INDOOR AIR QUALITY SENSOR TR50

The Honeywell TR50 IAQ Sensor is an advanced, configurable device for commercial buildings. This sensor monitors:

- Temperature (T)
- Relative Humidity (RH)
- Carbon Dioxide (CO_2)
- Particulate Matter (PM1.0, PM2.5, PM10)
- Total Volatile Organic Compound (TVOC)

Flexible building automation system integration via BACnet MS/TP, Modbus, Sylk™ Bus protocols. Customizable display and sensor thresholds with stable long-term accuracy for minimal maintenance or recalibration.

FEATURES AND BENEFITS

MULTI-SENSOR

You spend 90% of your time indoors. Know more about the air in your building.

Easy integration with third party controllers or Honeywell Optimizer controllers, with the added option for utilizing the Healthy Buildings Dashboard or the Intelligent Building Optimizer to help ensure that ventilation and filtrations are always optimized for the best productivity, and energy outcomes.

BUILT TO LAST

Long Term Stability is ensured by us. Accurate and resilient sensors that come pre-calibrated from the factory and do not need to be re-calibrated in the field.

The ability for over the wire firmware updates ensures time savings when upgrades are available, useful to enhance existing features, and any bug fixes.

BUILT FOR FLEXIBILITY

The LED ring light changes colors from green to yellow to red based on the parameter levels detected.

The colored LED can also be switched to a neutral mode with only white light.

Show the users why parameters are important by locking certain ones so they are always visible and hiding the ones, you do not want to see.

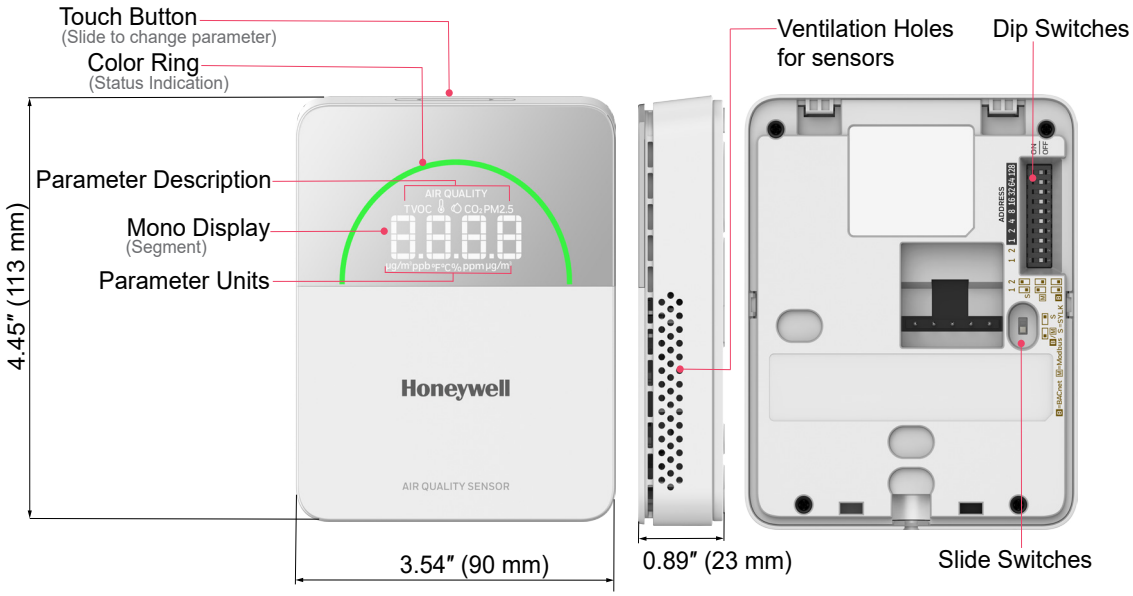
AIR QUALITY SCORE

With a novel sixth output that the sensor provides - users in the space and facility managers, too, can see a simple numerical score out of one hundred that shows them how good the air quality is.

This Air Quality index is calculated based on CO_2, PM2.5, and TVOC detected for the TR50-5D, TR50-5D-U and only CO_2 for the TR50-3D, TR50-3D-U.

Honeywell

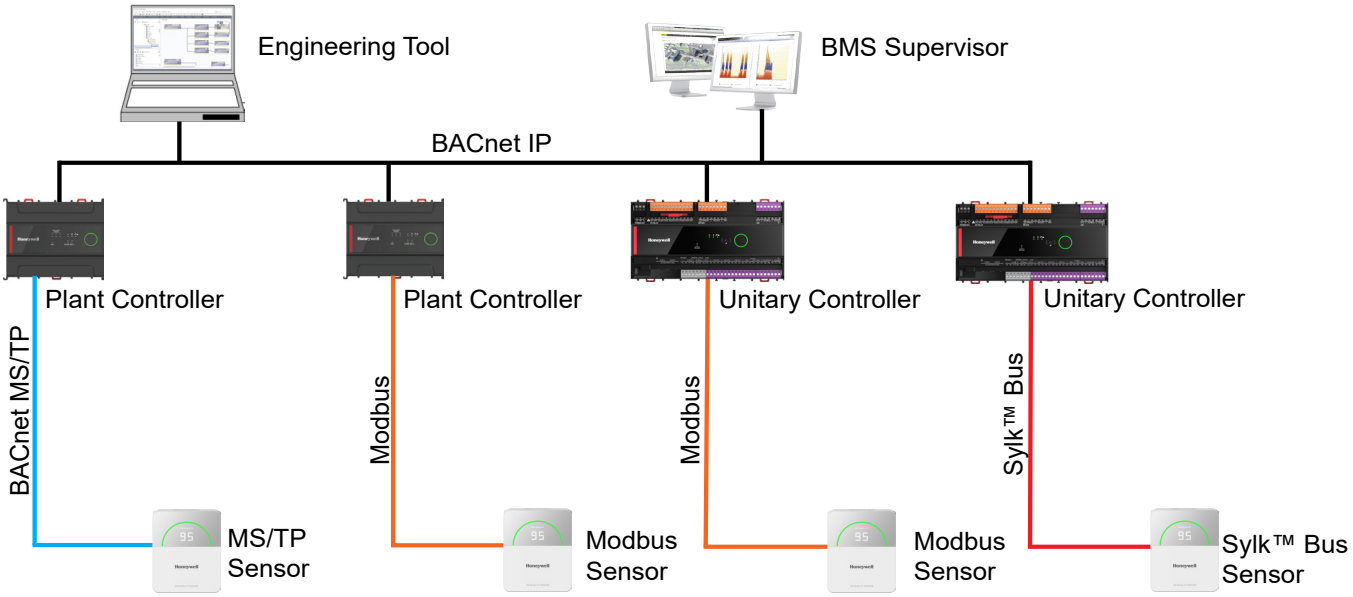
OVERVIEW AND DIMENSIONS



All the dimensions are in inches (millimeters).

SYSTEM ARCHITECTURE

There are many flexible ways a TR50 IAQ Sensor can be integrated into a BMS as shown below.



ORDERING INFORMATION

PART NUMBER	SENSORS	COMMUNICATION PROTOCOL	DISPLAY	POWER	BRAND
TR50-5D	Temperature, Humidity, CO_2, PM2.5 and TVOC	BACnet, Modbus, Sylk™	Yes	24 VAC/VDC	Honeywell
TR50-5N	Temperature, Humidity, CO_2, PM2.5 and TVOC	BACnet, Modbus, Sylk™	No	24 VAC/VDC	Honeywell
TR50-3D	Temperature, Humidity and CO_2	BACnet, Modbus, Sylk™	Yes	24 VAC/VDC or Sylk™	Honeywell
TR50-3N	Temperature, Humidity and CO_2	BACnet, Modbus, Sylk™	No	24 VAC/VDC or Sylk™	Honeywell
TR50-5D-U	Temperature, Humidity, CO_2, PM2.5 and TVOC	BACnet, Modbus, Sylk™	Yes	24 VAC/VDC	Unbranded
TR50-3D-U	Temperature, Humidity and CO_2	BACnet, Modbus, Sylk™	Yes	24 VAC/VDC or Sylk™	Unbranded

PRODUCT SPECIFICATION

GENERAL

PARAMETER	SPECIFICATION
Detection Parameters	- Temperature (T) - Relative Humidity (RH) - Carbon Dioxide (CO_2) - Particular Matter (PM1, PM2.5, and PM10) - Total Volatile Organic Compound (TVOC)
Display	Mono segment display
Power Supply	**Direct :** 24 VAC/VDC ± 20 % **Sylk™ :** Honeywell Sylk™ Bus Technology
Power Consumption	**TR50-5D-X:** 24 VAC, 3.8 VA, 24 VDC, 1.5 W **TR50-5N:** 24 VAC, 3.8 VA, 24 VDC, 1.4 W **TR50-3D-X:** 24 VAC, 3.2 VA, 24 VDC Sylk™ Bus, 0.9 W **TR50-3N:** 24 VAC, 3.2 VA, 24 VDC Sylk™ Bus, 0.8 W
Operating Temperature	32 - 122 °F (0 - 50 °C)
Operating Humidity	0-95 % RH, non-condensing
Storage Temperature	-40 to 150 °F (-40 to 65.5 °C)
Communication	BACnet MS/TP, Modbus over RS-485, or Sylk™ Bus
Net weight	0.42 lbs. (189 grams)
Enclosure	Polycarbonate
IP protection level	IP20
Junction Box compatibility	US single vertical, BS single, ME single, EUR single
Surface mount	The device can be mounted on drywall, stone, etc. in retrofit cases.
Touch Button	Use to switch screens from one parameter to another.

USER INTERFACE

The LED light behavior can be configured into two modes. It shows LED behavior, air quality, sensor reading level, or sensor health.

PARAMETER	SPECIFICATION			
Mode	**LED Behavior**	**Air Quality Level**	**Sensor Reading Level**	**Sensor Health**
Colour Mode	Green	Good	Good	
	Yellow	Medium	Medium	
	Red	Poor	Poor (For CO_2, PM2.5 and TVOC)	Sensor Failure
Neutral Mode	White On	Good	Good	
	White Breath	Medium	Medium	
	White Blink	Poor	Poor (For CO_2, PM2.5 and TVOC)	Sensor Failure

SENSING

PARAMETER	DETAIL		SPECIFICATION
Temperature	Technology Type		Multiple NTC compensate
	Measuring range		32 - 122 °F (0 - 50 °C)
	Sensor output resolution		0.1 °F (0.1 °C)
	Accuracy		± 1.8 °F (± 1 °C)
Humidity	Technology Type		CMOSens Sensor Chip
	Measuring range		0 - 100 % RH
	Sensor output resolution		0.1 % RH
	Accuracy		±3 % RH @ 20 - 80 % RH in Room Temperature
CO_2	Technology Type		Photoacoustic NDIR
	Measuring range		400-5000 ppm
	Sensor output resolution		1 ppm
	Accuracy		± 50 ppm ± 2.5 % reading @ 400-1000 ppm ± 50 ppm ± 3 % reading @ 1001-2000 ppm ± 40 ppm ± 5 % reading @ 2001-5000 ppm
PM1.0 PM2.5 PM10	Technology Type		Laser Scattering Particle Sensor
	Measuring Range		0 - 5000 µg/m³
	Sensor output resolution		1 µg/m³
	Accuracy (According to GRIMM Technology)	PM1.0	± 10 µg/m³, 0-100 µg/m³ 101-500 µg/m³, ± 10 % reading
		PM2.5	± 10 µg/m³, 0-100 µg/m³ 101-500 µg/m³, ± 10 % reading
		PM10	± 25 µg/m³ 0-100 µg/m³ 101-500 µg/m³, ± 25 % reading
TVOC	Technology Type		Metal Oxide (MOx) Chemiresistor
	Measuring range		8-2820 ppb (16-5640 µg/m³)
	Sensor output resolution		1 ppb (1 µg/m³)
	Accuracy (According to Ethanol)		± 10 ppb ± 15 % reading @ 8-250 ppb (± 20 µg/m³ ± 15 % reading @ 1-500 µg/m³)

SCALABILITY

The TR50 IAQ Sensors are open protocol and can connect to any controller using BACnet and Modbus. The Sylk-Bus™ connectivity is compatible with the Honeywell Optimizer Suite controllers and has limited compatibility with the Honeywell Spyder Classic models.

PRODUCT SPECIFICATION

DISPLAY OPTIONS*

PARAMETER	SPECIFICATION
Air Quality	Indoor Air Quality
Sensor Reading	Temerature, Humidity, CO_2
	PM2.5, TVOC (TR50-5D, TR50-5D-U only)
Error Code	In case of sensor failure, the display will show the sensor name and **Err**. For example, in the case of PM2.5 sensor failure, the display will show the error code as **Err**$^{PM2.5}$. If more than one sensor fails, the display will switch among those failure sensors.

*Only available in TR50-5D, TR50-5D-U and TR50-3D, TR50-3D-U models.

ELECTRICAL CHARACTERISTICS	
Purpose of Control	Operating Control
Construction of Control	Independently Mounted Control
Type of Action	Type 1
Pollution Degree	2
Rated Impulse Voltage	500 V

CALIBRATION

The devices come pre-calibrated out of the box and do not need to be recalibrated before installation. Our high precision sensors ensure that the devices do not need to be recalibrated regularly over their lifetime either.

If the device readings start to drift or you see anomalous data, you can recalibrate the sensor by providing an offset with a new sensor reading (more details in the User Guide).

STANDARDS AND COMPLIANCES	
RoHS	IEC63000
CE	EN 60730-1 EN 60730-2-9
FCC	CFR 47 Part 15 Subpart B
UL	UL 60730-1 UL 60730-2-9
ISED	ICES - 003 issue 7

GENERAL SAFETY INSTRUCTIONS

- Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

- This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
- This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

- CAN ICES-3(B)/NMB-3(B).
- l'appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux CNR exempts de licence d'Innovation, Sciences et Développement économique Canada. L'exploitation est soumise aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage,
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

- ce matériel est conforme aux limites de dose d'exposition aux rayonnements, FCC / CNR-102 énoncée dans un autre environnement.cette eqipment devrait être installé et exploité avec distance minimale de 20 entre le radiateur et votre corps.

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