

## NS Series Network Sensors

### Description

The NS Series Network Sensor offering includes NS Series Network Zone Sensors and NS Series Network Discharge Air Sensors. 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, and Facility Explorer FX-PC Series Programmable Controllers (FX-PCGs, FX-PCVs, and FX-PCXs).

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.

Some models of NS Series Network Zone Sensors include an onboard passive infrared (PIR) occupancy sensor that detects motion to determine if a space is occupied. This feature maximizes up to 30% energy savings in high-energy usage environments such as schools, dormitories, offices, hospitals, and hotels by adjusting the temperature of the space based on the occupancy status. In addition, the PIR occupancy sensor facilitates trending of floor space usage in these environments.

The NS Series Network Zone Sensors include models with a temperature setpoint dial and Liquid Crystal Display (LCD) that allows occupants to view the zone temperature, Relative Humidity (RH), and view and adjust the zone temperature setpoint. Some temperature and humidity models include a push button to toggle between temperature and RH on the display. These models also have the capability to set the desired default display to either temperature or RH.

A fan mode push button is included to set the desired fan speed (AUTO-OFF-low-medium-high). An occupancy override function allows the user to signal the controller that the zone is occupied to override the scheduled mode. Some models have DIP switches to set a unique address for applications that require multiple sensors.

For communication wiring flexibility, the wires connecting the network zone sensor to a controller can be terminated using a modular jack or screw terminals.

Each network sensor includes an SA Bus access port to allow accessories to access the SA Bus. This plug allows accessories to service or commission the connected controller or gain access to any other controller on the same Field Controller (FC) Bus.

The NS Series Network Zone Sensor offering includes models that can be surface mounted, vertical wallbox mounted, or flush mounted to meet the requirements of the specific application.

The NS Series Network Discharge Air Sensors monitor the duct temperature, typically at the discharge of the VAV box, and transmit this data to a local controller on the SA Bus using the 10 ft (305 cm) wiring lead included with the unit. The 10 ft (305 cm) wiring lead consists of four 22 AWG (0.6 mm) trade size color-coded wires encased in a plenum-rated jacket. Each of the wires is stripped and tinned for easy connection to the SA Bus screw terminal block.

The NS Series Network Discharge Air Sensors are available with either a 4 or 8 in. (102 or 203 mm) temperature probe. All models include DIP switches for applications requiring multiple discharge air sensors, each with a unique DIP switch address.



NS Series Network Sensors

### 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 you to change the setpoint with the turn of a dial
- onboard PIR occupancy sensor available on some models — maximizes up to 30% energy savings in high-energy usage environments, and facilitates trending of floor space usage
- 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 you 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

### Repair Information

If the NS Series Network Zone Sensor or the NS Series Network Discharge Air Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact the nearest Johnson Controls® representative.

## NS Series Network Sensors (Continued)

### Selection Charts

#### Network Zone Sensor Ordering Information — Temperature Only Models

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB) or Surface-Mounted (SM)	Johnson Controls Logo	LCD Display	Temperature Adjustment: Setpoint (Set) or Warmer/Cooler Dial (W/C)	Occupancy Override Button, PIR Occupancy Sensor	F/C Scale Toggle	Fan Control	Screw Terminals (ST) or Modular Jack (MJ)	Address Switches	VAV Balancing Feature
NS-ATA7001-0	80 x 80	SM	Yes	Yes	Set	Yes, No	No	No	MJ	No	No
NS-ATA7002-0	80 x 80	SM	Yes	Yes	Set	Yes, No	No	No	ST	No	No
NS-ATA7003-0	80 x 80	SM	Yes	Yes	Set	Yes, No	No	No	ST	Yes	No
NS-ATB7001-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	No	MJ	No	No
NS-ATB7002-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	No	ST	No	No
NS-ATB7003-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	No	ST	Yes	No
NS-ATC7001-0	80 x 80	SM	Yes	Yes	Set	Yes, No	No	Yes	MJ	No	No
NS-ATC7002-0	80 x 80	SM	Yes	Yes	Set	Yes, No	No	Yes	ST	No	No
NS-ATD7001-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	Yes	MJ	No	No
NS-ATD7002-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	Yes	ST	No	No
NS-ATF7001-0	80 x 80	SM	Yes	Yes	W/C	Yes, No	Yes	No	MJ	No	No
NS-ATF7002-0	80 x 80	SM	Yes	Yes	W/C	Yes, No	Yes	No	ST	No	No
NS-ATN7001-0	80 x 80	SM	Yes	No	N/A	No, No	No	No	MJ	No	No
NS-ATN7001-2	80 x 80	SM	No	No	N/A	No, No	No	No	MJ	No	No
NS-ATN7003-0	80 x 80	SM	Yes	No	N/A	No, No	No	No	ST	Yes	No
NS-ATN7003-2	80 x 80	SM	No	No	N/A	No, No	No	No	ST	Yes	No
NS-ATP7001-0	80 x 80	SM	Yes	No	W/C	Yes, No	No	No	MJ	No	No
NS-ATP7001-2	80 x 80	SM	No	No	W/C	Yes, No	No	No	MJ	No	No
NS-ATP7002-0	80 x 80	SM	Yes	No	W/C	Yes, No	No	No	ST	No	No
NS-ATP7002-2	80 x 80	SM	No	No	W/C	Yes, No	No	No	ST	No	No
NS-ATP7003-0	80 x 80	SM	Yes	No	W/C	Yes, No	No	No	ST	Yes	No
NS-ATP7003-2	80 x 80	SM	No	No	W/C	Yes, No	No	No	ST	Yes	No
NS-ATV7001-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	No <sup>1</sup>	MJ	No	Yes
NS-ATV7002-0	80 x 80	SM	Yes	Yes	Set	Yes, No	Yes	No <sup>1</sup>	ST	No	Yes
NS-BTB7001-0	120 x 80	WB, SM	Yes	Yes	Set	Yes, No	Yes	No	MJ	No	No
NS-BTB7001-2	120 x 80	WB, SM	No	Yes	Set	Yes, No	Yes	No	MJ	No	No
NS-BTB7002-0	120 x 80	WB, SM	Yes	Yes	Set	Yes, No	Yes	No	ST	No	No
NS-BTB7003-0	120 x 80	WB, SM	Yes	Yes	Set	Yes, No	Yes	No	ST	Yes	No
NS-BTB7003-2	120 x 80	WB, SM	No	Yes	Set	Yes, No	Yes	No	ST	Yes	No
NS-BTF7001-0	120 x 80	WB, SM	Yes	Yes	W/C	Yes, No	Yes	No	MJ	No	No
NS-BTF7002-0	120 x 80	WB, SM	Yes	Yes	W/C	Yes, No	Yes	No	ST	No	No
NS-BTN7001-0	120 x 80	WB, SM	Yes	No	N/A	No, No	No	No	MJ	No	No
NS-BTN7001-2	120 x 80	WB, SM	No	No	N/A	No, No	No	No	MJ	No	No
NS-BTN7003-0	120 x 80	WB, SM	Yes	No	N/A	No, No	No	No	ST	Yes	No
NS-BTN7003-2	120 x 80	WB, SM	No	No	N/A	No, No	No	No	ST	Yes	No
NS-BTP7001-0	120 x 80	WB, SM	Yes	No	W/C	Yes, No	No	No	MJ	No	No
NS-BTP7001-2	120 x 80	WB, SM	No	No	W/C	Yes, No	No	No	MJ	No	No
NS-BTP7002-0	120 x 80	WB, SM	Yes	No	W/C	Yes, No	No	No	ST	No	No
NS-BTP7002-2	120 x 80	WB, SM	No	No	W/C	Yes, No	No	No	ST	No	No
NS-BTP7003-0	120 x 80	WB, SM	Yes	No	W/C	Yes, No	No	No	ST	Yes	No
NS-BTV7001-0	120 x 80	WB, SM	Yes	Yes	Set	Yes, No	Yes	No <sup>1</sup>	MJ	No	Yes
NS-BTV7002-0	120 x 80	WB, SM	Yes	Yes	Set	Yes, No	Yes	No <sup>1</sup>	ST	No	Yes
NS-MTB7001-0	120 x 80	WB, SM	Yes	Yes	Set	No, Yes	Yes	No	MJ	No	No
NS-MTB7002-0	120 x 80	WB, SM	Yes	Yes	Set	No, Yes	Yes	No	ST	No	No
NS-MTL7001-0	120 x 80	WB, SM	Yes	No	N/A	Yes, Yes	No	No	MJ	No	No
NS-MTL7002-0	120 x 80	WB, SM	Yes	No	N/A	Yes, Yes	No	No	ST	No	No

1. In the VAV balancing models, the fan control button is replaced by a light bulb button used in the VAV balancing process.

## NS Series Network Sensors (Continued)

### Network Zone Sensor Ordering Information — Temperature and Humidity Models without RH Display

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB) or Surface-Mounted (SM)	Johnson Controls Logo	LCD Display, RH Display	Humidity Element Accuracy	Temperature Adjustment: Setpoint (Set) or Warmer/Cooler Dial (W/C)	Occupancy Override Button, PIR Occupancy Sensor	F/C Scale Toggle	Screw Terminals (ST) or Modular Jack (MJ)	Address Switches
NS-AHA7001-0	80 x 80	SM	Yes	Yes, No	3%	Set	Yes, No	No	MJ	No
NS-AHA7002-0	80 x 80	SM	Yes	Yes, No	3%	Set	Yes, No	No	ST	No
NS-AHB7001-0	80 x 80	SM	Yes	Yes, No	3%	Set	Yes, No	Yes	MJ	No
NS-AHB7002-0	80 x 80	SM	Yes	Yes, No	3%	Set	Yes, No	Yes	ST	No
NS-AHB7003-0	80 x 80	SM	Yes	Yes, No	3%	Set	Yes, No	Yes	ST	Yes
NS-AHN7001-0	80 x 80	SM	Yes	None	3%	N/A	No, No	No	MJ	No
NS-AHP7001-0	80 x 80	SM	Yes	None	3%	W/C	Yes, No	No	MJ	No
NS-AHN7001-2	80 x 80	SM	No	None	3%	N/A	No, No	No	MJ	No
NS-APA7001-0	80 x 80	SM	Yes	Yes, No	2%	Set	Yes, No	No	MJ	No
NS-APA7002-0	80 x 80	SM	Yes	Yes, No	2%	Set	Yes, No	No	ST	No
NS-APB7001-0	80 x 80	SM	Yes	Yes, No	2%	Set	Yes, No	Yes	MJ	No
NS-APB7002-0	80 x 80	SM	Yes	Yes, No	2%	Set	Yes, No	Yes	ST	No
NS-APB7003-0	80 x 80	SM	Yes	Yes, No	2%	Set	Yes, No	Yes	ST	Yes
NS-BHB7001-0	120 x 80	WB, SM	Yes	Yes, No	3%	Set	Yes, No	Yes	MJ	No
NS-BHB7002-0	120 x 80	WB, SM	Yes	Yes, No	3%	Set	Yes, No	Yes	ST	No
NS-BHB7003-0	120 x 80	WB, SM	Yes	Yes, No	3%	Set	Yes, No	Yes	ST	Yes
NS-BHN7001-0	120 x 80	WB, SM	Yes	None	3%	N/A	No, No	No	MJ	No
NS-BHN7001-2	120 x 80	WB, SM	No	None	3%	N/A	No, No	No	MJ	No
NS-BHP7001-0	120 x 80	WB, SM	Yes	None	3%	W/C	Yes, No	No	MJ	No
NS-BPB7001-0	120 x 80	WB, SM	Yes	Yes, No	2%	Set	Yes, No	Yes	MJ	No
NS-BPB7002-0	120 x 80	WB, SM	Yes	Yes, No	2%	Set	Yes, No	Yes	ST	No
NS-BPB7003-0	120 x 80	WB, SM	Yes	Yes, No	2%	Set	Yes, No	Yes	ST	Yes
NS-MHL7001-0	120 x 80	WB, SM	Yes	No, No	3%	N/A	Yes, Yes	No	MJ	No
NS-MHL7002-0	120 x 80	WB, SM	Yes	No, No	3%	N/A	Yes, Yes	No	ST	No

### Network Zone Sensor Ordering Information — Temperature and Humidity Models with Temperature or RH Display (Field Selectable Default Display)

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB) or Surface-Mounted (SM)	LCD Display, RH Display	Humidity Element Accuracy	Temperature Adjustment: Setpoint (Set) or Warmer/Cooler Dial (W/C)	Occupancy Override Button	F/C Scale Toggle	Screw Terminals (ST) or Modular Jack (MJ)	Address Switches
NS-AHR7101-0	80 x 80	SM	Yes, Yes	3%	Set	Yes	Yes	MJ	No
NS-AHR7102-0	80 x 80	SM	Yes, Yes	3%	Set	Yes	Yes	ST	No
NS-AHR7103-0	80 x 80	SM	Yes, Yes	3%	Set	Yes	Yes	ST	Yes
NS-APR7101-0	80 x 80	SM	Yes, Yes	2%	Set	Yes	Yes	MJ	No
NS-APR7102-0	80 x 80	SM	Yes, Yes	2%	Set	Yes	Yes	ST	No
NS-BHR7101-0	120 x 80	WB, SM	Yes, Yes	3%	Set	Yes	Yes	MJ	No
NS-BHR7103-0	120 x 80	WB, SM	Yes, Yes	3%	Set	Yes	Yes	ST	Yes

### Network Zone Sensor Ordering Information — Motion Detection Only Models (No Temperature or Humidity Sensing)

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB) or Surface-Mounted (SM)	LCD Display	PIR Occupancy Sensor	Screw Terminals (ST), or Modular Jack (MJ)	Address Switches
NS-MNN7001-0	120 x 80	WB, SM	No	Yes	MJ	No
NS-MNN7003-0	120 x 80	WB, SM	No	Yes	ST	Yes

## NS Series Network Sensors (Continued)

### Network Zone Sensor Ordering Information — CO<sub>2</sub> Models

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB), or Surface-Mounted (SM)	LCD Display	CO <sub>2</sub> Measurement Range	Johnson Controls Logo	Screw Terminals (ST), or Modular Jack (MJ)	Sensor Addressing
NS-BCN7004-0	120 x 80	WB, SM	No	0 to 2,000 ppm	Yes	ST, MJ	DIP Switch (212 to 219)
NS-BCN7004-2	120 x 80	WB, SM	No	0 to 2,000 ppm	No	ST, MJ	DIP Switch (212 to 219)

### Network Zone Sensor Ordering Information — Flush-Mount Temperature Only Models

Product Code Number	Faceplate Dimensions, Height x Width	Mounting	LCD Display	Temperature Measurement Range	Johnson Controls Logo	Terminations	Sensor Addressing
NS-FTN7003-0	4-1/2 in. x 2-3/4 in. (114 mm x 70 mm)	Flush-Mount	No	32.0°F/0.0°C to 104.0°F/40.0°C	Yes	Screw Terminal Block	DIP Switch (200 to 203)
NS-FTN7003-2	4-1/2 in. x 2-3/4 in. (114 mm x 70 mm)	Flush-Mount	No	32.0°F/0.0°C to 104.0°F/40.0°C	No	Screw Terminal Block	DIP Switch (200 to 203)


### Network Discharge Air Sensor Ordering Information


Product Code Number	Dimensions, Height x Width x Depth	Temperature Probe Length	10 ft (305 cm) Wiring Lead Included	Terminations	Sensor Addressing
NS-DTN7043-0	3 in. x 3 in. x 2 in. (76 mm x 76 mm x 51 mm)	4 in. (102 mm)	Yes	Screw Terminal Block	DIP Switch (204 to 211)
NS-DTN7083-0	3 in. x 3 in. x 2 in. (76 mm x 76 mm x 51 mm)	8 in. (203 mm)	Yes	Screw Terminal Block	DIP Switch (204 to 211)

## Technical Specifications

NS Series Network Zone Sensors — Temperature Only Models and Temperature and Humidity Models (Part 1 of 2)	
Supply Voltage	9.8 to 16.5 VDC; 15 VDC Nominal (From SA Bus)
Current Consumption	Temperature Only Models with LCD Display: 21 mA Maximum (Non-transmitting)
	Temperature Only Models without LCD Display: 13 mA Maximum (Non-transmitting)
	Temperature and Humidity Models with LCD Display: 25 mA Maximum (Non-transmitting)
	Temperature and Humidity Models without LCD Display: 17 mA Maximum (Non-transmitting)
Terminations	Modular Jack or Screw Terminal Block
Sensor Addressing	NS-AHx7003-0, NS-APB7003-0, NS-ATx7003-0, NS-BHx7003-0, NS-BPB7003-0, NS-BTB7003-0, NS-BTN7003-0, and NS-BTP7003-0 Models: DIP Switch Set from 200 to 203; Factory Set at 203 All Other Models: Fixed Address of 199
Wire Size	Modular Jack Models: 24 or 26 AWG (0.5 or 0.4 mm Diameter) Recommended; Three Twisted Pair (Six Conductors) Screw Terminal Block Models: 18 to 22 AWG (1.0 to 0.6 mm Diameter); 22 AWG (0.6 mm Diameter) Recommended
Communication Rate	Auto-Detect: 9.6k, 19.2k, 38.4k, or 76.8k bps
Mounting	Surface-Mounted: 80 x 80 mm
	Surface-Mounted or Vertical Wallbox-Mounted: 120 x 80 mm
Temperature Measurement Range	32.0°F/0.0°C to 104.0°F/40.0°C
Humidity Measurement Range	Full Range: 0 to 100% RH
	Calibrated Range: 10 to 90% RH
Temperature Sensor Type	Local 1k ohm Platinum Resistance Temperature Detector (RTD); Class A per IEC 60751
Humidity Sensor Type	Thin Film Capacitive Sensor
Temperature Resolution (Models with LCD)	±0.5F°/±0.5C°
Temperature Accuracy	NS Series Network Zone Sensor: ±1.0F°/±0.6C°
	Temperature Element Only: 0.35F° at 70°F (0.19C° at 21°C)
Humidity Element Accuracy	NS-APx700x-0 and NS-BPB700x-0 Models: ±2% RH for 20 to 80% RH; ±4% RH for 10 to 20% and 80 to 90% RH
	NS-AHx700x-0, NS-BHx700x-0, and NS-MHL700x-0 Models: ±3% RH for 20 to 80% RH; ±6% RH for 10 to 20% and 80 to 90% RH
Time Constant	10 Minutes Nominal at 10 fpm Airflow
Default Temperature Setpoint Adjustment Range	With LCD Display: 50.0°F/10.0°C to 86.0°F/30.0°C in 0.5° Increments
	Without LCD Display: ±5.0F°/±3.0C°
PIR Occupancy Sensor Motion Detection (Models with PIR Occupancy Sensor)	Minimum 94 Angular Degrees up to a Distance of 15 ft (4.6 m); Based on a Clear Line of Sight

## NS Series Network Sensors (Continued)

NS Series Network Zone Sensors — Temperature Only Models and Temperature and Humidity Models (Part 2 of 2)		
Ambient Conditions		<b>Operating:</b> 32 to 104°F (0 to 40°C); 10 to 90% RH, Noncondensing; 85°F (29°C) Maximum Dew Point <b>Storage with LCD Display:</b> -4 to 140°F (-20 to 60°C); 5 to 95% RH, Noncondensing <b>Storage without LCD Display:</b> -40 to 158°F (-40 to 70°C); 5 to 95% RH, Noncondensing
	BACnet International	BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Smart Sensor (B-SS) Note: Excludes the NS-ATV700x-0 and NS-BTV700x-0 models.
	United States	UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment; FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada, ICES-003
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Accessory (Order Separately)		<b>NS-WALLPLATE-0:</b> Adapts an 80 x 80 mm NS Series Network Zone Sensor to a Standard 80 x 120 mm Wallbox
Shipping Weight		<b>NS-Axx7xxx-0 Models:</b> 0.20 lb (0.09 kg) <b>NS-Bxx7xxx-0 and NS-Mxx700x-0 Models:</b> 0.25 lb (0.11 kg)

NS Series Network Zone Sensors — Motion Detection Only Models (No Temperature or Humidity Sensing)		
Supply Voltage		9.8 to 16.5 VDC; 15 VDC Nominal (From SA Bus)
Current Consumption		13 mA Maximum (Non-transmitting)
Terminations		Modular Jack or Screw Terminal Block
Sensor Addressing (NS-MNN7003-0 Model)		DIP Switch Set from 200 to 203; Factory Set at 203
Wire Size		<b>Modular Jack Model:</b> 24 AWG or 26 AWG (0.5 or 0.4 mm Diameter) Recommended; Three Twisted Pair (Six Conductors) <b>Screw Terminal Block Model:</b> 18 to 22 AWG (1.0 to 0.6 mm Diameter); 22 AWG (0.6 mm Diameter) Recommended
Communication Rate		<b>Auto-Detect:</b> 9.6k, 19.2k, 38.4k, or 76.8k bps
Mounting		<b>Surface-Mounted or Vertical Wallbox-Mounted:</b> 120 x 80 mm
PIR Occupancy Sensor Motion Detection		Minimum 94 Angular Degrees up to a Distance of 15 ft (4.6 m); Based on a Clear Line of Sight
Ambient Conditions		<b>Operating:</b> 32 to 104°F (0 to 40°C); 10 to 90% RH, Noncondensing; 85°F (29°C) Maximum Dew Point <b>Storage:</b> -40 to 158°F (-40 to 70°C); 5 to 95% RH, Noncondensing
	BACnet International	BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Smart Sensor (B-SS)
	United States	UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment; FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada, ICES-003
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight		0.25 lb (0.11 kg)

NS Series Network Zone Sensor — CO <sub>2</sub> Models (Part 1 of 2)		
Supply Voltage		<b>Non-isolated:</b> 20 to 30 VAC (18 to 30 VDC), Class 2 or Safety Extra-Low Voltage (SELV) <b>Isolated:</b> 9.8 to 16.5 VDC; 15 VDC Nominal (From SA Bus)
Current Consumption		<b>Non-isolated:</b> 22 mA Average at 24 VAC; 28 mA Average at 24 VDC <b>Isolated:</b> 5 mA Maximum, Non-transmitting (From SA Bus)
Power Consumption		<b>Non-isolated:</b> Less Than 0.7 W Average
Terminations		<b>Non-isolated Supply:</b> Screw Terminal Block <b>SA Bus:</b> Modular Jack or Screw Terminal Block
Sensor Addressing		DIP Switch Set from 212 to 219; Factory Set at 212
Wire Size		<b>Modular Jack:</b> 24 or 26 AWG (0.5 or 0.4 mm Diameter) Recommended; Three Twisted Pair (Six Conductors) <b>Screw Terminal Block:</b> 18 to 22 AWG (1.0 to 0.6 mm Diameter); 22 AWG (0.6 mm Diameter) Recommended
Communication Rate		<b>Auto-Detect:</b> 9.6k, 19.2k, 38.4k, or 76.8k bps
CO <sub>2</sub> Measurement Range		0 to 2,000 ppm


## NS Series Network Sensors (Continued)

NS Series Network Zone Sensor — CO <sub>2</sub> Models (Part 2 of 2)	
CO <sub>2</sub> Sensing Accuracy	Plus or Minus the Sum of 50 ppm and 3.0% of the CO <sub>2</sub> Reading at 77°F (25°C) and 978 hPa or an Altitude of 1,000 ft/300 m Note: All accuracy specifications reflect the testing of the device using high-grade certified gases. This device is intended for an altitude range of 0 ft/0 m to 2,000 ft/600 m above sea level without compensation.
	<b>Temperature Dependence of Output:</b> -0.35% of the CO <sub>2</sub> Reading per 1.8F°/1C° Typical <b>Pressure Dependence of Output:</b> +0.15% of the CO <sub>2</sub> Reading per 1 hPa Typical
CO <sub>2</sub> Sensing Resolution	1 ppm
CO <sub>2</sub> Sensing Response Time	1 Minute (0 to 90%)
CO <sub>2</sub> Sensing Warm-Up Time	Less Than 1 Minute; Less Than 10 Minutes for Full Accuracy
CO <sub>2</sub> Sensing Long-Term Stability	Less Than ±100 ppm Over 5 Years
Mounting	<b>Surface-Mounted or Vertical Wallbox-Mounted:</b> 120 x 80 mm
Ambient Conditions	<b>Operating:</b> 32 to 104°F (0 to 40°C); 10 to 90% RH, Noncondensing; 85°F (29°C) Maximum Dew Point; 700 to 1,200 hPa
	<b>Storage:</b> -40 to 158°F (-40 to 70°C); 0 to 95% RH, Noncondensing
Compliance	<b>BACnet International</b> BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Smart Sensor (B-SS)
	<b>United States</b> UL Listed, File E107041 CCN PAZX, Under UL 916, Energy Management Equipment; FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	<b>Canada</b> UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada, ICES-003
	<b>Europe</b> CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	<b>Australia and New Zealand</b> C-Tick Mark, Australia/NZ Emissions Compliant
Supply Voltage	0.35 lb (0.16 kg)

NS Series Network Zone Sensor — Flush-Mount Temperature Only Models	
Supply Voltage	9.8 to 16.5 VDC; 15 VDC Nominal (From SA Bus)
Current Consumption	12 mA Maximum (Non-transmitting) per Flush-Mount Network Sensor
Terminations	Screw Terminal Block Note: Wire leads are field supplied and are not tinned.
Sensor Addressing	DIP Switch Set from 200 to 203; Factory Set at 203
Wire Size	18 to 22 AWG (1.0 to 0.6 mm Diameter); 22 AWG (0.6 mm Diameter) Recommended; 10 ft (304.8 cm) Wiring Lead Included with the Unit
Communication Rate	<b>Auto-Detect:</b> 9.6k, 19.2k, 38.4k, or 76.8k bps
Temperature Measurement Range	32.0°F/0.0°C to 104.0°F/40.0°C
Temperature Sensor Type	Local 1k ohm Platinum Resistance Temperature Detector (RTD); Class A per IEC 60751
Temperature Accuracy	<b>NS Series Network Zone Sensor:</b> ±1.0F°/±0.6C°
	<b>Temperature Element Only:</b> 0.35F° at 70°F (0.19C° at 21°C)
Ambient Conditions	<b>Operating:</b> 32 to 104°F (0 to 40°C); 10 to 90% RH, Noncondensing; 85°F (29°C) Maximum Dew Point
	<b>Storage:</b> -40 to 158°F (-40 to 70°C); 5 to 95% RH, Noncondensing
Compliance	<b>BACnet International</b> BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Smart Sensor (B-SS)
	<b>United States</b> UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment; FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	<b>Canada</b> UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada, ICES-003
	<b>Europe</b> CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	<b>Australia and New Zealand</b> C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	0.25 lb (0.11 kg)

NS Series Network Discharge Air Sensors (Part 1 of 2)	
Supply Voltage	9.8 to 16.5 VDC; 15 VDC Nominal
Current Consumption	12 mA Maximum (Non-transmitting) per Discharge Air Sensor
Terminations	Four Color-Coded Wiring Leads, Stripped and Tinned; Factory-Installed at the Discharge Air Sensor Screw Terminal Block
Sensor Addressing	DIP Switch Set from 204 to 211; Factory Set at 204

## NS Series Network Sensors (Continued)

NS Series Network Discharge Air Sensors (Part 2 of 2)		
Wire Size	18 to 22 AWG (1.0 to 0.6 mm Diameter); 22 AWG (0.6 mm Diameter) Recommended; 10 ft (305 cm) Wiring Lead Included with the Unit	
Communication Rate	<b>Auto-Detect:</b> 9.6k, 19.2k, 38.4k, or 76.8k bps	
Mounting	<b>Duct-Mounted:</b> 4 or 8 in. (102 or 203 mm) Temperature Probe Length	
Temperature Measurement Range	14°F/-10°C to 140°F/60°C	
Temperature Sensor Type	Local 1k ohm Platinum Resistance Temperature Detector (RTD); Class A per IEC 60751	
Temperature Accuracy	<b>NS Series Network Discharge Air Sensor:</b> $\pm 1.0F^{\circ}/\pm 0.6C^{\circ}$ <b>Temperature Element Only:</b> 0.35F° at 70°F (0.19C° at 21°C)	
Ambient Conditions	<b>Operating:</b> 14 to 140°F (-10 to 60°C); 10 to 90% RH, Noncondensing; 85°F (29°C) Maximum Dew Point <b>Storage:</b> -40 to 158°F (-40 to 70°C); 5 to 95% RH, Noncondensing	
<b>Compliance</b>  	<b>BACnet International</b>	BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Smart Sensor (B-SS)
	<b>United States</b>	UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment; FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	<b>Canada</b>	UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada, ICES-003
	<b>Europe</b>	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	<b>Australia and New Zealand</b>	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight	<b>NS-DTN7043-0:</b> 1.15 lb (0.52 kg) <b>NS-DTN7083-0:</b> 1.17 lb (0.53 kg)	