



# SENSORS

The power behind **your mission**

## SENSORS

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## CARBON DIOXIDE

### CD-2xx-E00-00

#### WALL MOUNT - CO<sub>2</sub> AND TEMPERATURE TRANSMITTER

The CD-2xx-E00-00 series is a wall mount transmitter for measuring the CO<sub>2</sub> levels and the relevant temperature within Heating, Ventilation and Air Conditioning applications.

The CD-2xx Series incorporates a single beam dual wavelength NDIR CO<sub>2</sub> sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability.

A multiple point CO<sub>2</sub> and T factory adjustment procedure leads to excellent CO<sub>2</sub> measurement accuracy over the entire T working range.

This compact wall-mounted device produces 0 to 10 V or 4 to 20 mA signals and it is designed to work as part of any HVAC control system.

This new CO<sub>2</sub> transmitter is easy to install, offers a full 3-year warranty, and requires no maintenance or field calibration



## FEATURES

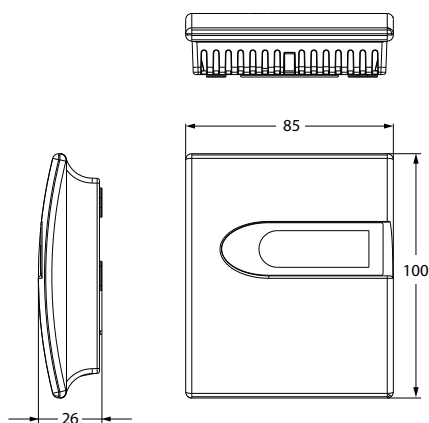
- Power supply 15...35 VDC / 24 VAC
- 0...10 V or 4...20 mA CO<sub>2</sub> and temperature output
- Models with display
- Snap-on enclosure
- Outstanding long-term stability
- CO<sub>2</sub> factory calibration certificate

## CARBON DIOXIDE







CD-2xx-E00-00 WALL MOUNT



### DIMENSIONS (in mm)



### ORDERING INFORMATION

CODES	CO <sub>2</sub> OUTPUT	CO <sub>2</sub> WORKING RANGE	TEMPERATURE OUTPUT	TEMPERATURE WORKING RANGE	DISPLAY	CALIBRATION CERTIFICATE	
CD-200-E00-00	0...10 V	0...2000 ppm	0...10 V	0 to 50°C	---		
CD-201-E00-00							
CD-220-E00-00	4...20 mA		4...20 mA		---		
CD-221-E00-00							

## CARBON DIOXIDE

### CD-3xx-E00-00

WALL MOUNT - CO<sub>2</sub> / RELATIVE HUMIDITY AND  
TEMPERATURE TRANSMITTER

The CD-3xx-E00-00 series is a wall mount transmitter for measuring the CO<sub>2</sub> levels, the relevant humidity and the temperature within Heating, Ventilation and Air Conditioning applications.

The CD-3xx series incorporates a single beam dual wavelength NDIR CO<sub>2</sub> sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability.

A multiple point CO<sub>2</sub> and T factory adjustment procedure leads to excellent CO<sub>2</sub> measurement accuracy over the entire T working range.

The CD-3xx room sensor are designed to work as part of any HVAC control system.

This new CO<sub>2</sub> transmitter is easy to install and requires no maintenance or field calibration.



## FEATURES

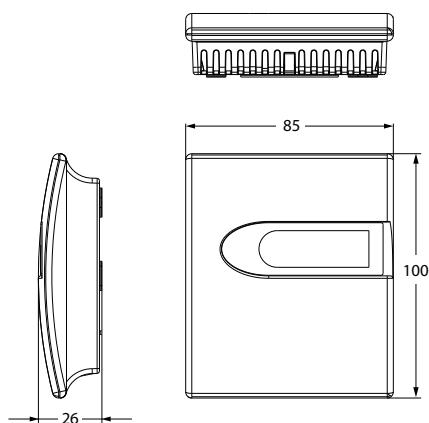
- Power supply 15...35 VDC / 24 VAC
- 0...10 V CO<sub>2</sub> and relative humidity output
- 0...10 V and Pt1000 temperature output on the same device
- Models with display
- Snap-on enclosure
- Outstanding long-term stability
- CO<sub>2</sub> factory calibration certificate

## CARBON DIOXIDE

CD-3xx-E00-00 WALL MOUNT



## DIMENSIONS (in mm)



## ORDERING INFORMATION

CODES	CO <sub>2</sub> OUTPUT	CO <sub>2</sub> WORKING RANGE	RH% OUTPUT	RH% WORKING RANGE	TEMPERATURE OUTPUT	TEMPERATURE WORKING RANGE	DISPLAY	CALIBRATION CERTIFICATE
CD-310-E00-00	0...10V	0...2000 ppm	0...10 V	10...90% RH	0...10V and Pt 1000	0 to 50°C (active model)	---	■
CD-311-E00-00							■	■



## CD-Px000

### DUCT MOUNT - CO<sub>2</sub> AND TEMPERATURE TRANSMITTER

The CD-P series duct mount transmitters are designed for the measurement of Carbon Dioxide (CO<sub>2</sub>) and Temperature in Heating Ventilating and Air Conditioning applications where Demand Control Ventilation (DCV), fresh air and indoor Air Quality (IAQ), and rooftop air handling economizer control systems are often required.

The transmitters incorporate the a dual wavelength NDIR CO<sub>2</sub> sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability.

The CD-P1000 Transmitter is available with CO<sub>2</sub> output only, 0-10V or 4-20 mA, while the CD-P2000 range offers CO<sub>2</sub> and Temperature with active and passive outputs.

## FEATURES

- Dual wavelength non-dispersive infrared technology (NDIR)
- Measuring range 0...2000 ppm
- CO<sub>2</sub> Accuracy at 25°C: < ± (50 ppm +2% of measured value)
- Temperature accuracy ±0.3°C
- Response time  $\tau_{63}$  < 100s at 3m/s (590 ft/min) air speed
- Power supply: 24 VAC ±20% or 15 - 30 VDC
- Housing material polycarbonate, UL94V-0 approved
- Protection class enclosure: IP65, probe: IP20
- Working conditions: -20 to 60°C; 0...95% RH (non-condensing)
- Factory calibration certificate (DIN EN10204 - 2.2)

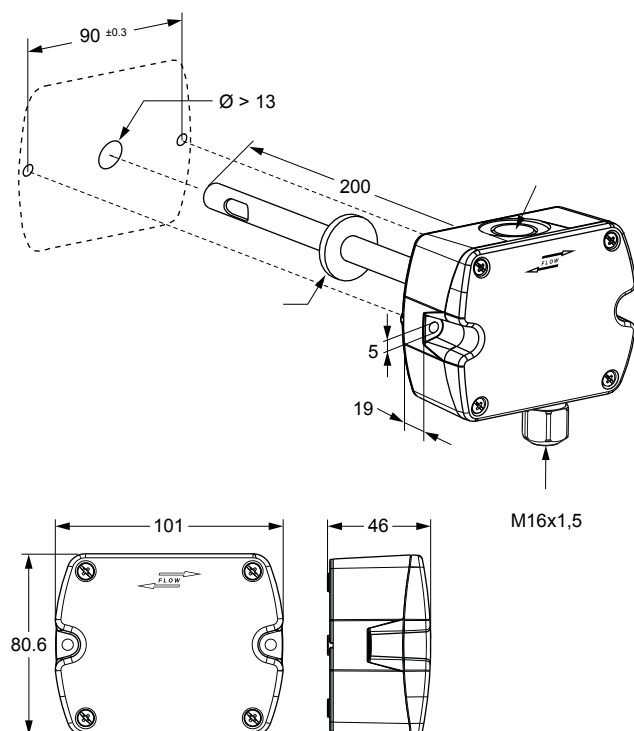


## CARBON DIOXIDE

CD-Px000 DUCT MOUNT



## DIMENSIONS (in mm)



## ORDERING INFORMATION

CODES	DESCRIPTION
CD-P1000-00-00	Duct CO <sub>2</sub> 0/2000 PPM, output 0...10 V or 4...20 mA selectable
CD-P2010-00-00	Duct CO <sub>2</sub> 0/2000 PPM, output 0...10 V or 4...20 mA selectable + Temperature 0...10 V @ 0...50°C
CD-P2016-00-00	Duct CO <sub>2</sub> 0/2000 PPM, output 0...10 V or 4...20 mA selectable + passive Pt1000
CD-P2017-00-00	Duct CO <sub>2</sub> 0/2000 PPM, output 0...10 V or 4...20 mA selectable + passive NTC10K

# SENSORS

## DEW POINT

### HX-9100

#### DEW POINT SENSOR

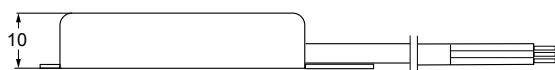
The HX-9100 dew point sensor provides warning signal in case of condensation on surfaces such as cold water pipes, cool ceilings and windows.

The HX-9100 can be powered at 15 VDC or 24 VAC, it detects the dew point condition providing an on/off signal to an analog or a digital input of the controller that will override functions in order to prevent the condensation on cooled surfaces.

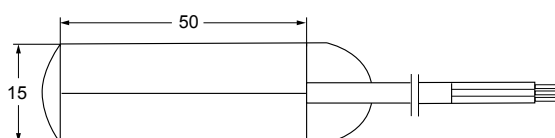
#### FEATURES

- Supply voltage: 15 VDC  $\pm 10\%$  or 24 VAC  $\pm 15\%$
- Action: 0 to 10 VDC or ON/OFF
- Hysteresis: 1%
- Output: 0.5 VDC max @ RH > 90%
- Protection class: IP44

#### DIMENSIONS (in mm)



HX-9100-9024 / HX-9100-9A24:  
Cable Length 1.5 m



HX-9100-9324:  
Cable Length 3 m

#### ORDERING INFORMATION

CODES	ACTION	OUTPUT AT CONDENSATION	CABLE LENGTH	POWER SUPPLY
HX-9100-9A24	0...10 VDC	$\leq +0.5$ VDC @ RH > 90%	1.5 m	15 VDC $\pm 10\%$ or 24 VAC $\pm 15\%$ 24 VDC $\pm 15\%$
HX-9100-9024	ON/OFF	Open collector closed, 0.5 VDC max @ RH > 90%		
HX-9100-9324	ON/OFF	Open collector closed, 0.5 VDC max @ RH > 90%	3 m	

## DIFFERENTIAL PRESSURE

### DP7000 – DP2500 – DP0250

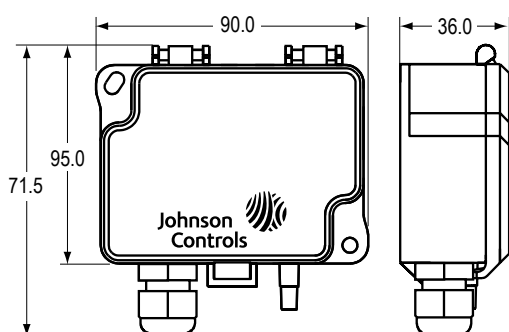
#### DIFFERENTIAL PRESSURE TRANSMITTER

The DP low differential pressure transmitter series is an accurate and cost competitive solution for measuring low pressures of air and non-aggressive gases in order to monitor and control pressures in building automation, HVAC and clean room systems.

#### FEATURES

- Power supply 24 VAC/VDC
- Pressure range: 8 different ranges in one device (see the table)
- Output signal: 0...10 VDC or 4...20 mA
- Automatically autozero point adjusting
- Response time selectable
- 2 rows x 12 characters digit display
- Back-light display
- Protection class: IP54
- Configurable measuring unit (Pa, kPa, mbar, inch WC, mm WC, psi)
- Factory Calibration Certificate available on request

#### DIMENSIONS (in mm)





## DIFFERENTIAL PRESSURE

DP7000-DP2500-DP0250 DIFFERENTIAL PRESSURE

## ORDERING INFORMATION

ORDERING CODES	PACKAGING	OPERATING RANGE (Pa)	AUTO ZERO	DISPLAY	OUTPUT SIGNAL	ENCLOSURE	SUPPLY VOLTAGE	SPAN POINT ADJUSTMENT								
DP7000-R8	Single	0...1000 0...1500 0...2000 0...2500 0...3000 0...4000 0...5000 0...7000	---	---	0...10 VDC or 4...20 mA	IP54	24 VAC / VDC	---								
DP7000-R8-01	Bulk		---													
DP7000-R8-AZ	Single		■	■												
DP7000-R8-AZ-01	Bulk		---													
DP7000-R8-D	Single		---	■												
DP7000-R8-AZ-D	Single		■													
DP2500-R8	Single	-100...+100 0...100 0...250 0...500 0...1000 0...1500 0...2000 0...2500	---	---					0...10 VDC or 4...20 mA	IP54	24 VAC / VDC	---				
DP2500-R8-01	Bulk		---													
DP2500-R8-AZ	Single		■	■												
DP2500-R8-AZ-01	Bulk		---													
DP2500-R8-D	Single		---	■												
DP2500-R8-AZ-D			---													
DP0250-R8-AZ	Bulk	0...25 0...50 0...100 0...250	■	---												
DP0250-R8-AZ-01				---												
DP0250-R8-AZ-D	Single	-25...+25 -50...+50 -100...+100 -150...+150	■	■				■								
DP0250-R8-AZS				---												
DP0250-R8-AZ-DS				■												

## ACCESSORY KIT

CODE	DESCRIPTION
T00199	DP Transmitter accessory kit, 2 fixing screws, 2 plastic tube connectors and 2 m tube Ø 4/7 mm

## DIFFERENTIAL PRESSURE

### DP7000-DP2500-DP0250 DIFFERENTIAL PRESSURE



## FACTORY CALIBRATION CERTIFICATES

On request, the DP7000, DP2500 and DP0250 transmitter can be provided with the Factory calibration certificate for a specific pressure range setting.

The certificate will report:

- Date and validity
- Device type and calibration range
- Device ID
- Test report on 3 measurement points

The calibration test performed in the factory ensures the accuracy of the pressure readings measured by the sensor. A calibration certificate is provided with any error measured in the test declared. This error value can be used when configuring the analog input channel for the sensor. Select the error at the nearest value the pressure sensors is expected to be typically measuring, this should normally be mid-range, and use this as the offset when setting up the analog input channel. This will ensure the sensor provides the greatest accuracy possible at the normal operating condition.



## HOW TO ORDER A DP WITH CALIBRATION CERTIFICATE

The calibration certificate performed in the factory can be provided for a specific pressure range only. To determine the ordering code please select the Certificate required from the table below. Take into consideration that pressure range changes from one model to another.

		DP7000	DP2500	DP0250
DPxxxx-	C1	0...1000 Pa	-100...+100 Pa	0...25 Pa
	C2	0...1500 Pa	0...100 Pa	0...50 Pa
	C3	0...2000 Pa	0...250 Pa	0...100 Pa
	C4	0...2500 Pa	0...500 Pa	0...250 Pa
	C5	0...3000 Pa	0...1000 Pa	-25...+25 Pa
	C6	0...4000 Pa	0...1500 Pa	-50...+50 Pa
	C7	0...5000 Pa	0...2000 Pa	-100...+100 Pa
	C8	0...7000 Pa	0...2500 Pa	-150...+150 Pa

For Display or Autozero options then add:

- **D** Display
- **AZ** Autozero Option
- **AZ-D** Autozero and Display

### Note

- i.e. **DP0250-C3-AZ** DP0250 with autozero with Calibration certified for 0...100 Pa range setting  
**DP2500-C3-AZ-D** DP2500 with autozero and Display with Calibration certified for 0...250 Pa range setting  
**DP7000-C3** DP7000 Calibration certified for 0...2000 Pa range setting



## HT-1300

### DUCT MOUNT

Specially designed for HVAC, the HT-1300 duct mount humidity sensor is a cost effective, highly accurate and reliable solution for measuring relative air humidity and temperature.

The enclosure minimizes installation cost and provides outstanding protection against contamination and condensation, thus ensuring flawless operation.

The HT-130x-UD1 employs the new humidity/temperature sensor with excellent long-term stability and resistance to pollutants. Long term performance is granted by the PTFE membrane fitted to the standard protection cap, suitable for most common HVAC applications.

The standard protection cap can be replaced with a series of alternative protection caps specially designed for harsh environments.

## FEATURES

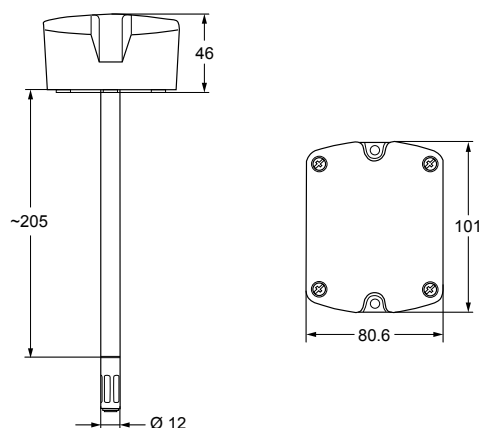
- Power supply 15...35 VDC / 24 VAC  $\pm 20\%$
- Humidity range 0...100%
- Humidity output 0...10 VDC
- Humidity accuracy 2,5% from 10 to 95% RH
- Temperature outputs 0...10 VDC or passive
- Duct probes length 200 mm
- Protection caps for harsh environment application
- Protection class: IP65
- Inspection Certificate according EN 10204:2004



## PLANT HUMIDITY

HT-1300 DUCT MOUNT


### DIMENSIONS (in mm)



PROTECTION CAPS FOR HARSH ENVIROMENT

## ORDERING INFORMATION

### HT-1300 PLANT HUMIDITY SENSORS

CODES	HUMIDITY WORKING RANGE	HUMIDITY OUTPUT	HUMIDITY ACCURACY	TEMPERATURE WORKING RANGE	TEMPERATURE OUTPUT	CALIBRATION CERTIFICATE	SUPPLY VOLTAGE
HT-1301-UD1	10...95 %	0...10 VDC	2,5 %	-15 to 60°C	0...10 VDC		15 to 35 VDC or 24 VAC ±20%
HT-1302-UD1				0 to 40°C			
HT-1303-UD1				-15 to 60°C	NTC 2k2		
HT-1305-UD1					Pt100		
HT-1306-UD1					Pt1000		

### FILTER CAPS FOR HARSH ENVIRONMENTS - ACCESSORIES

CODES	DESCRIPTION	APPLICATION
HT-1300-CAP-103	Stainless steel sintered filter cap	For industrial, agriculture, barns
HT-1300-CAP-105	PTFE sintered filter cap	For chemical and very polluted environment
HT-1300-CAP-106	Polycarbonate body with stainless steel wire mesh filter cap	For dryers and humidifiers
HT-1300-CAP-115	Catalytic filter in PTFE filter caps	For pharm, biotech, high oxygen concentration, sterilization with H2O2

### STANDARD FILTER CAP - ACCESSORY

CODE	DESCRIPTION
HT-1300-UD1-KIT	Kit of 10 pcs: Mounting flange, cable gland, screws/fishers, gasket and standard protection Cap, PTFE membrane for dusty and building automation applications.

# SENSORS

## PLANT TEMPERATURE

### TS-6300

#### PLANT TEMPERATURE SENSOR

The TS-6300 series temperature sensors provide a passive signal that corresponds to the air or water temperature Heating, Ventilation and Air Conditioning (HVAC) applications.

They are passive resistive signal NTC K2, NTC K10, Pt100 or Pt1000 related to the sensed temperature.

The TS-6300 temperature sensor series has been designed to work as a part of any HVAC control system.



## FEATURES

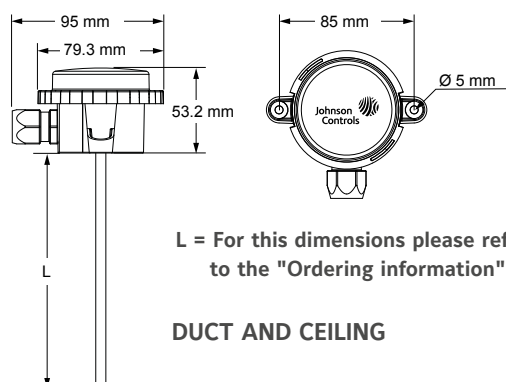
- Wide range of mounting types and signal outputs
- Different length of tubes and wells for duct and immersion applications
- Bayonet mounting system
- For immersion applications, well can be mounted before duct sensor is mounted
- IP54 ingress protection (except cable sensor)
- IP67 ingress protection for cable sensor



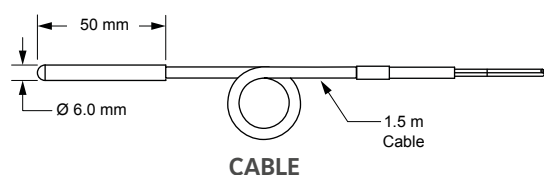
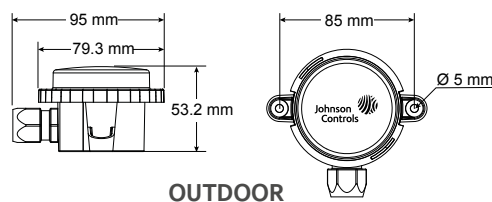
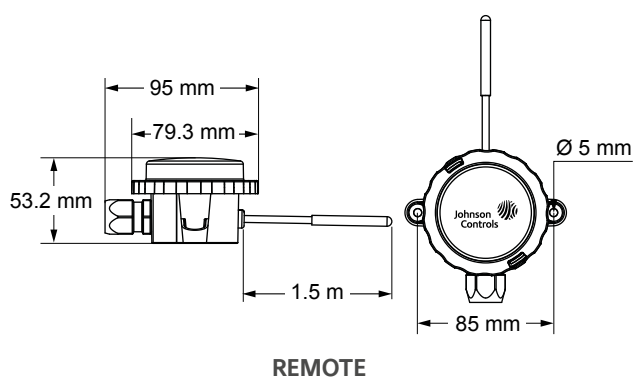
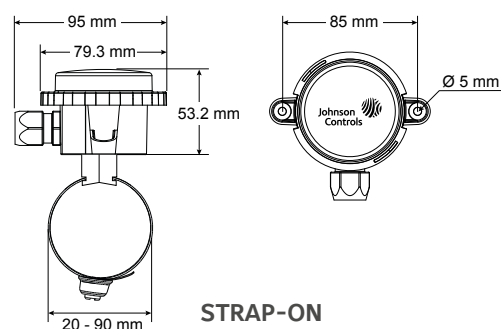
## PLANT TEMPERATURE

### TS-6300 PLANT TEMPERATURE

#### DIMENSIONS (in mm)

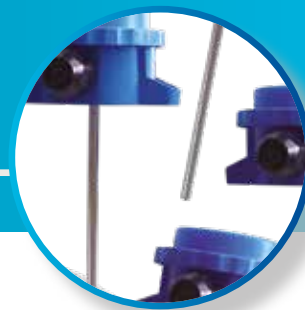


L = For this dimensions please refer to the "Ordering information" (next page)



## PLANT TEMPERATURE

TS-6300 PLANT TEMPERATURE



## ORDERING INFORMATION

CODES	OUTPUT	MOUNTING TYPE	LENGHT (mm)	TEMPERATURE RANGE
TS-6370D-A11	0...10 VDC	Duct / immersion	138	-40 to 50°C
TS-6370D-B11			192	
TS-6370D-C11			290	
TS-6370D-D11			446	
TS-6370D-A12			138	-20 to 40°C
TS-6370D-B12			192	
TS-6370D-C12			290	
TS-6370D-D12			446	
TS-6370D-A13			138	0 to 40°C
TS-6370D-B13			192	
TS-6370D-C13			290	
TS-6370D-D13			446	
TS-6370D-A14			138	0 to 100°C
TS-6370D-B14			192	
TS-6370D-C14			290	
TS-6370D-D14			446	
TS-6330D-A10	2K2 NTC	Duct / immersion	138	-40 to 120°C
TS-6330D-B10			192	
TS-6330D-C10			290	
TS-6330D-D10			446	
TS-6340D-A10	10K NTC		138	
TS-6340D-B10			192	
TS-6340D-C10			290	
TS-6340D-D10			446	
TS-6350D-A10	Pt100		138	
TS-6350D-B10			192	
TS-6350D-C10			290	
TS-6350D-D10			446	
TS-6360D-A10	Pt1000		138	
TS-6360D-B10			192	
TS-6360D-C10			290	
TS-6360D-D10			446	

## PLANT TEMPERATURE

### TS-6300 PLANT TEMPERATURE



## ORDERING INFORMATION

CODES	OUTPUT	MOUNTING TYPE	LENGHT <i>(mm)</i>	TEMPERATURE RANGE
TS-6370R-F01	0...10 VDC	Remote sensor	1.5 m cable lenght	-40 to 50°C
TS-6370R-F03				0 to 40°C
TS-6370R-F04				0 to 100°C
TS-6330K-F00	2K2 NTC	Cable sensor		-40 to 100°C
TS-6340K-F00	10K NTC			
TS-6360K-F00	Pt1000			
TS-6370E-001	0...10 VDC	Outdoor	---	-40 to 50°C
TS-6370E-002				-20 to 40°C
TS-6330E-000	2K2 NTC	Outdoor		-40 to 70°C
TS-6340E-000	10K NTC			
TS-6350E-000	Pt100			
TS-6360E-000	Pt1000			
TS-6370S-002	0...10 VDC	Strap-on		-20 to 40°C
TS-6370S-004				0 to 100°C
TS-6330S-000	2K2 NTC	Strap-on		-40 to 100°C
TS-6340S-000	10K NTC			
TS-6350S-000	Pt100			
TS-6360S-000	Pt1000			
TS-6370C-E13	0...10 VDC	Ceiling	36	0 to 40°C
TS-6330C-E10	2K2 NTC	Ceiling		-40 to 70°C
TS-6340C-E10	10K NTC			
TS-6350C-E10	Pt100			
TS-6360C-E10	Pt1000			



## PLANT TEMPERATURE

### TS-6300 PLANT TEMPERATURE

## ORDERING INFORMATION

### OUTDOOR SENSOR GREY

CODES	OUTPUT	MOUNTING TYPE	OPERATING RANGE
TS-6330E-050	2K2 NTC	Outdoor grey enclosure	-40 to 70°C
TS-6340E-050	10K NTC		
TS-6350E-050	Pt100		
TS-6360E-050	Pt1000		
TS-6370E-051	0...10 VDC		-40 to 50°C
TS-6370E-052			-20 to 40°C

## ACCESSORIES

CODES	LENGHT (mm)	MATERIAL	MOUNTING THREAD	PN
TS-6300W-E200	50 <sup>1</sup>	Brass/Copper	R 1/2"	PN16
TS-6300W-D200	80			
TS-6300W-F200	120			
TS-6300W-G200	150			
TS-6300W-H200	200			
TS-6300W-I200	260			
TS-6300W-E300	50 <sup>1</sup>	Stainless steel	R 1/2"	PN25
TS-6300W-D300	80			
TS-6300W-F300	120			
TS-6300W-G300	150			
TS-6300W-H300	200			
TS-6300W-I300	260			
TS-6300W-E400	50 <sup>1</sup>		G 1/2"	
TS-6300W-D400	80			
TS-6300W-F400	120			
TS-6300W-G400	150			
TS-6300W-H400	200			
TS-6300W-I400	260			

TS-6300D-000	Duct flange kit
TS-6300W-900	Retrofitting thermowell adapter kit

#### Note

<sup>1</sup> For cable sensor only



### PT-5217

#### LIQUID OR AIR PRESSURE TRANSMITTER

The PT-5217 pressure transmitter accurately measures pressure and converts the measurement into a standard proportional 0...10 V signal.

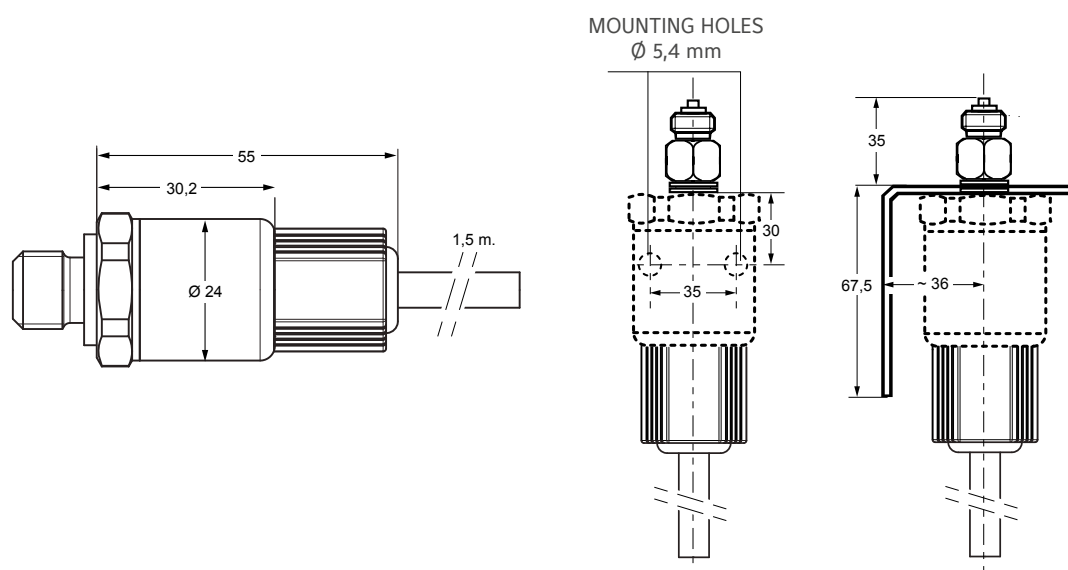
The PT-5217 is especially adapted to measure relative and absolute pressure of liquid and gases.

The pressure transmitter consists of a piezoresistive ceramic measuring cell with a diaphragm, installed in a stainless steel housing.

#### FEATURES

- Compact, rugged construction
- Negligible temperature influence on accuracy
- Low hysteresis
- High accuracy
- Direct mounting, 1.5 m cable included
- Splash proof enclosure

#### DIMENSIONS (in mm)





## PRESSURE

PT-5217 LIQUID OR AIR PRESSURE TRANSMITTER

## ORDERING INFORMATION

CODES	OPERATING RANGE	ENCLOSURE	SUPPLY VOLTAGE
PT-5217-7011	0...100 kPa	IP67	24 VAC +15% / -15%, 50/60 Hz or 12...33 VDC, < 7 mA
PT-5217-7101	0...1000 kPa		

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
EQ-6056-7000	Mounting kit for plastic hose 4 x 6 mm

## ROOM HUMIDITY

### HT-1000

#### WALL MOUNT

The HT-1000 series room humidity sensors provide active sensing of relative humidity and on specific models, also active/passive sensing of temperature in HVAC applications.

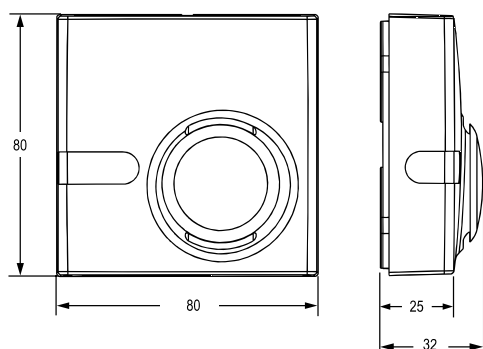
It features a polymer capacitance humidity sensing element and provides within either  $\pm 2\%$  or  $\pm 4\%$  accuracy a voltage output signal proportional 0 to 100% relative humidity.

The HT-1000 series room humidity sensors are designed for use with any type of Johnson Controls or third party HVAC controllers.

#### FEATURES

- Supply voltage: 15 VAC / 24 VAC
- Output RH%: 0...10 VDC
- Output Temperature: 0...10 VDC, NTC K2, Pt1000
- Protection class: IP30

#### DIMENSIONS (in mm)





## ROOM HUMIDITY

HT-1000 WALL MOUNT

## ORDERING INFORMATION

CODES	HUMIDITY RANGE	HUMIDITY OUTPUT	HUMIDITY ACCURACY	TEMPERATURE RANGE	TEMPERATURE OUTPUT	SUPPLY VOLTAGE
HT-1201-UR	0...100% RH	0...10 VDC	±2%	0 to 40°C	0...10 VDC	12 to 30 VDC 24 VAC ±15%
HT-1300-UR			±4%	---	---	
HT-1301-UR				0 to 40°C	0...10 VDC	
HT-1303-UR					NTC K2	
HT-1306-UR				0 to 60°C	Pt1000	



## FLUSH MOUNT SENSORS

### RS-7000

#### ANALOG SENSORS

The Flush Mount RS-7000 Analog Sensors Series with LCD is an electronic room command module designed to work with Johnson Controls® controllers in heating, ventilating and air conditioning (HVAC) systems. Models in this series monitor the zone temperature and humidity, and transmit data to a field controller using up to three analog outputs.

RS-7060-0000 can toggle between Temperature and RH on the display, depending on desired default display.

The temperature only model RS-7080-0002 includes Fan mode push button to set the desired fan speed (OFF-LOW-MED-HIGH-AUTO). Both models with display have occupancy button, which allows user to select when the zone is occupied, to set the comfort mode only when is necessary.

The model without display RS-7040-0000 provides a combined measurement of the zone temperature and humidity.

Installation is quite easy, given the possibility to configure the Setpoint Mode and temperature limits during installation.

## FEATURES

- **Temperature sensor with combined humidity for best comfort** - RS-7000 range offers fan speed control or combined humidity sensor for best comfort
- **Configurable options reduce stock need** - The setpoint mode adjust or warmer/cooler can be configured during the installation
- **Large backlit display in a low profile enclosure** - Provides a modern looking and clear user interface
- **Customizable display helps to meet building policy** - RS-7000 can show actual values or setpoint only
- **Keypad lockable in public space** - The RS-7000 sensor buttons can be locked against misuse in public space
- **Flush mount installation** - Suitable for various installation boxes, offers low profile enclosure

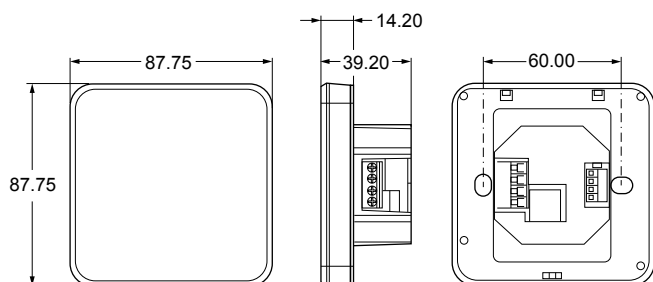









## FLUSH MOUNT SENSORS

### RS-7000 ANALOG SENSORS

## DIMENSIONS (in mm)



## ORDERING INFORMATION

CODES	COLOR <sup>1</sup>	LCD	TEMPERATURE	HUMIDITY <sup>2</sup>	FAN CONTROL	TEMPERATURE ADJUSTMENT <sup>3</sup>	°F/°C SCALE TOGGLE	OCCUPANCY OVERRIDE
RS-7040-0000	White	---		 (±3%)	---	---	---	---
RS-7060-0000					---	Adj/WC		
RS-7080-0002					---			

### Notes

- 1 Device color white only.
- 2 For models with humidity sensor, the humidity value can be displayed in LCD too.
- 3 Adj/WC, Setpoint Adjust 12 to 28°C (Default) / WC (Warmer/Cooler) Setpoint ±3°C mode.

# SENSORS

## FLUSH MOUNT SENSORS

### NSA-7000

#### NETWORK SENSORS

The Flush Mount NSA-7000 Network Sensor Series with LCD is an electronic zone sensor designed to function directly with Johnson Controls® BACnet® MS/TP digital controllers in heating, ventilating and air conditioning (HVAC) systems. Models in this series monitor the temperature set point, zone temperature and humidity and transmit this data to a field controller on the Sensor Actuator (SA) bus.

NSA-FHR71x3-0 can toggle on the display between temperature and relative humidity, depending on desired default display.

A push button is included in NSA-FTD70x3-0 to set the desired fan speed (OFF/LOW-MED-HIGH-AUTO). All models have occupancy button, which allows user to signal when the zone is occupied, to set the comfort mode only when is necessary.

The model without display NSA-FHN7001-0 has not buttons but provides an accurate measurement of the zone temperature and humidity.

For communication wiring flexibility, all models have both a modular jack and screw terminals for an easy connection to the Metasys® controllers.

## FEATURES

- **Large backlit display in a low profile enclosure** - Provides a modern looking clear user interface
- **Flush mount installation** - Suitable for various installation boxes, offers low profile enclosure
- **Programmable SA Bus Address** - Addressable through the display without the use of tool or screwdriver
- **Easy wiring** - NSA700 offers both type of connections: Modular Jack (MJ) and Screw terminal (ST)
- **Configurable options help product selection** - Setpoint type and limits can be configured during the installation
- **Customizable display helps tenants to meet building policy** - NSA can show actual values or setpoint only
- **Keypad lockable in public space** - The NSA sensor buttons can be locked against misuse in public space
- **Customize colors meet customer needs** - The white front panel may be optionally customized in black or other colors

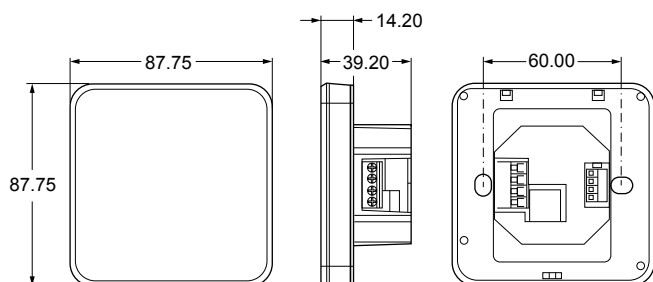




## FLUSH MOUNT SENSORS

### NSA-7000 NETWORK SENSORS

## DIMENSIONS (in mm)



## ORDERING INFORMATION

### WHITE STANDARD DEVICES

CODES	LCD	TEMPERATURE	HUMIDITY <sup>1</sup>	FAN CONTROL	TEMPERATURE ADJUSTMENT <sup>2</sup>	°F/°C SCALE TOGGLE	OCCUPANCY OVERRIDE	SCREW TERMINAL <sup>3</sup>	ADDRESS SELECTION <sup>4</sup>
NSA-FHN7001-0	---	■	■ (±3%)	---	---	---	---	ST/MJ	---
NSA-FTD7003-0	■	■	---	■	Adj/WC	■	■	ST/MJ	■
NSA-FTB7003-0	■	■	---	---	Adj/WC	■	■	ST/MJ	■
NSA-FHR7103-0	■	■	■ (±3%)	---	Adj/WC	■	■	ST/MJ	■

### BLACK OPTIONAL DEVICES

There is MOQ (Minimum Order Quantity) requirement for black devices

CODES	LCD	TEMPERATURE	HUMIDITY <sup>1</sup>	FAN CONTROL	TEMPERATURE ADJUSTMENT <sup>2</sup>	°F/°C SCALE TOGGLE	OCCUPANCY OVERRIDE	SCREW TERMINAL <sup>3</sup>	ADDRESS SELECTION <sup>4</sup>
NSA-FHN7011-0	---	■	■ (±3%)	---	---	---	---	ST/MJ	---
NSA-FTD7013-0	■	■	---	■	Adj/WC	■	■	ST/MJ	■
NSA-FTB7013-0	■	■	---	---	Adj/WC	■	■	ST/MJ	■
NSA-FHR7113-0	■	■	■ (±3%)	---	Adj/WC	■	■	ST/MJ	■

#### Notes

- For models with humidity sensor, the humidity value also can be displayed in LCD.
- Adj/WC, Setpoint Adjust 12 to 28°C (Default) / WC (Warmer/Cooler) Setpoint ±3°C mode.
- All models equipped with both ST (Screw Terminal) and MJ (Modular Jack).
- Default address is 199. Model without display has fixed address 199. Model with display can be configured between 199 to 215. In a mixed bus configuration 4 sensors max.

## ANALOG SENSORS



## RS-1100

### ROOM COMMAND MODULE

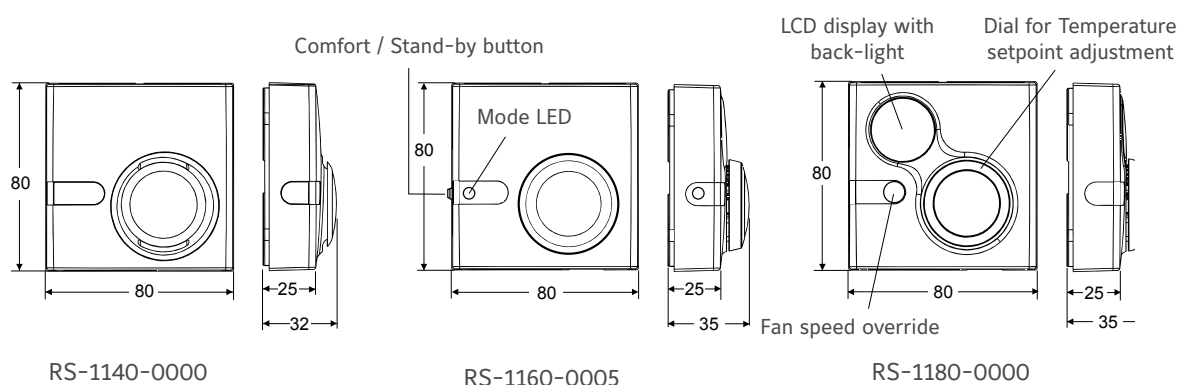
The RS-1100 room command modules are designed for use with any type of Johnson Controls or third party HVAC controllers that can accept a 0...10 V signal directly proportional to the sensed temperature.

Models are available with and without LCD display, room temperature setpoint adjustment dial, temporary occupied override function and fan speed button.

## FEATURES

- Power supply:  
15 VDC (all models)  
24 VAC / VDC (only models with display)
- 0...10 VDC temperature output
- Remote temperature setpoint adjustment
- Occupancy override function (models with or without display)
- Room enclosures 80 x 80 mm
- Protection class: IP30
- Fan speed button

## DIMENSIONS (in mm)



## ANALOG SENSORS

RS-1100 ROOM COMMAND MODULE



## ORDERING INFORMATION

CODES	TEMPERATURE OUTPUT	LCD DISPLAY	SETPOINT DIAL SCALE	TEMPORARY OCCUPANCY OVERRIDE FUNCTION	FAN SPEED OVERRIDE
RS-1140-0000	0...10 VDC	---	---	---	---
RS-1160-0000		---	12...28°C	Pushbutton	---
RS-1160-0005		---	+/-		---
RS-1180-0000		■	12...28°C	Integrated	---
RS-1180-0005		■	+/-		---
RS-1190-0000		---	12...28°C	---	---
RS-1190-0005		---	+/-		---
RS-1180-0002		■	12...28°C	Integrated	■
RS-1180-0007		■	+/-	Integrated	■

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
TM-1100-8931	Plastic surface mounting kit
TM-9100-8900	Special tool for opening enclosure

## ANALOG SENSORS



## TM-1100

### ROOM COMMAND MODULE

The TM-1100 series of room command modules are designed for use with the TC-9102, TC-9109 and TCU series of DDC terminal unit controllers.

The setpoint dial enables the room occupant to adjust the working set point of the controller within the range of 12 to 28°C or -3 to +3°, according to the model number.

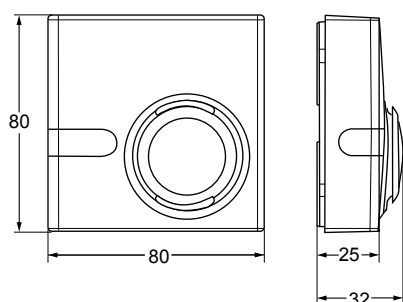
The occupancy button enables the occupant to switch the mode of operation of the controller between COMFORT and STANDBY or to request a temporary COMFORT mode during NIGHT operation.

A LED indicator shows the current operating mode. For TC-9102 and TCU fan coil unit controllers, a room command module with a 3-speed fan override is available. Models without a temperature sensing element are provided for application where the temperature sensor is mounted inside the fan coil unit.

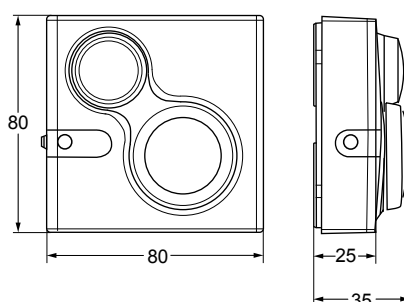
## FEATURES

- Passive sensor
- NTC K2 temperature output
- Remote temperature setpoint adjustment
- 3-speed fan override
- Occupancy override button
- Room enclosures 80 x 80 mm
- Protection class: IP30

## DIMENSIONS (in mm)



TM-1140-0000




TM-1160-0007 and TM-1170-0007

## ANALOG SENSORS

TM-1100 ROOM COMMAND MODULE



## ORDERING INFORMATION

CODES	BUILT-IN SENSING ELEMENT	TEMPERATURE SETPOINT DIAL SCALE	FAN SPEED OVERRIDE	OCCUPANCY BUTTON
TM-1140-0000	NTC K2	---	---	---
TM-1150-0000				
TM-1160-0000		12 to 28°C		
TM-1160-0005		+/-		
TM-1160-0002		12 to 28°C	3-speed fan override	
TM-1160-0007				
TM-1170-0005	Without	+/-	---	
TM-1170-0007			3-speed fan override	
TM-1190-0000	NTC K2	12 to 28°C	---	---
TM-1190-0005		+/-		

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
TM-1100-8931	Plastic base for surface mount
TE-9100-8501	Unit mount NTC K2 temperature sensor (1.5 m cable)
TM-9100-8900	Special tool for opening enclosure



# SENSORS

## ANALOG SENSORS



## TM-2100

### ROOM COMMAND MODULE

The TM-2100 series of room command modules are designed for use with the FCC and Facility Explorer series of DDC terminal unit controllers. The setpoint dial enables the room occupant to adjust the working set point of the controller within the range of 12 to 28°C or -3 to +3°, according to the model number.

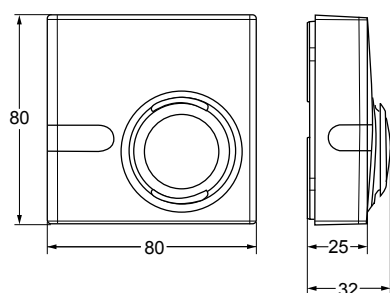
The occupancy button enables the occupant to switch the mode of operation of the controller between COMFORT and STANDBY or to request a temporary COMFORT mode during NIGHT operation.

A LED indicator shows the current operating mode. A Room Command Module with a 3-speed fan override adjuster is available.

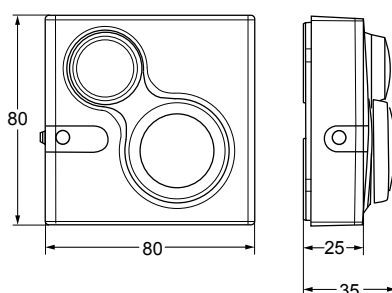
## FEATURES

- Passive sensor
- NTC 10K temperature output
- Remote temperature setpoint adjustment
- 3-speed fan override
- Occupancy override button
- Room enclosures 80 x 80 mm
- Protection class: IP30

## DIMENSIONS (in mm)



TM-2140-0000



TM-2160-0007 and TM-2170-0007

## ANALOG SENSORS

TM-2100 ROOM COMMAND MODULE



## ORDERING INFORMATION

CODES	BUILT-IN SENSING ELEMENT	TEMPERATURE SETPOINT DIAL SCALE	FAN SPEED OVERRIDE	OCCUPANCY BUTTON
TM-2140-0000	NTC 10K	---	---	---
TM-2150-0000		3-speed fan override		■
TM-2160-0000				
TM-2160-0005				
TM-2160-0002				
TM-2160-0007				
TM-2190-0000		---	---	
TM-2190-0005				

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
TM-1100-8931	Plastic base for surface mount
TE-9100-8502	Unit mount NTC K10 temperature sensor (1.5 m cable)
TM-9100-8900	Special tool for opening enclosure

### TM-3100

#### ROOM COMMAND MODULE

The TM-3100 series room temperature sensor provide passive sensing of temperature in HVAC application.

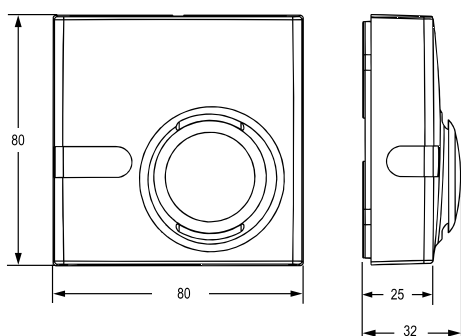
The TM-3100 is equipped with a Pt1000 class A sensing element and provides an output proportional signal to the measured ambient temperature.

The TM-3100 series room temperature sensor is designed for use with the Facility Explorer series and with the Field Equipment controller series.

#### FEATURES

- Passive sensor
- Pt1000
- Room enclosure: 80 x 80 mm
- Protection Class: IP30

#### DIMENSIONS *(in mm)*





## ANALOG SENSORS

TM-3100 ROOM COMMAND MODULE

## ORDERING INFORMATION

CODES	BUILT-IN SENSING ELEMENT	TEMPERATURE SETPOINT DIAL SCALE	FAN SPEED OVERRIDE	OCCUPANCY BUTTON
TM-3140-0000	Pt 1000	---	---	---

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
TM-1100-8931	Plastic base for surface mount
TM-9100-8900	Special tool for opening enclosure

## ANALOG SENSORS

### TE-7000

#### ROOM COMMAND MODULE

The TE-7000 room command module is designed for use with Johnson Controls VAV Modular Assembly.

The module has an NTC temperature sensor, a dial for setpoint adjustment within the range of 12 to 28°C or -3 to +3K, and an occupancy button with an LED indicator.

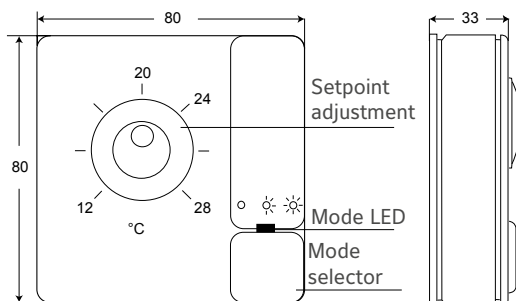
If the VAV controller is not already in occupied mode, as shown by the LED indicator, the occupant may press the occupancy button to obtain comfort control for a set period of time, normally defaulted to one hour.

The module also has a built-in connector for a PC with the software to test and commission the VAV modular assembly and the air supply system.

## FEATURES

- Power supply: +15 Vdc
- Temperature sensor: NTC
- Occupancy override button
- Protection class: IP30
- Remote setpoint adjustment

## DIMENSIONS (in mm)





## ANALOG SENSORS

### TE-7000 ROOM COMMAND MODULE

## ORDERING INFORMATION

CODES	COLOR	SETPOINT DIAL RANGE
TE-7000-8002	Off-white / Gray base	12 to 28°C
TE-7000-8002-W	White / White base	
TE-7000-8003	Off-white / Gray base	-3 to +3 K
TE-7000-8003-W	White / White base	

#### Note

Add **"-K"** to code for setpoint dial with serrated edge, e.g. TE-7000-8002-K, TE-7000-8002-WK

## ACCESSORIES (ORDER SEPARATELY)

CODES	DESCRIPTION
TE-7000-8900	Service tool connector cable (1.5 m) (for use with IU-9100 converter)
TM-9100-8900	Special tool (to open module)
TM-9100-8901	Dial-Stop screws kit (bag of 100 self-tapping screws)
TM-9100-8902	Serrated knob kit (bag of 10 knobs) - Off-white
TM-9100-8902-W	Serrated knob kit (bag of 10 knobs) - white

### NS

#### NETWORK ROOM COMMAND MODULE

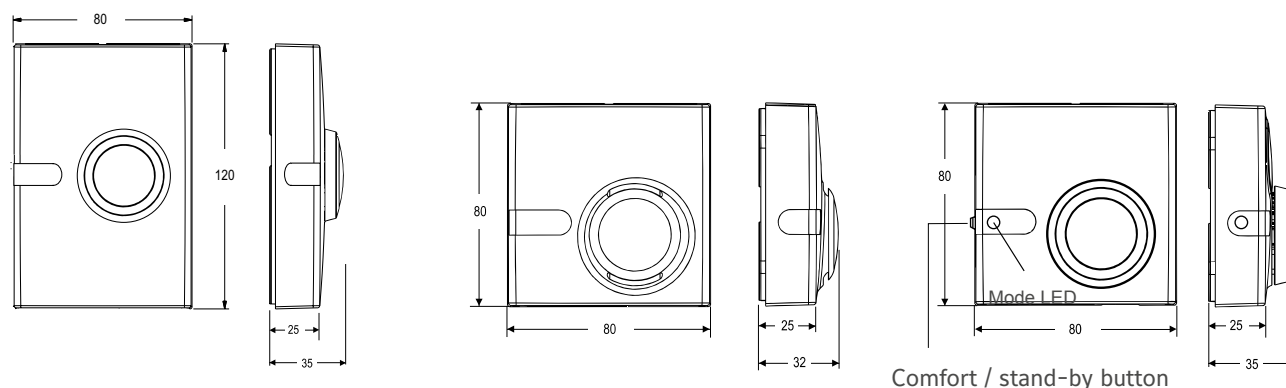
The NS series network sensors are designed to function directly with *Metasys*® system Field Equipment Controllers (FECs), Input/Output Modules (IOMs), Variable Air Volume (VAV) Modular Assembly (VMA16) Controllers.

The majority of NS series network zone sensors monitor room temperature; however, options are available to also monitor zone humidity, carbon dioxide (CO<sub>2</sub>), local temperature setpoint adjustments and other variables. This data is transmitted to a controller on the Sensor Actuator (SA) Bus.

#### FEATURES

- **BACnet® Master-Slave/Token-Passing (MS/TP) protocol communication** - Provides compatibility with *Metasys* system field controllers and Facility Explorer programmable controllers in a proven communication network
- **Backlit Liquid Crystal Display (LCD) available on some models** - Provides real-time status of the environment with backlighting activated during user interaction
- **Simple temperature setpoint adjustment available on some models** - Enables to change the setpoint with the turn of a dial or just pressing up and down buttons
- **Temporary occupancy available on some models** - Provides a timed override command, which temporarily initiates an alternate mode
- **Field selectable default display setting on some models** - Allows to toggle between temperature and RH on the display and set the desired default for continuous viewing
- **Fahrenheit/Celsius (F/C) button available on some models** - Toggles the display temperature between degrees Celsius and degrees Fahrenheit

#### DIMENSIONS (in mm)



## NETWORK SENSORS

### NS NETWORK ROOM COMMAND MODULE



## ORDERING INFORMATION

### SURFACE MOUNTING - TEMPERATURE ONLY MODELS

CODES	LCD DISPLAY	SETPOINT ADJUSTMENT	W/C WARMER AND COOLER (+/-3°C)	OCCUPANCY BUTTON	PIR OCCUPANCY	°F/°C SCALE TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 80 x 80 mm - Temperature 0 to 40°C										
NS-ATA7001-0	■	■	---	■ <sup>4</sup>	---	---	---	---	■	---
NS-ATA7002-0	■	■	---	■ <sup>4</sup>	---	---	---	■	---	---
NS-ATA7003-0	■	■	---	■ <sup>4</sup>	---	---	---	■	---	■
NS-ATA7004-2 <sup>1</sup>	■	■	---	■ <sup>4</sup>	---	---	---	■	■	■
NS-ATB7001-0	■	■	---	■ <sup>4</sup>	---	■	---	---	■	---
NS-ATB7002-0	■	■	---	■ <sup>4</sup>	---	■	---	■	---	---
NS-ATB7003-0	■	■	---	■ <sup>4</sup>	---	■	---	■	---	■
NS-ATC7001-0	■	■	---	■ <sup>4</sup>	---	---	■	---	■	---
NS-ATC7002-0	■	■	---	■ <sup>4</sup>	---	---	■	■	---	---
NS-ATC7005-2 <sup>1</sup>	■	■	---	■ <sup>4</sup>	---	---	■	■	■	---
NS-ATD7001-0	■	■	---	■ <sup>4</sup>	---	■	■	---	■	---
NS-ATD7002-0	■	■	---	■ <sup>4</sup>	---	■	■	■	---	---
NS-ATF7001-0	■	---	■	■ <sup>4</sup>	---	■	---	---	■	---
NS-ATF7002-0	■	---	■	■ <sup>4</sup>	---	■	---	■	---	---
NS-ATN7001-0	---	---	---	---	---	---	---	---	■	---
NS-ATN7001-2 <sup>1</sup>	---	---	---	---	---	---	---	---	■	---
NS-ATN7003-0	---	---	---	---	---	---	---	■	---	■
NS-ATN7003-2 <sup>1</sup>	---	---	---	---	---	---	---	■	---	■
NS-ATN7004-2 <sup>1</sup>	---	---	---	---	---	---	---	■	■	■
NS-ATP7001-0	---	---	■	■	---	---	---	---	■	---
NS-ATP7001-2 <sup>1</sup>	---	---	■	■	---	---	---	---	■	---
NS-ATP7002-0	---	---	■	■	---	---	---	■	---	---
NS-ATP7002-2 <sup>1</sup>	---	---	■	■	---	---	---	■	---	---
NS-ATP7003-0	---	---	■	■	---	---	---	■	---	■
NS-ATP7003-2 <sup>1</sup>	---	---	■	■	---	---	---	■	---	■
NS-ATV7001-0 <sup>2</sup>	■	■	---	■ <sup>4</sup>	---	■	3	---	■	---
NS-ATV7002-0 <sup>2</sup>	■	■	---	■ <sup>4</sup>	---	■	3	■	---	---

#### Note

**1** Models without Johnson Controls logo

**2** VAV Balancing feature

**3** Fan button is replaced by a light bulb button for the VAV balancing process

**4** Occupancy activated by dial



## NETWORK SENSORS

NS NETWORK ROOM COMMAND MODULE

## ORDERING INFORMATION

SURFACE MOUNTING - TEMPERATURE ONLY MODELS



CODES	LCD DISPLAY	SETPOINT ADJUSTMENT	W/C WARMER AND COOLER (+/-3°C)	OCCUPANCY BUTTON	PIR OCCUPANCY	°F/°C SCALE TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 120 x 80 mm - Temperature 0 to 40°C										
NS-BTB7001-0	■	■	---	■ <sup>4</sup>	---	■	---	---	■	---
NS-BTB7001-2 <sup>1</sup>	■	■	---	■ <sup>4</sup>	---	■	---	---	■	---
NS-BTB7002-0	■	■	---	■ <sup>4</sup>	---	■	---	■	---	---
NS-BTB7003-0	■	■	---	■ <sup>4</sup>	---	■	---	■	---	■
NS-BTB7003-2 <sup>1</sup>	■	■	---	■ <sup>4</sup>	---	■	---	■	---	■
NS-BTF7001-0	■	---	■	■ <sup>4</sup>	---	■	---	---	■	---
NS-BTF7002-0	■	---	■	■ <sup>4</sup>	---	■	---	■	---	---
NS-BTL7003-0	---	---	---	■	---	---	---	■	---	■
NS-BTN7001-0	---	---	---	---	---	---	---	---	■	---
NS-BTN7001-2 <sup>1</sup>	---	---	---	---	---	---	---	---	■	---
NS-BTN7003-0	---	---	---	---	---	---	---	■	---	■
NS-BTN7003-2 <sup>1</sup>	---	---	---	---	---	---	---	■	---	■
NS-BTP7001-0	---	---	■	■	---	---	---	---	■	---
NS-BTP7001-2 <sup>1</sup>	---	---	■	■	---	---	---	---	■	---
NS-BTP7002-0	---	---	■	■	---	---	---	■	---	---
NS-BTP7002-2 <sup>1</sup>	---	---	■	■	---	---	---	■	---	---
NS-BTP7003-0	---	---	■	■	---	---	---	■	---	■
NS-BTV7001-0 <sup>2</sup>	■	■	---	■ <sup>4</sup>	---	■	3	---	■	---
NS-BTV7002-0 <sup>2</sup>	■	■	---	■ <sup>4</sup>	---	■	3	■	---	---
NS-MTB7001-0	■	■	---	■ <sup>4</sup>	■	■	---	---	■	---
NS-MTB7002-0	■	■	---	■ <sup>4</sup>	■	■	---	■	---	---
NS-MTB7004-2 <sup>1</sup>	■	■	---	■ <sup>4</sup>	■	■	---	■	■	■
NS-MTL7001-0	---	---	---	■ <sup>4</sup>	■	---	---	---	■	---
NS-MTL7002-0	---	---	---	■	■	---	---	■	---	---
NS-MTN7004-2 <sup>1</sup>	---	---	---	---	■	---	---	■	■	■

### Note

- 1 Models without Johnson Controls logo
- 2 VAV Balancing feature
- 3 Fan button is replaced by a light bulb button for the VAV balancing process
- 4 Occupancy activated by dial

## NETWORK SENSORS

### NS NETWORK ROOM COMMAND MODULE



## ORDERING INFORMATION

### SURFACE MOUNTING - TEMPERATURE ONLY MODELS, BLACK VERSION

CODES	DISPLAY	SETPoint ADJUSTMENT	W/C WARMER AND COOLER (+/-3°C)	OCCUPANCY BUTTON	PIR OCCUPANCY	°F/°C SCALE TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCH
Size - Height x Width: 80 x 80 mm - Temperature 0 to 40°C										
NS-ATA7002-3	■	■	---	■	---	---	---	■	---	---
Size - Height x Width: 120 x 80 mm - Temperature 0 to 40°C										
NS-BTB7001-3	■	■	---	■	---	■	---	---	■	---

#### Note

Occupancy override through the set-point dial.

### HANDHELD VAV BALANCING TOOL

CODES	DESCRIPTION
NS-ATV7003-0	Handheld VAV balancing tool

### SURFACE MOUNTING - TEMPERATURE AND HUMIDITY SENSORS WITH PUSH BUTTONS

CODES	LCD DISPLAY	SETPoint ADJUSTMENT	HUMIDITY ACCURACY	OCCUPANCY BUTTON <sup>1</sup>	PIR OCCUPANCY	°F/°C SCALE TOGGLE	RH% /°C TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 120 x 80 mm - Temperature 0 to 40°C											
NS-BHM7101-0	■	■	3%	■	---	■	■	---	---	■	---
NS-BHM7102-0	■	■	3%	■	---	■	■	---	■	---	---
NS-BHM7103-0	■	■	3%	■	---	■	■	---	■	---	■
NS-BTJ7001-0	■	■	---	■	---	■	---	---	---	■	---
NS-BTJ7002-0	■	■	---	■	---	■	---	---	■	---	---
NS-BTJ7003-0	■	■	---	■	---	■	---	---	■	---	■
NS-BTK7001-0	■	■	---	■	---	■	---	■	---	■	---
NS-BTK7002-0	■	■	---	■	---	■	---	■	■	---	---
NS-MTJ7001-0	■	■	---	■	■	■	---	---	---	■	---
NS-MTJ7002-0	■	■	---	■	■	■	---	---	■	---	---

#### Note

<sup>1</sup> Occupancy is activated by pressing SP buttons. On request the sensor with pushbuttons are available without logo

## NETWORK SENSORS

### NS NETWORK ROOM COMMAND MODULE



## ORDERING INFORMATION

### SURFACE MOUNTING - TEMPERATURE AND HUMIDITY MODELS (WITHOUT RH% DISPLAY)

CODES	DISPLAY TEMPERATURE ONLY	HUMIDITY ACCURACY	SETPOINT ADJUSTMENT	WARMER AND COOLER (+/- 3°C)	OCCUPANCY BUTTON	PIR OCCUPANCY	°F/°C SCALE TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 80 x 80 mm - Temperature 0 to 40°C											
NS-AHA7001-0	■	3%	■	---	■ <sup>2</sup>	---	---	---	---	■	---
NS-AHA7002-0	■	3%	■	---	■ <sup>2</sup>	---	---	---	■	---	---
NS-AHA7004-2 <sup>1</sup>	■	3%	■	---	■ <sup>2</sup>	---	---	---	■	■	■
NS-AHB7001-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-AHB7002-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
NS-AHB7003-0	■	3%	---	---	■ <sup>2</sup>	---	■	---	■	---	■
NS-AHN7001-0	---	3%	---	---	---	---	---	---	---	■	---
NS-AHN7001-2 <sup>1</sup>	---	3%	---	---	---	---	---	---	---	■	---
NS-AHN7003-0	---	3%	---	---	---	---	---	---	■	---	■
NS-AHN7004-2 <sup>1</sup>	---	3%	---	---	---	---	---	---	■	■	■
NS-AHP7001-0	---	3%	---	■	■	---	---	---	---	■	---
NS-APA7001-0	■	2%	■	---	■ <sup>2</sup>	---	---	---	---	■	---
NS-APA7002-0	■	2%	■	---	■ <sup>2</sup>	---	---	---	■	---	---
NS-APB7001-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-APB7002-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
NS-APB7003-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	■	---	■
Size - Height x Width: 120 x 80 mm - Temperature 0 to 40°C											
NS-BHB7001-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-BHB7002-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
NS-BHB7003-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	■
NS-BHN7001-0	---	3%	---	---	---	---	---	---	---	■	---
NS-BHN7001-2 <sup>1</sup>	---	3%	---	---	---	---	---	---	---	■	---
NS-BHN7003-0	---	3%	---	---	---	---	---	---	■	-	■
NS-BHP7001-0	---	3%	---	■	■	---	---	---	---	■	-
NS-BHP7003-0	---	3%	---	■	■	---	---	---	■	-	■
NS-BPB7001-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-BPB7002-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
NS-BPB7003-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	■	---	■
NS-MHB7004-2 <sup>1</sup>	■	3%	■	---	■ <sup>2</sup>	■	■	---	■	■	■
NS-MHL7001-0	---	3%	---	---	■	■	---	---	---	■	---
NS-MHL7002-0	---	3%	---	---	■	■	---	---	■	-	---
NS-MHN7004-2 <sup>1</sup>	---	3%	---	---	---	■	---	---	■	■	■

#### Note

<sup>1</sup> Models without Johnson Controls logo

<sup>2</sup> Occupancy activated by dial

## NETWORK SENSORS

NS NETWORK ROOM COMMAND MODULE



## ORDERING INFORMATION

SURFACE MOUNTING - TEMPERATURE AND HUMIDITY MODELS  
(DISPLAY TEMPERATURE OR RH% - FIELD SELECTABLE)

CODES	DISPLAY	HUMIDITY ACCURACY	SETPOINT ADJUSTMENT	W/C WARMER AND COOLER (+/-3°C)	OCCUPANCY BUTTON	PIR OCCUPANCY	°F/°C SCALE TOGGLE	FAN CONTROL	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 80 x 80 mm - Temperature 0 to 40°C											
NS-AHR7101-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-AHR7102-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
NS-AHR7103-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	■
NS-APR7101-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-APR7102-0	■	2%	■	---	■ <sup>2</sup>	---	■	---	■	---	---
Size - Height x Width: 120 x 80 mm - Temperature 0 to 40°C											
NS-BHR7101-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	---	■	---
NS-BHR7103-0	■	3%	■	---	■ <sup>2</sup>	---	■	---	■	---	■

## FLUSH MOUNT - TEMPERATURE ONLY MODELS

CODES	DISPLAY	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 114 x 70 mm - Temperature 0 to 40°C				
NS-FTN7003-0	---	■	---	■
NS-FTN7003-2 <sup>1</sup>	---	■	---	■

## SURFACE MOUNTING - PIR OCCUPANCY ONLY MODELS

CODES	PIR OCCUPANCY	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 120 x 80 mm				
NS-MNN7001-0	■	---	■	---
NS-MNN7003-0	■	■	---	■
NS-MNN7004-2 <sup>1</sup>	■	■	■	■

### Notes

<sup>1</sup> Models without Johnson Controls logo

<sup>2</sup> Occupancy activated by dial

## NETWORK SENSORS

NS NETWORK ROOM COMMAND MODULE



## ORDERING INFORMATION

SURFACE MOUNTING - CO<sub>2</sub> OCCUPANCY ONLY MODELS

CODES	RANGE (PPM)	SCREW TERMINALS	MODULAR JACK	ADDRESS SWITCHES
Size - Height x Width: 120 x 80 mm				
NS-BCN7004-0	2.000	■	■	■
NS-BCN7004-2 <sup>3</sup>	2.000	■	■	■

DUCT MOUNTING - DISCHARGE AIR SENSORS

CODES	SCREW TERMINALS + CABLE (3 m LENGTH)	PROBE LENGTH (mm)	ADDRESS SWITCHES
Size - Height x Width: 76 x 76 mm - Temperature -10 to 60°C			
NS-DTN7043-0	■	102	■
NS-DTN7043-2 <sup>3</sup>	■		■
NS-DTN7083-0	■	203	■
NS-DTN7083-2 <sup>3</sup>	■		■

### Note

**3** Models without Johnson Controls logo

### NS8000

#### SERIES NETWORK SENSORS

The NS8000 series network sensors are designed to function directly with *Metasys*® system Field Equipment Controllers (FECs), Input/Output Modules (IOMs), Variable Air Volume (VAV) Modular Assembly (VMA16) Controllers.

The majority of NS series network zone sensors monitor room temperature; however, options are available to also monitor zone humidity, carbon dioxide (CO<sub>2</sub>), local temperature setpoint adjustments and other variables. This data is transmitted to a controller on the Sensor Actuator (SA) Bus.

#### FEATURES

- **BACnet® Master-Slave/Token** – Passing (MS/TP) protocol communication: provides compatibility with *Metasys* system field controllers and Facility Explorer programmable controllers in a proven communication network.
- **Single and multifunctional sensors** – Choose temperature, humidity, CO<sub>2</sub>, and occupancy sensing depending on HVAC needs.
- **Simple temperature setpoint adjustment or Warmer/Cooler mode available on display models** – Configure simple setpoint adjustment or Warmer/Cooler mode.
- **Onboard occupancy sensor available on PIR models** – Maximizes up to 30% energy savings in high-energy usage environments, and facilitates trending of floor space usage.
- **Temporary occupancy included on all display and Warmer/Cooler models** – Provides a timed override command, which initiates a temporary occupancy state.
- **Field-selectable default display setting on display models** – Toggle between temperature, RH or temperature setpoint on the display, and set the desired default for continuous viewing.
- **Fahrenheit/Celsius (°F/°C) selectable on display models** – Display temperature in degrees Fahrenheit or degrees Celsius.
- **All display models meet California Energy Code (Title 24)** – Displays the required State of California Title 24 economizer fault conditions.
- **All display models include a screen lockout** – Prevents sensor tampering.
- **Serialized sensors and calibration certificates** – Obtain factory calibration certificates for all models.

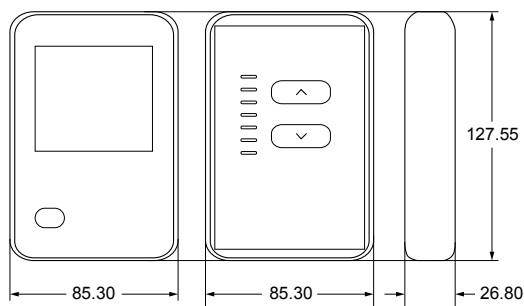


## NETWORK SENSORS

### NS8000 SERIES NETWORK SENSORS



## DIMENSIONS (in mm)



## ORDERING INFORMATION

NS8000	PIR	TEMP/RH	CO <sub>2</sub>	DISPLAY	COLOR	JCI LOGO
NSB8BNC043-0	---	---	■	---	■	---
NSB8BNC042-0	---	---	■	---	■	■
NSB8BNC041-0	---	---	■	---	□	---
NSB8BNC040-0	---	---	■	---	□	■
NSB8BTN243-0	---	TEMP	---	DISPLAY, SETPOINT	■	---
NSB8BTN242-0	---	TEMP	---	DISPLAY, SETPOINT	■	■
NSB8BTN241-0	---	TEMP	---	DISPLAY, SETPOINT	□	---
NSB8BTN240-0	---	TEMP	---	DISPLAY, SETPOINT	□	■
NSB8BTN143-0	---	TEMP	---	WARMER/COOLER	■	---
NSB8BTN142-0	---	TEMP	---	WARMER/COOLER	■	■
NSB8BTN141-0	---	TEMP	---	WARMER/COOLER	□	---
NSB8BTN140-0	---	TEMP	---	WARMER/COOLER	□	■
NSB8BTN043-0	---	TEMP	---	---	■	---
NSB8BTN042-0	---	TEMP	---	---	■	■
NSB8BTN041-0	---	TEMP	---	---	□	---
NSB8BTN040-0	---	TEMP	---	---	□	■
NSB8MTN243-0	■	TEMP	---	DISPLAY, SETPOINT	■	---
NSB8MTN242-0	■	TEMP	---	DISPLAY, SETPOINT	■	■
NSB8MTN241-0	■	TEMP	---	DISPLAY, SETPOINT	□	---
NSB8MTN240-0	■	TEMP	---	DISPLAY, SETPOINT	□	■

## NETWORK SENSORS

### NS8000 SERIES NETWORK SENSORS



NS8000	PIR	TEMP/RH	CO <sub>2</sub>	DISPLAY	COLOR	JCI LOGO
NSB8MTN043-0	■	TEMP	---	---	■	---
NSB8MTN042-0	■	TEMP	---	---	■	■
NSB8MTN041-0	■	TEMP	---	---	□	---
NSB8MTN040-0	■	TEMP	---	---	□	■
NSB8BTC243-0	---	TEMP	■	DISPLAY, SETPOINT	■	---
NSB8BTC242-0	---	TEMP	■	DISPLAY, SETPOINT	■	■
NSB8BTC241-0	---	TEMP	■	DISPLAY, SETPOINT	□	---
NSB8BTC240-0	---	TEMP	■	DISPLAY, SETPOINT	□	■
NSB8BTC043-0	---	TEMP	■	---	■	---
NSB8BTC042-0	---	TEMP	■	---	■	■
NSB8BTC041-0	---	TEMP	■	---	□	---
NSB8BTC040-0	---	TEMP	■	---	□	■
NSB8MTC243-0	■	TEMP	■	DISPLAY, SETPOINT	■	---
NSB8MTC242-0	■	TEMP	■	DISPLAY, SETPOINT	■	■
NSB8MTC241-0	■	TEMP	■	DISPLAY, SETPOINT	□	---
NSB8MTC240-0	■	TEMP	■	DISPLAY, SETPOINT	□	■
NSB8MTC043-0	■	TEMP	■	---	■	---
NSB8MTC042-0	■	TEMP	■	---	■	■
NSB8MTC041-0	■	TEMP	■	---	□	---
NSB8MTC040-0	■	TEMP	■	---	□	■
NSB8BPN243-0	---	TEMP, 2%RH	---	DISPLAY, SETPOINT	■	---
NSB8BPN242-0	---	TEMP, 2%RH	---	DISPLAY, SETPOINT	■	■
NSB8BPN241-0	---	TEMP, 2%RH	---	DISPLAY, SETPOINT	□	---
NSB8BPN240-0	---	TEMP, 2%RH	---	DISPLAY, SETPOINT	□	■
NSB8BHN243-0	---	TEMP, 3%RH	---	DISPLAY, SETPOINT	■	---
NSB8BHN242-0	---	TEMP, 3%RH	---	DISPLAY, SETPOINT	■	■
NSB8BHN241-0	---	TEMP, 3%RH	---	DISPLAY, SETPOINT	□	---
NSB8BHN240-0	---	TEMP, 3%RH	---	DISPLAY, SETPOINT	□	■
NSB8BHN143-0	---	TEMP, 3%RH	---	WARMER/COOLER	■	---
NSB8BHN142-0	---	TEMP, 3%RH	---	WARMER/COOLER	■	■
NSB8BHN141-0	---	TEMP, 3%RH	---	WARMER/COOLER	□	---
NSB8BHN140-0	---	TEMP, 3%RH	---	WARMER/COOLER	□	■



## NETWORK SENSORS

### NS8000 SERIES NETWORK SENSORS



NS8000	PIR	TEMP/RH	CO <sub>2</sub>	DISPLAY	COLOR	JCI LOGO
NSB8BHN043-0	---	TEMP, 3%RH	---	---	Black	---
NSB8BHN042-0	---	TEMP, 3%RH	---	---	Black	Yellow
NSB8BHN041-0	---	TEMP, 3%RH	---	---	White	---
NSB8BHN040-0	---	TEMP, 3%RH	---	---	White	Yellow
NSB8MHN243-0	Yellow	TEMP, 3%RH	---	DISPLAY, SETPOINT	Black	---
NSB8MHN242-0	Yellow	TEMP, 3%RH	---	DISPLAY, SETPOINT	Black	Yellow
NSB8MHN241-0	Yellow	TEMP, 3%RH	---	DISPLAY, SETPOINT	White	---
NSB8MHN240-0	Yellow	TEMP, 3%RH	---	DISPLAY, SETPOINT	White	Yellow
NSB8MHN043-0	Yellow	TEMP, 3%RH	---	---	Black	---
NSB8MHN042-0	Yellow	TEMP, 3%RH	---	---	Black	Yellow
NSB8MHN041-0	Yellow	TEMP, 3%RH	---	---	White	---
NSB8MHN040-0	Yellow	TEMP, 3%RH	---	---	White	Yellow
NSB8BHC243-0	---	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	Black	---
NSB8BHC242-0	---	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	Black	Yellow
NSB8BHC241-0	---	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	White	---
NSB8BHC240-0	---	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	White	Yellow
NSB8BHC043-0	---	TEMP, 3%RH	Yellow	---	Black	---
NSB8BHC042-0	---	TEMP, 3%RH	Yellow	---	Black	Yellow
NSB8BHC041-0	---	TEMP, 3%RH	Yellow	---	White	---
NSB8BHC040-0	---	TEMP, 3%RH	Yellow	---	White	Yellow
NSB8MHC243-0	Yellow	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	Black	---
NSB8MHC242-0	Yellow	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	Black	Yellow
NSB8MHC241-0	Yellow	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	White	---
NSB8MHC240-0	Yellow	TEMP, 3%RH	Yellow	DISPLAY, SETPOINT	White	Yellow
NSB8MHC043-0	Yellow	TEMP, 3%RH	Yellow	---	Black	---
NSB8MHC042-0	Yellow	TEMP, 3%RH	Yellow	---	Black	Yellow
NSB8MHC041-0	Yellow	TEMP, 3%RH	Yellow	---	White	---
NSB8MHC040-0	Yellow	TEMP, 3%RH	Yellow	---	White	Yellow

# SENSORS

## WIRELESS SENSORS

### WRZ

#### ZigBee WIRELESS PROTOCOL

The WRZ series wireless room sensors are designed to sense room/zone temperature and transmit wireless temperature control data. Some models also sense and transmit relative humidity.

In a ZFR1800 series wireless field bus system application, the sensors communicate with FEC16 Series, FEC26 series and VMA16 series controllers by means of the ZFR1811 router.

In wired field bus applications, the sensors communicate with a WRZ-7860 wireless receiver. The WRZ-7860 receiver transfers data to the controller by means of the Sensor Actuator (SA) communication bus. In a typical application, one WRZ series sensor reports to one WRZ-7860 receiver, but up to five WRZ series sensors can be associated with a single WRZ-7860 receiver for multi-sensor averaging or high/low temperature selection.

WRZ series sensor models are available with or without a Liquid Crystal Display (LCD). Depending on the sensor model, the WRZ series sensor can transmit sensed temperature, setpoint temperature, sensed humidity, occupancy status and PIR occupancy sensor and low battery conditions to an associated router or receiver. The WRZ series sensors are designed for indoor, intra-building applications only.

The WRZ sensors use direct-sequence, spread-spectrum RF technology, and operate on the 2.4 GHz Industrial, Scientific and Medical (ISM) band. The receiver meets the IEEE 802.15.4 standard for low power, low duty cycle RF transmitting systems.

*Refer to the WRZ Series Wireless Room Sensors Product Bulletin (LIT-12011653) for important product application information.*

### FEATURES

- Wireless RF design
- Integral wireless signal strength testing built into the sensor
- Easy installation and relocation
- Easily-applicable data types
- Simple, field adjustable DIP switches
- Optional, battery-powered WRZ-SST-110 wireless system survey tool
- High resistance to RF interference from other radio devices or RF noise sources
- User selectable default display for humidity models
- Display models
- Three temperature setpoint range options

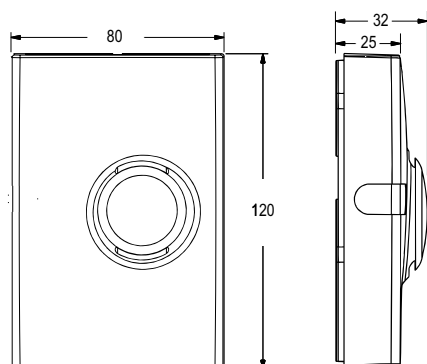


## WIRELESS SENSORS

WRZ ZIGBEE WIRELESS PROTOCOL



## DIMENSIONS (in mm)



## ORDERING INFORMATION

CODES	DESCRIPTION
WRZ-THB0000-0	Wireless room temperature and humidity sensor with display, warmer/cooler (+/-) setpoint adjustment or setpoint adjustment scale: 13 to 27°C, F/C button, relative humidity (RH) button and manual occupancy override button
WRZ-THN0000-0	Wireless room temperature and humidity sensor with battery level/signal strength LED and manual occupancy override button
WRZ-THP0000-0	Wireless room temperature and humidity sensor with warmer/cooler (+/-) setpoint adjustment and manual occupancy override button
WRZ-TTB0000-0	Wireless room temperature sensor with display, F/C button and manual occupancy override button
WRZ-TTD0000-0	Wireless room temperature sensor with display, F/C Button, fan speed control and manual occupancy override button
WRZ-TTP0000-0	Wireless room temperature sensor with warmer/cooler (+/-) setpoint adjustment, battery level/signal strength LED and manual occupancy override button
WRZ-TTR0000-0	Wireless room temperature sensor with battery level/signal strength LED, manual occupancy override button and no setpoint adjustment
WRZ-TTS0000-0	Wireless room temperature sensor with setpoint adjustment scale: 13 to 27°C, battery level/signal strength LED and manual occupancy override button
WRZ-MNN0100-0	Wireless Zigbee™ sensor, occupancy (PIR)
WRZ-MTN0100-0	Wireless Zigbee™ sensor, occupancy (PIR), temperature, no display
WRZ-MHN0100-0	Wireless Zigbee™ sensor, occupancy (PIR), temperature, 3% relative humidity, no display
WRZ-MTB0100-0	Wireless sensor, occupancy (PIR), temperature, display, warmer/cooler dial, Fahrenheit/Celsius pushbutton, occupancy override
WRZ-SST-120	Wireless system survey tool

## WIRELESS SENSORS

WRZ ZIGBEE WIRELESS PROTOCOL



## ORDERING INFORMATION

### WRZ SENSOR MODEL COMPARISON

CODES	TEMPERATURE	3% HUMIDITY	DISPLAY	F/°C BUTTON	FAN CONTROL	OCCUPANCY OVERRIDE	PIR OCCUPANCY SENSOR	SETPOINT ADJUSTMENT DIAL <sup>1</sup>
WRZ-THB0000-0	■	■	■	■	---	■	---	CONFIG
WRZ-THN0000-0	■	■	---	---	---	■	---	NO DIAL
WRZ-THP0000-0	■	■	---	---	---	■	---	W/C
WRZ-TTB0000-0	■	---	■	■	---	■	---	CONFIG
WRZ-TTD0000-0	■	---	■	■	■	■	---	CONFIG
WRZ-TTP0000-0	■	---	---	---	---	■	---	W/C
WRZ-TTR0000-0	■	---	---	---	---	■	---	NO DIAL
WRZ-TTS0000-0	■	---	---	---	---	■	---	SCALED
WRZ-MNN0100-0	---	---	---	---	---	---	■	NO DIAL
WRZ-MTN0100-0	■	---	---	---	---	---	■	NO DIAL
WRZ-MHN0100-0	■	■	---	---	---	---	■	NO DIAL
WRZ-MTB0100-0	■	---	■	■	---	■	■	W/C

#### Note

<sup>1</sup> Warmer/cooler temperature offset (W/C), single-value in 13 to 29°C range (SCALED), CONFIG - system-configured (available on display models only)