

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 (CO₂)
- Particulate Matter (PM1.0, PM2.5, PM10)
- Total Volatile Organic Compound (TVOC)

Flexible building automation system integration via BACnet MS/TP, Modbus, Sylk™ Bus (coming soon) 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.

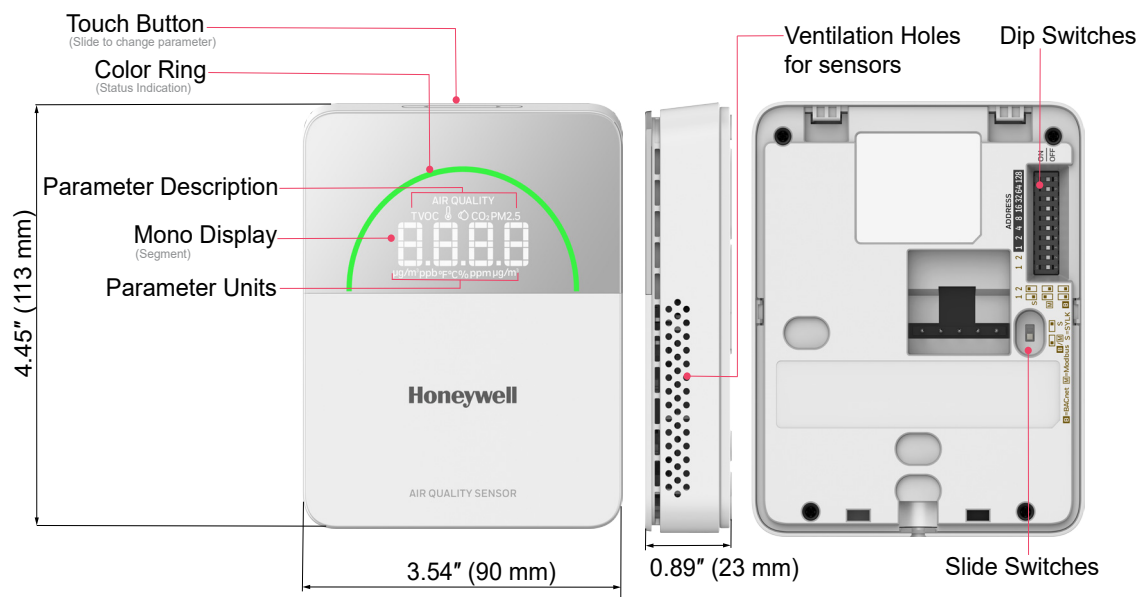
Show the users why parameters are important by locking certain ones so they are always visible and hiding the ones, you do not want to see.

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 CO₂, PM2.5, and TVOC detected for the TR50-5D and only CO₂ for the TR50-3D.

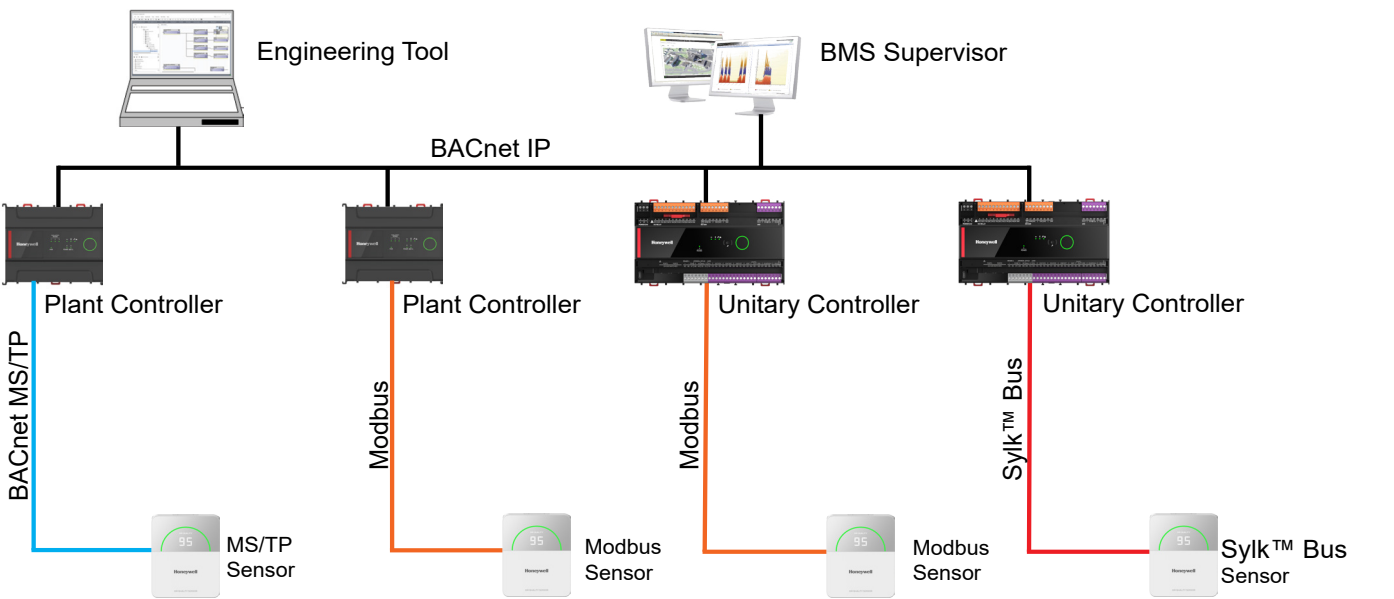
OVERVIEW AND DIMENSIONS



All the dimensions are in inches (mm).

SYSTEM ARCHITECTURE

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



ORDERING INFORMATION

PART NUMBER	SENSORS	COMMUNICATION PROTOCOL	DISPLAY	POWER
TR50-5D	Temperature, Humidity, CO ₂ , PM2.5 and TVOC	BACnet, Modbus, *Sylk™	Yes	24 VAC/VDC
TR50-5N	Temperature, Humidity, CO ₂ , PM2.5 and TVOC	BACnet, Modbus, *Sylk™	No	24 VAC/VDC
TR50-3D	Temperature, Humidity and CO ₂	BACnet, Modbus, *Sylk™	Yes	24 VAC/VDC or Sylk™
TR50-3N	Temperature, Humidity and CO ₂	BACnet, Modbus, *Sylk™	No	24 VAC/VDC or Sylk™

*** indicates 3-in-1 sensors can be used with Sylk™ as an emulated TR40, full Sylk™ compatibility with the Optimizer controllers is coming soon.

PRODUCT SPECIFICATION

GENERAL

PARAMETER	SPECIFICATION
Detection Parameters	- Temperature (T) - Relative Humidity (RH) - Carbon Dioxide (CO₂) - Particular Matter (PM1, PM2.5 and PM10) - Total Volatile Organic Compound (TVOC)
Display	Mono segment display
Power Supply	Direct : 24 VAC/VDC $\pm$ 20 % Sylk™ : Honeywell Sylk™ Bus Technology
Power Consumption	TR50-5D : 24 VAC, 3.8 VA, 24 VDC, 1.5 W TR50-5N : 24 VAC, 3.8 VA, 24 VDC, 1.4 W TR50-3D : 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

PARAMETER SPECIFICATION				
The LED light behavior can be configured into two modes. It shows LED behavior, air quality, sensor reading level or sensor health.				
Color Mode	LED Behavior	Air Quality Level	Sensor Reading Level	Sensor Health
	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	Measuring range	32 - 122 °F (0 - 50 °C)
	Sensor output resolution	0.1 °F (0.1 °C)
	Accuracy	$\pm$ 1.8 °F ($\pm$ 1 °C)
Humidity	Measuring range	0 - 100 % RH
	Sensor output resolution	0.1 % RH
	Accuracy	$\pm$ 3 % RH @ 20 - 80 % RH in Room Temperature
CO ₂	Measuring range	0-9999 ppm
	Sensor output resolution	1 ppm
	Accuracy	$\pm$ 75 ppm @ 400- 1000 ppm. $\pm$ 40 ppm $\pm$ 5 % reading @ 1001-2000 ppm
PM1.0 PM2.5 PM10	Measuring Range	0 - 5000 μ g/m ³
	Sensor output resolution	1 μ g/m ³
	Accuracy (According to GRIMM Technology)	PM1.0 $\pm$ 10 μ g/m ³ , 0-100 μ g/m ³ 101-500 μ g/m ³ , $\pm$ 10 % reading
		PM2.5 $\pm$ 10 μ g/m ³ , 0-100 μ g/m ³ 101-500 μ g/m ³ , $\pm$ 10 % reading
		PM10 $\pm$ 25 μ g/m ³ 0-100 μ g/m ³ 101-500 μ g/m ³ , $\pm$ 25 % reading
TVOC	Measuring range	0-9999 ppb
	Sensor output resolution	0.1 ppb
	Accuracy (According to Alcohol Volatilization)	$\pm$ 25 % reading

DISPLAY OPTIONS*

PARAMETER	SPECIFICATION
Air Quality	Indoor Air Quality
Sensor Reading	Temperature, Humidity, CO ₂
	PM2.5, TVOC (TR50-5D 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 and TR50-3D models.

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

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

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
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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).

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