "Select [Configure]", press the button which contains the word "Configure".

Default display

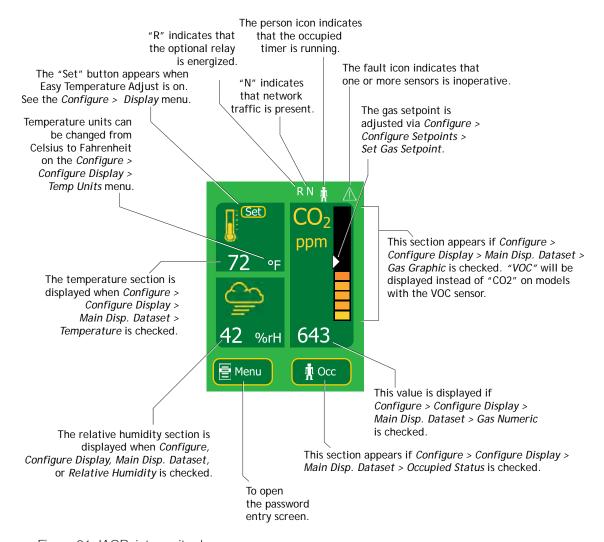


Figure 21. IAQPoint monitor home screen

In the Default Display, the user will see information about the conditions being detected by the monitor. A typical display is shown here but the exact combination of data can be customized extensively. Press [Menu] to advance to the password entry screen or [Occ] (for "Occupied") to override the monitor's programmed functions. This will allow the building's current status to be maintained for a period of between one minute to two hours.³

³ The [Occ] function can also be configured to activate a relay or receive fieldbus input from a BACnet network.

Navigation

Most screens include three navigation buttons at the bottom of the display:



Press the Accept button $[\checkmark]$ to accept displayed entries or values and return to the previous menu.



Press the Delete button $[\leftarrow]$ to delete values (one character at a time).



Press the Cancel button [x] to return to discard any input and return to the previous menu.

Password entry



The user's password, a four-digit number, is entered by pressing the appropriate numbers on the touchscreen. As each number is selected, it is shown near the top of the display. After the four numbers are displayed, press $[\checkmark]$ to proceed to the main menu. Press $[\leftarrow]$ to delete the last digit entered (repeat to delete more digits). Press $[\times]$ to return to the Default Display screen without entering a password.

The monitor will accept two passwords. A level 1 password (0000 by default) will allow the user to, for example, modify the monitor's temperature setpoints. A level 2 password (2967 by default) will give the user access to additional functions such as constraining those setpoints to a certain range, customizing the default display, or changing passwords.

Main menu



Access to the main menu is gained after an accepted password (either level 1 or level 2) has been entered. The Calibrate option is available only with level 2 access.

Review menu



All of the operational parameters of the monitor can be viewed through the Review menu.

Review > Factory Config.

This screen shows the factory settings of the IAQPoint2 monitor (serial numbers, software version number, and time stamp). Below the time stamp is an indication of the IAQPoint2 hardware output type. This can be either "Analog" or "RS-485" for the BACnet/Modbus version. The bottom line shows whether the optional temperature and relative humidity sensor is fitted. This can have the value "Y" or "N".

Review menu > User Config.

This screen summarizes how the IAQPoint2 has been configured. The top two lines convey the communications settings for the digital fieldbus (protocol name, baud rate, addresses, and parity). On analog versions of the product, this line will simply contain "Analog" because there is nothing to configure. The third line contains the configuration of the gas sensor including the setpoint and hysteresis.

The fourth line conveys the configuration of the optional temperature sensor. The numbers include the setpoint and the minimum and maximum settings. The min/max settings can be adjusted in *Configure > Set Max Temp Setpoint* and *Configure > Set Min Temp Setpoint* below. The fourth row contains calibration information. The fifth line contains the settings of the optional relative humidity sensor. On

IAQPoint2 units without the optional temperature and humidity sensor, lines three through five contain "TRH Sensor Not Fitted."

Line six conveys the period of the occupied timer and the relay source. The occupied timer period can be set from 1 minute to 2 hours in six steps. The relay source indicates the function of the optional relay. It can be configured to respond to the gas level, to the digital fieldbus, or to the occupied timer.

Review menu > Status

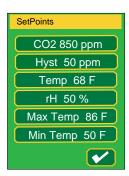
The Status screen shows temporary information about the IAQPoint2 monitor. The first line shows how many seconds the monitor has been running since the last power interruption. The second shows whether the optional relay has been detected. If the monitor is configured with a VOC sensor, line three displays the raw signal from it. This number decreases when volatile organic compounds are detected and can be useful for sensor verification.

Configure menu



The monitor's customization begins with the Configure menu. The setpoints option is available only with digital monitors and monitors equipped with relays. The fieldbus option is available only with digital monitors.

Configure menu > Configure Setpoints submenu



Setpoint submenus for up to six parameters can be selected from this menu.

Configure menu > Configure Setpoints > Set Gas Setpoint

The setpoint for CO₂ or VOCs is changed at this screen. This affects the position of the white triangle indicator on the main screen. This value is reported over BACnet and Modbus. It is compared to the actual gas readings and can be used to drive the relay and the binary outputs in BACnet and Modbus. This screen will not be visible in models containing neither the relay nor the fieldbus outputs.

Configure menu > Configure Setpoints > Hyst. Setpoint

The hysteresis range settings effectively serve as a damping feature. They determine a system's sensitivity, controlling how often the the monitor activates the HVAC system. A narrow hysteresis range would cause an HVAC system to react to minor changes. If the range is extremely narrow, the HVAC equipment will cycle excessively and, therefore, undergo unnecessary wear. A wide hysteresis range would require large deviations from the setpoint before responding to changes in the gas concentration. If the range is too wide, occupants will experience discomfort before the HVAC system responds.

Hysteresis determines how quickly the digital outputs (relay or fieldbus) respond to decreasing gas concentration. The digital output will activate when the concentration is greater than the setpoint. It will de-activate when the concentration is less than the setpoint minus the hysteresis. This sets a hysteresis value.

The binary outputs (relay, BACnet, and Modbus) go false only when the gas concentration drops below the setpoint less hysteresis. This screen will not be visible in models containing neither the relay nor the fieldbus outputs.

Configure menu > Configure Setpoints > Set Temp Setpoint

The setpoint is the value at which the monitor will cause the building's HVAC system to respond. Any number between 32 and 106°F (0-50°C) can be chosen at this screen. The default setting is 68°F (20°C). The temperature setpoint is reported over BACnet and Modbus. This screen will not be displayed on analog models or on models that lack the temperature sensor.

Configure menu > Configure Setpoints > rH Setpoint

The rH setpoint is the value at which the monitor will cause the building's HVAC system to respond to changes in humidity. Relative humidity values from 1% to 99% can be selected. The default setting is 50%.

This screen will not be displayed on analog models or on models without the temperature sensor. The rH setpoint is reported over BACnet and Modbus.

Configure menu > Configure Setpoints > Set Max and Min Temp Setpoint

A level 2 password is required to change the maximum temperature setpoint. This feature constrains the highest temperature which can be selected at the "Set Temp Setpoint" screen, which requires only a level 1 password. The maximum value in the range can be any temperature between 32 and 122°F (0-50°C). It must be higher

than the minimum temperature setpoint. The default temperature is 86°F (30°C).

The minimum temperature setpoint is changed in the same manner. The minimum value in the range can be any temperature between 32 and 122°F (0-50°C). It must be lower than the maximum temperature setpoint. The default setting is 50°F (10°C).

These two screens are visible only on models with the optional temperature sensor and fieldbus outputs. Both screens will by greyed out until the level 2 password is entered.

These parameters affect the Configure > Configure Setpoints > Set Temp Setpoint and the Temperature Adjust screens.



Configure menu > Configure Outputs > Set CO2 Full Scale

The Set CO2 Full Scale screen is visible only on models with the CO2 sensor. Two settings are available, 2000 or 5000 ppm. Setting the CO2 full scale allows the CO2 value to be displayed on the vertical "thermometer" bar. It also affects the analog output. This setting does not affect the numeric gas concentration display or the fieldbus outputs. Thus in an environment that contains 3000 ppm of CO2, this setting determines whether the vertical "thermometer" bar shows 100% full or 60% full. It also determines whether the analog output contains 20 mA/10 V or 13.6 mA / 6.8 V. It does not affect the numeric display; it will show 3000 ppm. It does not affect BACnet or Modbus, either; these will report 3000 ppm.

The default setting is 2000 ppm.

Configure menu > Configure Outputs > Set mA Ch2 Function

The IAQPoint monitor has three channels. Channels 1 and 2 report gas values. Channel 2 can be configured to measure temperature (voltage) instead. Channel 3 measures humidity when the optional rH sensor is installed. Report Temperature is the default when the monitor is configured with a temperature/humidity sensor, otherwise Report Gas Conc. is the default.

The operation of the middle of the three analog outputs is determined at this screen. (It will not be visible on digital models.) Models without the optional temperature sensor route the gas signal to channel 2 by default and so do not show this screen. Thus this screen is visible only on models with analog output and a temperature sensor.

This screen permits changing the function of channel two. For example, a certain monitor might be in an environment with a $\rm CO_2$ concentration of 5000 ppm (full scale) and a temperature of 77°F (half scale). If the channel 2 function is set to temperature, the 12 mA/6 V (temperature) signal will be produced by channel 2. But if the channel 2 function is set to $\rm CO_2$, the 20 mA/10 V (the $\rm CO_2$ signal) will be produced by channel 2. This feature works in a similar fashion if a VOC sensor is fitted. It has no effect on the operation of channels 1 or 3. This facilitates getting from a single monitor both current and voltage signals that are proportional to the $\rm CO_2$ concentration.

Configure menu > Configure Outputs > Set Occupied Timeout

Set Occupied Timeout controls the delay between when the HVAC system is given the command to deactivate and when it actually shuts down. Available values vary from one minute to two hours in six steps. The occupied timer starts running whenever the [Occ] button on the main screen is pressed. (The [Occ] button is hidden by default but can be shown via *Configure > Configure Display > Main Display Dataset*.) The timer drives the "occupied" icon (*) on the main screen, a fieldbus output, and can be configured to drive the relay. (The relay is configured via the Configure > Configure Outputs > Set Relay Source screen.)

The relay flow of the IAQPoint2 air quality monitor is shown in this illustration.

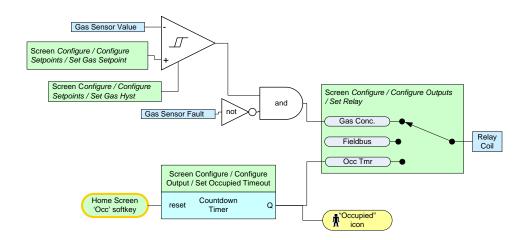


Figure 22. IAQPoint2 relay flow

Configure menu > Configure Outputs > Set Relay Source

The functions of the relay are adjusted at this screen. The monitor normally responds to gas concentrations (i.e., the air quality level). The Set Relay Source feature allows a relay to respond to the occupied timer or, for digital versions, to the network (fieldbus, for example, in BACnet systems). The default selection is air quality level.

By default, the relay energizes when the gas concentration is lower than the setpoint. However, this screen also facilitates configuring the relay to respond to fieldbus inputs (and thus become a general purpose output). This screen can configure the relay to energize whenever the occupied timer is running as well. In this mode the button plus relay function as a classic "override" input –the relay can be hardwired to a universal input on a building automation controller. Figure 16 illustrates the operation of the relay.

Configure menu > Outputs submenu > Automatic Baseline

The internal CO₂ sensor can apply continuous, slow fine-tuning so that the minimum observed concentration is reported as 400 ppm, which is the approximate atmospheric concentration of carbon dioxide. This automatic baseline feature is enabled by default and, in most situations, eliminates the need for periodic calibration. However, it requires that the environment be unoccupied regularly so that the internal CO₂ concentration falls to atmospheric levels. (This would make the automatic baseline feature inappropriate for buildings such as hospitals or greenhouses which have CO₂ generation around the clock.)

After the automatic baseline setting is changed, power to the monitor must be removed briefly for correct operation (a soft reboot is insufficient). This can be accomplished by loosening the screws and briefly disconnecting the monitor from the backplate.

The Automatic Baseline screen is not accessible if the monitor has a VOC sensor.

Configure > Configure Display



Temp Units is available only for monitors with temperature/humidity sensors. Easy Temp Adj is available for digital monitors and those fitted with temperature/humidity sensors.

Configure menu > Display submenu > Main Display Dataset



How much information is displayed on the home screen is determined at this screen. For example, some users may choose to disable the display of some information for simplicity and less distraction. In some installations, it may be preferable to disable the CO₂ reading. Any combination of the five outputs is permissible (including, if desired, none of them). The default selections are Gas Graphic, Gas Numeric, Temperature, Relative Humidity, and Occupied Status. (Temperature and Relative Humidity are available in monitors with the temperature/humidity sensor.)

Configure menu > Display submenu > Idle Display Behavior

To conserve energy, if the screen has not been touched for five minutes, the monitor will revert to the home screen and, depending on the selection made at the Idle Display Behavior screen, will either dim or go off. Off is the default selection.

There is no setting to keep the display at full brightness or to persist on the menu screen without touching.

Configure menu > Display submenu > Temp. Units

Whether temperatures are displayed in degrees Fahrenheit or degrees Celcius is controlled from this screen. The default is Fahrenheit. This screen is available only on models with the optional temperature/humidity sensor.

Configure > Configure Display > Easy Temp Adj

If desired, a "Set" button can be displayed on the main menu, allowing the temperature setpoint to be changed without entering a password. By default, this feature is disabled. This feature is disabled by default and is only available on models with the temperature sensor and the BACnet/Modbus interface.

Configure menu > Configure Fieldbus



This screen is available only on models with the BACnet/Modbus interface. The monitor's fieldbus configuration options apply only to RS-485-enabled units. The monitor will reboot whenever the [Accept] button is pressed so that the new communication parameters will be implemented correctly.

Configure menu > Configure Fieldbus > Set Protocol

The monitor can be configured for either BACnet or Modbus from the Set Protocol screen. The default is Modbus.

If the monitor is to communicate with the Honeywell Analytics 301C controller, this screen should be configured for Modbus, 9600 baud, and no parity. The address must be unique. If the monitor contains the optional temperature/humidity sensor, the next two higher addresses should not be used.

Configure > Configure Fieldbus > Set Fieldbus Speed

The data rate of the fieldbus (from 4800 to 115200 baud) is selected at this screen. This value must match all of the other devices on the segment.

Configure > Configure Fieldbus > Set Address

If the BACnet protocol is selected, this screen facilitates setting the BACnet MAC address from 1 to 127. If the Modbus protocol is selected, it facilitates setting the Modbus ID from 1 to 247. The address must be unique within the segment.

Configure > Configure Fieldbus > Set BACnet ID

The BACnet ID can be adjusted to any value between 1 and 4,194,302 with the numeric keyboard. The default value is 1. The Set BACnet ID menu applies only if the BACnet protocol is selected. This number must be unique within the entire network. A network may consist of multiple segments separated by routers. Values from 0 to 4194302 may be entered.

Configure menu > Fieldbus submenu > Set Parity

Parity value selections apply only to monitors configured with the Modbus communications protocol. Even parity is the default.

This parity screen is available only if the Modbus protocol is selected. (BACnet always uses no parity.) The monitor will use one stop bit unless the parity is set to "none" in which case it will use two stop bits.

Configure menu > Configure Passwords & Reset > Set Password 1 or 2



Password options are available through the Configure Passwords menu. The Password Level 1, Password Level 2, and Reset to Factory Settings options are described below. The Reboot option will force the monitor to shut down and then restart.

This screen allows two passwords to be set. Passwords must be four digits long.

Configure menu > Configure Passwords & Reset > Reset all configuration

The Reset All Configuration option allows existing passwords to be deleted and returns all of the monitor's options to the default values.

This function resets all user configuration information to factory defaults. This includes setpoints, passwords, fieldbus configuration, and custom milliamp output calibrations. The monitor will reboot after selections from this menu have been made.

Configure menu > Configure Passwords & Reset > Reboot

This will force the monitor to reboot.



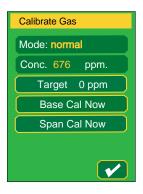
There is no confirmation screen after pressing the [Reboot] button.

Calibrate menu



Calibration procedures are initiated at the Calibrate menu. Refer to local regulations for calibration requirements. Calibrate the monitor at least once a year to maintain the highest level of accuracy.

Calibrate > Calibrate Gas



This screen is visible only on models with the CO₂ sensor and only after the level-2 password has been entered. Calibration cannot be performed if Automatic Baseline is enabled, as it is by default (see Configure > Configure Outputs > Automatic Baseline above).

The top line shows the current state of the gas sensor. Possible values include:

- normal
- in base cal
- base cal pass
- base cal fail
- in fault

The gas sensor must be in the "normal" state for a calibration to be performed. The second line shows the current CO_2 concentration reading from the sensor. The third line is a button that facilitates setting the target or actual concentration. Leave this at zero if pure nitrogen is being used for calibration.

The fourth line is the [Base Cal Now] button. This causes the sensor to execute a calibration function to make its output match the target concentration. Calibration takes about 15 seconds. Another calibration cannot be performed without leaving and returning to this screen.

Calibrate > Cal Temperature



This screen is available only on models with the optional temperature humidity sensor and after the level 2 password has been entered. This feature allows the monitor to be installed in an area that is known to be characteristically cooler or warmer than the rest of the space (e.g., near a photocopier). This requires that a desired value ("target temperature") be entered.

The monitor is precalibrated so calibration is unnecessary.

Press the "Target" button to enter the target temperature through the numeric keyboard, within a range from 32 to 122°F (0 to 50°C). The default value is 68°F (20°C). Press [√] to return to the Cal Temperature menu, then press the "Calibrate Offset" button. The monitor will then calculate the difference between the room temperature and the desired temperature. This difference is the offset. When the calibration has been completed, "Calibration Done" will be displayed. Press [X] to return to the Cal Temperature screen.

Calibrate > Cal rH

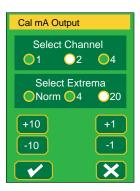


This screen is available only on models with the optional temperature humidity sensor and only after the level-2 password has been entered. The monitor is precalibrated so calibration is not necessary.

Curent value unit displays the current relative humidity.

The target relative humidity can be entered through the numeric keyboard within a range from 0 to 100%. The default value is 45%. Calibrate offset allows the monitor to be installed in an area that is known to be characteristically more or less humid than the rest of the space, much like the temperature offset described in the previous section.

Calibrate > Calibrate mA Output



The monitor's mA output for each of three channels can be calibrated to match that of a site's external HVAC equipment. Channel 1 measures gas levels, channel 2 can be configured to measure either a gas or temperature. In monitors with the optional rH sensor, channel 3 measures humidity. Adjustments are made in 10-unit increments with the +10 and -10 buttons and in 1-unit increments with the +1 and -1 buttons.

Simulate



Simulated output permits creating high or low outputs on the three sensors, allowing the operator to verify that the system will respond as planned to changes in the gas level, temperature, or humidity level. Any combination of minimum, maximum, or normal values of gas, temperature, and humidty can be simulated. Default simulation selections are normal for all three parameters.

Additionally, the relay can be forced on or off from this screen. This can be useful to confirm the operation of external equipment. For example, a service person can simulate a high CO₂ concentration to confirm that an external fresh air damper moves to the full open position.

None of the monitor's configured values is affected by changes in the Simulate menu.

Language menu



The IAQPoint2 monitor can be configured for English or French (Français). The default language selection is English.

Calibration

For the highest possible accuracy when the ABC function is off, the sensor can be recalibrated by a qualified operator.

CO₂ Calibration

By default, the CO₂ sensor uses an Automatic Baseline Calibration (ABC) algorithm to maintain accuracy. However, ABC is inappropriate for environments with continuously elevated concentration and should be disabled. With ABC disabled, the CO₂ sensor can be manually calibrated. The sensor's response coefficient is fixed during manufacture. The baseline calibration affects only the offset, not the slope of the sensor's response. This calibration can be performed at any CO₂ concentration level. However, calibration with 1,000 ppm CO₂ calibration gas is simplest and is recommended. For non-ABC applications, the unit should be calibrated in the environment in which it will be used.

The calibration procedure (possible only if ABC is disabled):

- 1. Enter the level 2 password. By default, this is 2967.
- 2. Navigate to Calibrate > Calibrate Gas. This screen will flash every second to indicate calibration mode.
- A message may be displayed indicating that ABC is enabled and calibration is not possible. If ABC is not desired, it can be disabled in the Configure > Configure Outputs > Auto Baseline menu.
- Connect a cylinder of a test gas of known concentration (e.g. Honeywell part M-501010, 1,000 ppm CO₂) to a 0.5 lpm regulator (e.g. Honeywell part M-502877).
- 5. Connect the regulator's tube into the calibration port on the side of the IAQPoint2 monitor.
- 6. The top line of the display shows the mode of the CO₂ sensor. Verify that this is "normal" and not some other message.
- 7. The second line of the display shows the current concentration. Verify that this shows a reasonable number. Since the calibration gas flow has not yet been started, this should show an ambient CO₂ concentration. It is normally greater than 500 ppm in a room.
- 8. Open the regulator's valve to start the flow of gas.
- 9. Wait three minutes for test gas to purge all of the ambient air out of the sensor.
- 10. Verify that the concentration reading stabilizes to match the cylinder CO₂ concentration within ±200 ppm.
- 11. Verify that the "Target" concentration matches the concentration of the cylinder of test gas. If pure nitrogen is used, this should be zero. If needed, enter the correct concentration by pressing [Target].
- 12. Press [Base Cal Now].
- 13. The mode display should show "in base cal" for about ten seconds.
- 14. Verify that the mode display shows "base cal pass".
- 15. Verify that the concentration reading matches the target concentration ±30 ppm.

- 16. Turn off the valve on the regulator.
- 17. Verify that the test gas concentration rises to a reasonable value after about one minute, reflecting the ambient concentration.
- 18. Press [$\sqrt{\ }$] and navigate back to the main menu. The main display may show a fault for up to four seconds when exiting calibration mode. This is normal and is not an indication of trouble.
- 19. Disconnect the regulator from the gas cylinder.
- 20. IMPORTANT: On duct mount models, confirm that the calibration port plug is reinstalled. If this is step is neglected, the sensor's sampling of duct CO₂ concentration may be contaminated by ambient CO₂ levels.

The monitor should be calibrated only by a qualified operator. The level 2 password is required. Non-display models cannot be calibrated.

VOC Calibration

The VOC sensor automatically calibrates itself over a period of about a week. This automatic calibration requires that the VOC sensor be exposed to fresh air for at least an hour of each day. No manual calibration for VOCs is possible. A bump test of wall-mount models may be performed be simply breathing on IAQPoint2.

Temperature Calibration

The optional IAQPoint2 temperature sensor is pre-calibrated and usually does not shift with age. Thus, periodic temperature calibration is usually not necessary. With wall-mount models, accurate temperature measurement requires at least 20 minutes of uninterrupted power, vertical mounting and still air.

However, an offset calibration can be useful in areas that are known to be characteristically cooler or warmer than the rest of the space (e.g., near a photocopier). The procedure for performing a temperature offset calibration is as follows:

- 1. Determine the true temperature of the space by use of a reference thermometer.
- 2. Enter the level 2 password. By default, this is 2967.
- 3. Navigate to Calibrate > Calibrate Temperature.
- 4. Press [Target] to navigate to "Set Tgt Temp". Enter the temperature reported by the reference thermometer.
- 5. Press [Calibrate Offset].
- 6. Verify that the message "in base cal" is displayed. This lasts about two seconds.
- 7. Verify that the message "Calibration Done" is displayed.
- 8. Press [X].
- 9. Verify that the Current temperature agrees with the reference thermometer. Note that this screen does not automatically update. If desired, an update can be forced by exiting and re-entering this screen.
- If desired, the factory calibration may be restored by pressing [Revert to Factory Cal]

11. When satisfied, with the temperature reading, navigate to the main screen.

rH Calibration

The optional IAQPoint2 relative humidity sensor is pre-calibrated. However, exposure to certain chemicals may cause the reading to shift over time. The humidity reading may be recalibrated using the following procedure:

- 1. Determine the true rH level by use of a reference hygrometer.
- 2. Enter the level 2 password. By default, this is 2967.
- 3. Navigate to Calibrate > Calibrate rH.
- 4. Press [Target] to navigate to "Set Target rH". Enter the relative humidity reported by the reference instrument.
- 5. Press [Calibrate Offset].
- 6. Verify that the message "in base cal" is displayed. This lasts about two seconds.
- 7. Verify that the message "Calibration Done" is displayed.
- 8. Press [X]
- 9. Verify that the Current rH agrees with the reference hygrometer. Note that this screen does not automatically update. If desired, an update can be forced by exiting and re-entering this screen.
- 10. If desired, the factory calibration may be restored by pressing [Revert to Factory Cal]
- 11. When satisfied, with the humidity reading, navigate to the main screen.

Troubleshooting

Faults and warning messages

Faults are handled in different ways, depending on the configuration of the unit. 4-20 mA loops will drop below 2.0 mA. Relays will de-energize. Fault codes in fieldbus-equipped units will be displayed on the touchscreen. The event history of recent fault codes (approximately the last fifteen) is displayed but fault codes are not stored. A level 2 password is required for access to the event history screen.

	IAQPoint2 Troubleshooting Guide									
,	Affected Version									
Analog Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution		
						Measure voltage between terminals T9 and T7 and confirm that 20-30 VAC or 18-28VDC is sup- plied.	External wiring has	Provide 24 V AC/DC		
•	•		•	•	All analog outputs produce 0 mA or 0 VDC	(Non-display models only) Confirm that the LED on the right side flashes for 5 seconds after power is applied.	an error.	power.		
						Unplug the USB cable.	Microprocessor will not boot if USB is connected.	Unplug USB cable.		
							IAQPoint2 is defective.	Replace.		

	IAQPoint2 Troubleshooting Guide									
Affected Versi		sion								
Analog Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution		
						Confirm that switches for volt/milliamp mode are in the desired position as described in Figures 11 and 15.	Internal 500 Ω load resistors are improperly switched in circuit.	Slide switches to the correct position as described in Figures 11 and 15.		
•	•		•	•	One or more analog outputs are lower than expected.	Confirm continuity in the external loop with an ohmmeter.	External equiment does not share a common ground.	Rearrange external circuit to have loops as shown in Figure 9.		
					·	Confirm voltage between terminals T7 and each of T4, T5 and T6 is less than 10.0 VDC while the monitor is connected.	External impedance is too high.	Rearrange external current loop to have R<= 500Ω .		
•	•		•	•	One or more analog outputs produces high voltage. (Typi- cally 14.5 VDC)	Confirm that switches for volt/milliamp mode are "on" as described in Figure 11 and 15.	The monitor is configured for mA output; internal 500 Ω load resistors are switched out of circuit.	If voltage output is desired slide switches down (for wall mount) or right (duct mount) to close switches.		
•	•		•		Apparent crosstalk between Ch1 and	Confirm that the switches for digital network termination are "off" as described in Figure 15.	$120~\Omega$ termination resistor (for digital networks) is connected between Ch1 and Ch2.	Slide switch up.		
					Ch2 in	Check part number to determine if temperature sensor fitted.	Ch2 reports gas signal if temperature sensor not purchased.	Purchase a model with optional temperature sensor.		
•	•		•	•	Ch1 analog output produces 2 mA or 1 VDC for longer than 10 seconds after powerup.		Gas sensor is defective.	Replace.		

	IAQPoint2 Troubleshooting Guide									
	Affected Versio		Version							
Analog	Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution	
		•		•	•	Ch1 analog output produces 4 mA or 2 VDC even when breathing on sensor.		If fitted, VOC sensor is in warmup mode.	Wait until 15 minutes after powerup.	
		•		•	•	Ch2 analog output produces 2 mA or 1 VDC for longer than 10 seconds after powerup.		Ch2 is configured to report temperature and temperature sensor is defective.	Replace.	
		•		•	•	Ch3 analog output produces 2 mA or 1 VDC for longer than	Check part number to determine if humidity	Humidity sensor is not fitted.	Purchase a model with optional humidity sensor.	
						10 seconds after powerup.	sensor fitted.	Humidity sensor is defective	Replace.	
		•	•	•	•	Display is black.	Touch display.	The monitor has gone into sleep mode because the display was not touched for 5 minutes.	Touch display to wake up or reconfigure for dim display while sleeping.	
		•	•	•	•	Display is dim.	Touch display.	The monitor has gone into sleep mode because the display was not touched for 5 minutes.	Touch display to wake up or reconfigure for black display while sleeping.	
		•	•	•	•	Display is white	Unplug USB cable.	Microprocessor will not boot if USB is connected.	Unplug USB cable.	
		•	•	•	•	Numeric display is replaced by ""		Associated sensor is defective	Replace.	
		•	•	•	•	Triangle with exclamation symbol () is shown at top of screen.		One or more sensors is defected	Replace.	
		•	•	•	•	Calibration menu is not visible.		Calibration is only possible with level 2 password.	Enter the level 2 password.	

	IAQPoint2 Troubleshooting Guide									
Affected Models		Ver	sion							
Analog Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution		
•	•	•	•		Temperature reading is higher than an accurate reference instrument.		The monitor is not mounted vertically as required.	Remount vertically, according to installation instructions.		
					Temperature reading is higher than an		Air velocity is less than 7 ft/sec (2 m/	Reposition the monitor for a location with adequate air velocity.		
))	accurate reference instrument.		sec) as required.	Use an alternate sensor for temperature measurement.		
•	•	•	•		Temperature reading is lower than an accurate instrument.		The monitor is not located in still air as required.	Remount according to installation instructions, away from air vents.		
	•	•	•	•	Temperature setpoint adjustment range is restricted to narrower than 50 - 95F (10 - 35C)	Check configuration via Review>>User Config line 4.	The monitor has been configured for narrower temperature limits	Enter level 2 password and navigate to Con- figure >> Configure SetPoints >> Max- Temp or MinTemp.		
						Navigate to Configure >> Configure Display >> Main Display Dataset. Check the settings	The monitor is set for simple display.	Change the settings under Configure >> Configure Display >> Main Display Dataset.		
	•	•	•	•	Features absent from main display screen	Navigate to Configure >> Configure Display >> Easy Temp Adj.	The easy temperature adjust screen is disabled by default	Enter level 2 password and change the setting under Configure >> Configure Display >> Easy Temp Adj.		
						Check part number to determine if temperature and humidity sensors are fitted.	Some software features are not available in basic versions of the product.	Purchase a model with all of the desired features such as relay and temperature / humidity sensor.		
•	• • •		•	Gas reading seems inaccurate.	Confirm that the gas calibration port (as shown in Figure 7) is plugged.	The monitor is sampling air from outside the duct.	Plug gas calibration port.			

	IAQPoint2 Troubleshooting Guide									
Affected Models			Ver	sion						
Analog Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution		
							ABC feature is disabled unintentionally, thus preventing automatic baseline correction.	Turn on ABC. (Allow 3 weeks for automatic corrections.)		
					Gas reading seems	If CO ₂ sensor is fitted,	If ABC is disabled intentionally, unit is in need of calibration	Calibrate as described on page 40.		
	•				inaccurate.	reading seems check if ABC feature	if ABC is enabled, the environment may not be suitable for ABC. ABC requires an environment with atmospheric CO2 concentration for several hours per day.	Disable ABC and use periodic manual calibration as described on page 40.		
							Confirm that the monitor's reported concentration	Calibration gas was not delivered to the	Confirm that a regulator for 0.5 l/min flow is used such as Honeywell part number M-502877.	
						responded when the calibration gas flow started.	sensor.	Confirm that the gas delivery tube is connected to the side calibration port shown in Figures 7 and 8.		
•	•	•	•	•	Gas Calibration op- eration reports "base cal fail"	Confirm that the	Wrong calibration gas cylinder used	Confirm that the cor- rect calibration gas is used such as Honey- well part M-501038		
						reported concentra- tion is within 200 ppm of the target concentration	The sensor was previously miscaibrated to be far in error. This can happen if a zero calibration is performed without gas.	Change the calibration is two smaller steps by setting the target concentration midway between the current reading and the cylinder's true CO2 concentration.		
							The monitor is defective	Contact Honewell Service.		

	IAQPoint2 Troubleshooting Guide									
,	Affecte Model		Version							
Analog Non-display	Analog with Display	Digital	Wall-mount	Duct-mount	Symptom	Diagnostic Tests	Cause	Solution		
							Network polarity is incorrect.	Review wiring and installation instructions		
							Protocol is wrong.	Configure for Modbus or BACnet.		
						Look for 'N' at top of main display. Check	Baud rate is wrong.	Configure for same speed as other devices on the network.		
					The monitor does not communicate.	configuration via Review>>User Con-	Address is wrong.	Configure for a unique address.		
							The monitor does not	fig lines 1 and 2.	Parity is wrong	Configure to same value as Modbus master.
								Unsupported com- mand (e.g. Modbus Write Multiple Registers)	Use a supported command.	
				•		Examine termination resistor switches as described in Figure 12 (wall-mount) and Figure 16 (duct- mount)	Termination is wrong.	Each network segment should have exactly two 120 Ω terminals.		
			•	•		Examine the analog slide switches as shown in Figure 16.	The analog termination resistors are across the digital network.	Slide the switches to the left.		
		•	•	•	Unexpected data values read on Modbus.	Read Modbus holding registers with a PC tool such as ModbusPoll.	Incorrect interpreta- tion.	See Modbus register table on page 53.		
		•	•	•	Unexpected data values read on BACnet.	Read BACnet objects with a PC tool such as CAS BACnet Explorer.	Incorrect interpreta- tion.	See BACnet properties table on page 61.		

Maintenance

The built-in ABC algorithm makes maintenance unnecessary in normal environments.

Cleaning

Clean the case and the touchscreen by wiping gently with a soft cloth dampened only with water. Do not allow water to enter the monitor's case. Do not spray any liquids on the touchscreen or the case. Do not use harsh or abrasive cleaning solutions on the touchscreen or the case.

Sensor accuracy test

To test the CO₂ sensor, apply 1000 ppm of CO₂ test gas⁴. The sensor should read ±30 ppm ±5% of the test gas specification. This equates to 1000 ppm ±80 ppm ± of the test gas specification. There is no accuracy test for VOC sensors.

Sensor poisons/inhibitors

Silicone is one of the major chemicals that has an adverse effect on VOC sensors. It forms a layer on top of the sensitive material, thus limiting the accessibility of the sensor surface. When this happens, sensitivity can be reduced drastically. The effect of this on the monitor's performance could be severe. The monitor would be unable to recover from this condition. There are no poisons or inhibitors for the CO_2 sensor.

VOC sensors can be affected by rapid transitions in relative humidity.

⁴ part no. M-501010

Specifications

D	escription		Value
	Gas		CO ₂
Monitor with	Detection meth	od	Non-dispersive infrared (NDIR) with automatic background calibration (ABC) algorithm
Monitor with CO ₂ sensor	Ranges		0-2,000 ppm, 0-5,000 ppm
301301	Accuracy		±30 ppm ±3% of reading at 25°C from 0 to 2,000 ppm ^{1, 2, 3}
	Response Time		T ₉₀ <60 seconds
	Calibration		Not required
	Gases		Volatile organic compounds (VOCs)
Monitor with	Detection meth	od	Metal oxide semiconductor (MOS)
VOC sensor	Range		0-100 air quality index
	Calibration		Not required
	Temperature Ra	ange	32°F to 122°F (0°C to 50°C), 32°F to 104°F (0°C to 40°C) for wall-mount
	Temperature Ad	curacy	±0.5°C at 25°C and 50% rH ±1.5°C over range ⁴
	Humidity Range		0 to 95% rH, non-condensing
	Humidity Accur	асу	±5% at 25°C and 50% rH ⁴
	Duct-mount Air Velocity		420 ft/min (2 m/s) minimum, 1760 ft/min (9 m/s) minimum
	Power in		20 to 30 VAC; 18 to 28 VDC
Custom		Analog	typical: 188 mA @ 24 VAC (150 mA minimum, 281 mA maximum)
System Operations	Consumption	Digital	typical: 87 mA @ 24 VDC (75 mA minimum, 174 mA maximum)
Operations			typical: 174 mA @ 24 VAC (135 mA minimum, 215 mA maximum)
			typical: 83 mA @ 24 VDC (75 mA minimum, 120 mA maximum)
	Dimensions		3.0 in. W x 4.6 in. H x 1.5 in. D (77 mm x 118 mm x 37 mm)
	Weight		0.44 lbs (0.20 kg)
	Enclosure		ABS
	Display		TFT, multicolor graphical touchscreen, 1.9 in. W x 2.6 in. H (49 mm x 65 mm); optional with analog units
	Languages		English, French for initial release
Storage tempe	erature		to 122°F (-10°C to 50°C)
	Analog		4-20 mA, 0-10 VDC selectable
Outputs	Digital		Modbus RTU, BACnet MS/TP
Outputs	Relay		3 amps, 250 VAC resistive, and 30 VDC SPDT; field configurable set-
Mounting	Relay Wall mount		point and hysteresis IP22
options	Duct mount		IP22
	US		ANSI/UL 61010-1
	Canada		CAN/CSA C22.2 No. 61010-1
Certifications	Europe		CE EN 13779-2007
	Compliance		RoHS, WEEE
Warranty			One year

¹ allow an additional ±2% of reading for calibration gas cylinder

² self-calibration period: 2-3 weeks; warm-up time to spec precision: 1 minute

³ additional uncertainty of 2% of the reading for readings greater than 2,000 ppm

⁴ in still air after calibration

Modbus registers

Some models of the IAQPoint2 contain a digital interface for communicating over RS-485 networks. This interface can be switched in software to use either the Modbus RTU or BACnet MS/TP protocols. It can communicate at any speed from 4800 to 115,200 baud. When configured for Modbus and 9600 baud, the IAQPoint2 is compatible with the Honeywell 301C controller. The IAQPoint2 can directly replace an IAQPoint1 in Modbus or analog applications.

More information on Modbus can be obtained at www.modbus.org. The IAQPoint2 contains 12 Modbus holding registers. hese are numbered from 40101 to 40112 – it skips over the first 100. There are no input registers, output registers, or coils. Holding registers 40101 provides a concise summary of essential status. Two holding registers are writable via command 06.

This flowchart includes fieldbus and simulation features.

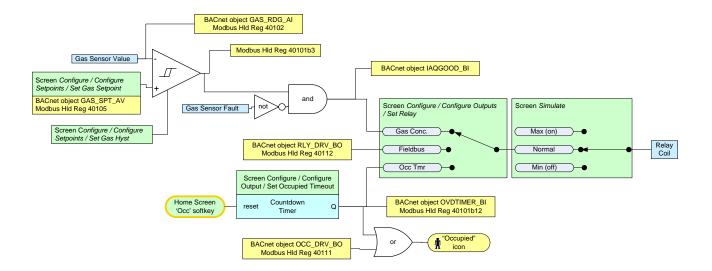


Figure 23. IAQPoint2 relay flow with fieldbus and simulation elements

	Modbus Registers								
Holding Register Address	Bit	Summary	Detail						
	b0	CO ₂ sensor good	This is true if the CO ₂ sensor is fitted and has no faults.						
	b1	VOC sensor good	This is true if the VOC sensor is fitted and has no faults.						
	b2	Heartbeat	This bit alternate between true and false every 10 seconds.						
	b3	Gas Conc low	This bit is true if the gas reading is less than the setpoint.						
	b4	Temp sensor good	This bit is true if the temperature sensor is fitted and reading correctly.						
	b5		Reserved for future enhancements.						
	b6		Reserved for future enhancements.						
	b7		Reserved for future enhancements.						
40101	b8	Humidity sensor good	This bit is true if the humidity sensor is fitted and reading correctly.						
	b9		Reserved for future enhancements.						
	b10		Reserved for future enhancements.						
	b11		Reserved for future enhancements.						
	b12	Occupied Timer Running	This bit is true if the occupied timer inside the IAQPoint2 is running. See Figure 22 for an illustration of this.						
	b13	Relay Fitted	This is true if the PEM backplate contains the optional relay.						
	b14	Relay Energized	This bit is true if the relay is energized.						
	b15		Reserved for future enhancements.						
40102		Gas displayed reading.	This reports gas concentration. If the CO_2 sensor is fitted this will report in ppm from 0 to 5000. If the VOC sensor is fitted this will report the air quality index from 0 to 100. If the gas sensor is faulty this will report 32767.						
40103		Temperature C observed	This reports temperature in tenths of a degree Celcius. (For example, the temperature of a human body would be reported as 370.) If the temperature sensor is faulty or absent this will contain -2730.						
40104		rH reading, Ob- served	This reports the relative humidity in percent from 0 to 100. If the humidity sensor is faulty or absent this will contain -1.						
40105		CO ₂ /VOC setpoint	This contains the gas setpoint. The scaling is the same as register 40102. It is not writable.						
40106		Temperature C Setpoint	This contains the temperature setpoint. The scaling is the same as register 40103. It is not writable.						
40107		rH setpoint	This contains the relative humidity setpoint. It is not writable.						
40108		Heartbeat	This counts forever up from 1 to 10000 and then repeats. Some Modbus masters may need this to confirm the communication is working.						
40109			Reserved for future enhancements.						
40110			Reserved for future enhancements.						
40111		Write Occupied	Writing a 1 to this will cause the "Occupied" icon to appear on the LCD. Writing anything other than 0 or 1 is illegal. See Figure 22 for an illustration of this.						
40112		Write Relay	Writing a 1 or 0 to this will activate the relay if the correctly configured. Writing anything other than 0 or 1 is illegal. See Figure 22 for an illustration of this.						

BACnet introduction

When configured for BACnet, the IAQPoint2 contains ten BACnet objects. The reading from each of the three sensors is conveyed by a analog input objects while the setpoints are conveyed by an analog value objects. Additionally, two binary inputs provide a simple indication of relative air quality and the occupied timer status. Finally, two binary outputs facilitate manipulation of the relay and the occupied icon by BACnet. Each object has several properties which can be read and sometimes written. All of the objects and properties of the IAQPoint2 BACnet device are listed in the table at the end of this section. A BACnet protocol implementation conformance statement (PICS) is included in this section, as well. More information about BACnet can be found at www. bacnet.org.

BACnet Protocol Implementation Conformance Statement

ANNEX A

- PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE) (This annex is part of this Standard and is required for its use.)

BACnet Protocol Implementation Conformance Statement

Date: May 22, 2012

Vendor Name: Honeywell International Inc Product Name: Next Generation IAQ Point

Product Model Number:

Application Software Version: unknown

Firmware Revision: unknown BACnet Protocol Revision: 7

Product Description:

Next Generation IAQ point is an indoor air quality sensor. It can measure CO2, volatile organic compounds, temperature and relative humidity. It communicates via BACnet MSTP and other means.

BACnet Standardized Device Profile (Annex L):

☐ BACnet Operator Workstation (B-OWS)
■ BACnet Advanced Operator Workstation (B-AWS
■ BACnet Operator Display (B-OD)
☐ 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):

BIBB	Service
DS-RP-B	Data Sharing - ReadProperty-B
DS-RPM-B	Data Sharing - Read Property Multiple-B
DS-WP-B	Data Sharing - Write Property-B
DM-DDB-B	Dynamic Device Binding
DM-DOB-B	Dynamic Object Binding

Segmentation Capability:	
□ Able to transmit segmented messages	Window Size
☐ Able to receive segmented messages	Window Size

Standard Object Types Supported:

An object type is supported if it may be present in the device. For each standard Object Type supported provide the following data:

- Whether objects of this type are dynamically creatable using the CreateObject service
- 2) Whether objects of this type are dynamically deletable using the DeleteObject service
- 3) List of the optional properties supported
- 4) List of all properties that are writable where not otherwise required by this standard
- 5) List of proprietary properties and for each its property identifier, datatype, and meaning
- 6) List of any property range restrictions

Object	Supported	Object Dynamically Creatable	Object Dynamically Deletable
ACCUMULATOR	N	N	N
ANALOG INPUT	Y	N	N
ANALOG_OUTPUT	N	N	N
ANALOG_VALUE	Y	N	N
AVERAGING	N	N	N
BINARY_INPUT	Y	N	N
BINARY_OUTPUT	Y	N	N
BINARY_VALUE	N	N	N
CALENDAR	N	N	N
COMMAND	N	N	N
DEVICE	Y	N	N
EVENT_ENROLLMENT	N	N	N
FILE	N	N	N
GROUP	N	N	N
LOOP	N	N	N
LIFE_SAFETY_DEVICE	N	N	N
LIFE_SAFETY_ZONE	N	N	N
MULTISTATE_INPUT	N	N	N
MULTISTATE_OUTPUT	N	N	N
MULTISTATE_VALUE	N	N	N
NOTIFICATION_CLASS	N	N	N
PROGRAM	N	N	N
PULSE CONVERTER	N	N	N
SCHEDULE	N	N	N
TRENDLOG	N	N	N

Analog Input Object

Optional Properties	Writable Properties (Not must by the Standard)	Proprietary Property
Reliability	Present Value	None
	Out Of Service	
	Object Name	
	Engineering Units*	

Present Value

- Range Restriction for GAS_RDG_AI (Object Identifier 0): 400 to 5000 ppm or 10 to 100% depending on sensor fitted.
- Range Restriction for TEMP_AI (Object Identifier 1): 10 to 35 degC or 50 to 95 degF
- Range Restriction for RH_AI (Object Identifier 2): 0 to 100%

Object Name

Range restriction of 1-22 characters.

Engineering Units

- Only writable for TEMP_AI (Object Identifier 2).
- Valid Options: Degrees C (62) or Degrees F (64).

Note:

- 1- For conveying the absence of sensor in PEM SKUs "Reliability" property with NO SENSOR value shall be used. The "status flags" property should convey FAULT in this condition.
- 2- During the sensor fault conditions in PEM, the "Reliability" property with UNRELIABLE_OTHER value shall be used. The "status flags" property should convey FAULT in this condition.

Analog Value Object

Optional Properties	Writable Properties (Not must by the Standard)	Proprietary Property
Reliability	Present Value	None
	Object Name	
	Engineering Units	

Present Value

- Range Restriction for GAS_SPT_AV (Object Identifier 3): 400 to 5000 ppm or 10 to 100% depending on sensor fitted.
- Range Restriction for TEMP_AV (Object Identifier 4): 10 to 35 degC or 50 to 95 degF
- Range Restriction for RH_AV (Object Identifier 5): 0 to 100%

Object Name

- Range restriction of 1-22 characters.

Engineering Units

- Applies to only Temperature setpoint (Object Identifier 4).
- Valid Options: Degrees C (62) or Degrees F (64).

Reliability

- Always NO_FAULT_DETECTED

Binary Input Object

Optional Properties	Writable Properties (Not must by the Standard)	Proprietary Property
Reliability	Present Value	None
	Out Of Service	
	Object Name	

Object Name

- Range restriction of 1-22 characters.

Reliability

- Always NO_FAULT_DETECTED

Present Value

- Writable only as 0 or 1.

Binary Output Object

Optional Properties	Writable Properties (Not must by the Standard)	Proprietary Property
Reliability	Object Name	None

Object Name

- Range restriction of 1-22 characters.

Reliability

- Always NO_FAULT_DETECTED

Device Object

Optional Properties	Writable Properties (Not must by the Standard)	Proprietary Property
Location	Object Identifier*	None
Description	Location	
Max Master	Description	
Max Info Frames	Max Master	

^{*} The uniqueness of Object Identifier shall be ensured by the writing device. The PEM will not have a mechanism to ensure the internetwork-wide uniqueness of these properties.

Max_APDU_Length_Accepted – PEM shall use a value of 480 for APDU length. Max Info Frames shall have a value of 1.

Object Name – Range restriction of 1-22 characters. Location – Range restriction of 1-22 characters Description – Range restriction of 1-50 characters Max Master – Range Restriction of 1-127 Object Identifier – Range Restriction of 0 to 4,194,302

Note: PEM shall increment the database revision property as per the BACnet specifications.

Objects List

Object	Type & Identifier	Description
GAS_RDG_AI	Analog Input 0	Gas Reading
TEMP_AI	Analog Input 1	Temperature reading in deg C or deg F
RH_AI	Analog Input 2	Relative Humidity Reading
GAS_SPT_AV	Analog Value 3	Gas Setpoint value
TEMP_SPT_AV	Analog Value 4	Temperature Setpoint in deg C or deg F
RH_SPT_AV	Analog Value 5	Relative Humidity Setpoint
IAQGOOD_BI	Binary Input 6	Gas concentration is low
OVDTIMER_BI	Binary Input 7	Occupied Timer Running
RLY_DRV_BO	Binary Output 8	Relay drive
OCC_DRV_BO	Binary Output 9	Occupied state Drive
IAQ Device	Device Object	Device Object

Data Link Layer Options:			
	ause 7) IET (Clause 8) NET (Clause 8), baud rate(s), b, baud rate(s): 4800, 9600, 19200, 3 baud rate(s): Clause 10), baud rate(s): (Clause 10), baud rate(s): dium:		B O O,
Davies Adduses Diadios			
Device Address Binding:	ported? (This is currently pecesar	v for two-way	
communication with MS/TP	ported? (This is currently necessar slaves and certain other devices.)	☐ Yes ■ No	
Networking Options:			
Router, Clause 6 - List all	I routing configurations, e.g., ARCN	IET-Ethernet,	
Ethernet-MS/TP, etc. Annex H, BACnet Tunnel	ing Router over IP		
☐ BACnet/IP Broadcast Ma	•		
	port registrations by Foreign Device	es? 🛮 Yes 🕻]
No			_
No Does the BBMD sup	port network address translation?	□ Yes □	_
Network Security Options:			
Network Security Options.			
	ion (NS-ED BIBB)		ty
Character Sets Supported:	nlo character cote doce not imply t	hat thay can all b	^
supported simultaneously.	ple character sets does not imply t	nat they call all D	C
■ ISO 10646 (UTF-8)	□ IBM TM /Microsoft TM DBCS	□ ISO 8859-1	
□ ISO 10646 (UCS-2)	☐ ISO 10646 (UCS-4)	□ JIS X 0208	
(000 2)	(0.00 .)	_ 0.0 / 0200	
If this product is a commun equipment/networks(s) thatThis is not a gateway_	ication gateway, describe the type the gateway supports:	s of non-BACnet	

BACNet Objects and Properties									
Group	Property	Data Type	Required	Storage Type	Read Value	Writable Values			
	object_identifier	unsigned	R	N	1	0 to 4,194,302			
	object_type	enumerated	R	С	device (8)	not writable			
	vendor_identifier	enumerated	R	С	Honeywell Inc. (17)	not writable			
	apdu_timeout	unsigned	R	С	0	not writable			
	application_software_ version	character string	R	С	v1	not writable			
	description	character string	0	С	Honeywell Indoor Air Quality Sensor	not writable			
	firmware_revision	character string	R	С	v1	not writable			
	location	character string	О	N	"location"	Any unique string 1-22 bytes			
	max_apdu_length_ac- cepted	unsigned	R	С	480	not writable			
	max_info_frames	unsigned	0	С	1	not writable			
	max_master	unsigned	0	N	127	1 to 127			
Φ.	model_name	character string	R	С	IAQPoint2	not writable			
Device	number_of_apdu_retries	unsigned	R	С	0	not writable			
	object_name	character string	R	С	""IAQPoint2_" + lower 12 bytes of serial number"	not writable			
	protocol_object_types_ supported	bit string	R	С	"analog_input, analog_value, binary_input, binary_output, device"	not writable			
	protocol_services_sup- ported	bit string	R	С	"readProperty, readPropertyMultiple, writeProperty, who_Has, who_Is,"	not writable			
	protocol_version	unsigned	R	С	1	not writable			
	segmentation_supported	enumerated	R	С	no_segmentation (3)	not writable			
	system_status	enumerated	R	С	operational_read_only (1)	not writable			
	vendor_name	character string	R	С	Honeywell	not writable			
	protocol_revision	unsigned	R	С	7	not writable			
	database_revision	unsigned	N	С	default 0 - will increment on changes of object names	not writable			

	BACNet Objects and Properties									
3	dnoib	Property	Data Type	Required	Storage Type	Read Value	Writable Values			
П		object_identifier		R	С	analog_input (0)	not writable			
		object_type	enumerated	R	С	analog_input (0)	not writable			
		event_state	enumerated	R	R	"if gas sensor fault Fault (1), else normal (0)"	not writable			
		object_name	character string	R	N	"GAS_RDG_AI"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	R	FALSE	"true" or "false"			
	IA_R	present_value	real	R	R	"Gas reading if CO2 fitted, 0 to 5000 if VOC fitted, 0 to 100"	"Only if out_of_service is TRUE. If CO2 fitted, 400 to 5000 if VOC fitted, 10 to 100"			
	GAS_RDG	reliability	enumerated	o	R	"As appropriate reports no_fault_detected (0) or no_sensor (1) or unreliable other (7) Fault is detected within 60 seconds"	not writable			
		status_flags	harden.	_	_	"if faulty "true" (1)				
		in_alarm	boolean	R	R	else "false" (0)" "if faulty "true" (1)	not writable			
		fault	boolean	R	R	else "false" (0)"	not writable			
		overridden	boolean	R	R	"false" (0)	not writable			
		out_of_service	boolean	R	R	Reports the OOS state	not writable			
		units	enumerated	R	N	"if CO2 fitted, ppm (96) if VOC fitted, % (98)"	not writable			
		object_identifier		R	С	analog_input (1)				
		object_type	enumerated	R	С	analog_input (0)				
		event_state	enumerated	R	R	"if temp sensor fault, fault (1), else normal (0)"				
		object_name	character string	R	N	"TEMP_AI"	Any unique string 1-22 bytes			
onts		out_of_service	boolean	R	R	FALSE	"true" or "false"			
Analog Inputs	P_A	present_value	real	R	R	"Temperature reading if Celcius, 0 to 50 if Fahrenheit 32 to 122"	"Only if out_of_service is TRUE if Celcius, 10 to 35 if Fahrenheit 50 to 95"			
A	EMP	reliability	enumerated	0	R	"if not purchase "no_sensor" (1) else if in fault "unreli- able_other" (7) else no_fault_detected (0)"	not writable			
	<u> </u>	status_flags								
		in_alarm	boolean	R	R	"if not purchased or faulty "true" (1) else "false" (0)"	not writable			
		fault	boolean	R	R	"if not purchased or faulty "true" (1) else "false" (0)"	not writable			
		overridden	boolean	R	С	False (0)	not writable			
		out_of_service	boolean	R	R	Reports the OOS state	not writable			
		units	enumerated	R	N	"Celcisus (62) (Units here independent of UI and AV4)"	"Fahrenheit (64) or Celcisus (62)"			
		object_identifier		R	С	analog_input (2)	not writable			
		object_type	enumerated	R	С	analog_input (0)	not writable			
		event_state	enumerated	R	R	"if humidity sensor fault, fault (1), else normal (0)"	not writable			
		object_name	character string	R	N	"RH_AI"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	R	FALSE	"true" or "false"			
	RH_AI	present_value reliability	enumerated	R O	R R	"rH reading 0 to 100" "if not purchase "no_sensor" (1) else if in fault "unreliable_other" (10) else no_fault_detected (0)"	"Only if out of service 0 to 100" not writable			
	"	status_flags								
		in_alarm	boolean	R	R	"if not purchased or faulty "true" (1) else "false" (0)"	not writable			
		fault	boolean	R	R	"if not purchased or faulty "true" (1) else "false" (0)"	not writable			
		overridden	boolean	R	С	False (0)	not writable			
		out_of_service	boolean	R	R	Reports the OOS state	not writable			
		units	enumerated	R	N	percent_relative_humidity (29)	not writable			

	BACNet Objects and Properties									
	dnonb	Property	Data Type	Required	Storage Type	Read Value	Writable Values			
П		object_identifier		R	С	analog_value (3)	not writable			
		object_type	enumerated	R	С	analog_value (2)	not writable			
		event_state	enumerated	R	R	normal (0)	not writable			
		object_name	character string	R	N	"GAS_SPT_AV"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	R	FALSE	not writable			
	GAS_SPT_AV	present_value	real	R	N	"Gas threshold if CO2 fitted, 850 if VOC fitted, 50 (Copy of setpoint on UI)"	"If CO2 fitted, 400 to 5000 if VOC fitted, 10 to 100"			
	S_SI	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
	GA	status_flags								
		in_alarm	boolean	R	С	always false (0)	not writable			
		fault	boolean	R	С	always false (0)	not writable			
		overridden	boolean	R	С	always false (0)	not writable			
		out_of_service	boolean	R	С	always false (0)	not writable			
		units	enumerated	R	С	"if CO2 fitted, ppm (96) if VOC fitted, % (98)"	not writable			
İİ		object_identifier		R	С	analog_value (4)	not writable			
		object_type	enumerated	R	С	analog_value (2)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"TEMP_SPT_AV"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	С	FALSE	not writable			
Analog Values	TEMP_SPT_AV	present_value	real	R	N	"20 C Copy of setpoint on UI)"	"if Celcius, 10 to 35 if Fahrenheit 50 to 95"			
nalog	IP_S	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
Ā	TEN	status_flags								
		in_alarm	boolean	R	С	always false (0)	not writable			
		fault	boolean	R	С	always false (0)	not writable			
		overridden	boolean	R	С	always false (0)	not writable			
		out_of_service	boolean	R	С	always false (0)	not writable			
		units	enumerated	R	N	"Celcisus (62) (Units here independent of UI and AI1)"	"Fahrenheit (64) or Celcisus (62)"			
		object_identifier		R	С	analog_value (5)	not writable			
		object_type	enumerated	R	С	analog_value (2)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"RH_SPT_AV"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	С	FALSE	not writable			
	Ŋ.	present_value	real	R	N	"50 % rH (Copy of setpoint on UI)"	0 to 100%			
	RH_SPT_AV	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
	Æ	status_flags								
		in_alarm	boolean	R	С	always false (0)	not writable			
		fault	boolean	R	С	always false (0)	not writable			
		overridden	boolean	R	С	always false (0)	not writable			
		out_of_service	boolean	R	С	always false (0)	not writable			
		units	enumerated	R	С	percent_relative_humidity (29)	not writable			

	BACNet Objects and Properties									
	Group	Property	Data Type	Required	Storage Type	Read Value	Writable Values			
		object_identifier		R	С	binary_input (6)	not writable			
		object_type	enumerated	R	С	binary_input (3)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"IAQGOOD_BI"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	R	FALSE	"true" or "false"			
	画	polarity	enumerated	R	С	always Normal (0)	not writable			
	IAQG00D_	present_value	enumerated	R	R	"if no faults and Conc <sp, (0)"<="" (1)="" else="" false="" td="" true=""><td>"only of out_of_service, "true" or "false""</td></sp,>	"only of out_of_service, "true" or "false""			
İ	ĭĕ	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
		status_flags								
İ	İ	in_alarm	boolean	R	С	always "false" (0)	not writable			
		fault	boolean	R	С	always "false" (0)	not writable			
=		overridden	boolean	R	С	always "false" (0)	not writable			
Binary Input		out_of_service	boolean	R	С	reports true OOS state	not writable			
inary		object_identifier		R	С	binary_input (7)	not writable			
"		object_type	enumerated	R	С	binary_input (3)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"OVDTIMER_BI"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	R	"false"	"true" or "false"			
	画	polarity	enumerated	R	С	always Normal (0)	not writable			
	OVDTIMER	present_value	enumerated	R	R	"if override timer running, "true" (1) else "false" (0)"	"only of out_of_service, "true" or "false""			
	§	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
		status_flags								
		in_alarm	boolean	R	С	always "false" (0)	not writable			
		fault	boolean	R	С	always "false" (0)	not writable			
		overridden	boolean	R	С	always "false" (0)	not writable			
		out_of_service	boolean	R	R	reports true OOS state	not writable			

	BACNet Objects and Properties									
	dnoan	Property	Data Type	Required	Storage Type	Read Value	Writable Values			
		object_identifier		R	С	binary_output (8)	not writable			
		object_type	enumerated	R	С	binary_output (4)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"RLY_DRV_BO"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	О	FALSE	not writable			
		polarity	enumerated	R	С	always Normal (0)	not writable			
	C	present_value	enumerated	R	R	last value written	"true" or "false"			
	REV_DRV_BO	priority_array		R	R	last value written	"true" or "false"			
	/_DR	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
	RE	relinquish_default		R	С	"false" (0)	not writable			
		status_flags								
		in_alarm	boolean	R	С	always "false" (0)	not writable			
		fault	boolean	R	С	always "false" (0)	not writable			
Binary outputs		overridden	boolean	R	R	"if Relay configured to respond to fieldbus, "false" (0). If relay configured to respond to gas or occupied timer or relay absent, "true" (1)"	not writable			
Iry of		out_of_service	boolean	R	R	always "false" (0)	not writable			
Bina		object_identifier		R	С	binary_output (9)	not writable			
		object_type	enumerated	R	О	binary_output (4)	not writable			
		event_state	enumerated	R	С	normal (0)	not writable			
		object_name	character string	R	N	"OCC_DRV_BO"	Any unique string 1-22 bytes			
		out_of_service	boolean	R	С	FALSE	not writable			
		polarity	enumerated	R	С	always Normal (0)	not writable			
	R_BI	present_value	enumerated	R	R	last value written	"true" or "false"			
	TIME	priority_array		R	R	last value written	"true" or "false"			
	OVDTIMER_B	reliability	enumerated	0	С	no_fault_detected (0)	not writable			
		relinquish_default		R	С	"false" (0)	not writable			
		status_flags								
		in_alarm	boolean	R	С	always "false" (0)	not writable			
		fault	boolean	R	С	always "false" (0)	not writable			
		overridden	boolean	R	С	always "false" (0)	not writable			
		out_of_service	boolean	R	С	always "false" (0)	not writable			

Notes:
1 --- 'R' indicates that this property is required by ASHRAE Standard 135 '0' indicates that the property is optional in ASHRAE Standard 135 2 --- 'C' indicates the property is hard-coded as a constant 'N' indicates the property is stored in non-volatile memory 'R' indicate the property is computed constantly and stored in RAM.

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 year, such defective part will be repaired or replaced, free of charge, at Honeywell Analytics' discretion if shipped prepaid to Honeywell Analytics at 405 Barclay Boulevard, Lincolnshire, Illinois, USA 60069, 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.

Restocking Policy

The following re-stocking fees apply when customers return products for credit: A 15% re-stocking fee will be applied if the product is returned within 1 month of the shipping date.

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

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

No credits will be issued beyond the three month period.

Exclusions

If a gas sensor is part of the Product, it is covered by the manufacturer's twelvemonth limited warranty.

If a gas sensor is covered by this limited warranty, and a claim by the Purchaser is made under this limited warranty, the sensor is subject to inspection by Honeywell Analytics for extended exposure to excessive gas concentrations. If this inspection indicates 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 has 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 in this document 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 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 from the transactions under this warranty may be brought by the purchaser more than one year after the cause of actions has occurred.

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