Metasys® System Extended Architecture

NS Series Network Sensors

Description

The NS Series Network Sensors are electronic zone sensors designed to function directly with Metasys® system BACnet® protocol Field Equipment Controllers (FECs), Input/Output Modules (IOMs), and the Variable Air Volume (VAV) Modular Assembly (VMA) 1600.

All models of network sensors monitor room temperature. Options are available to also monitor zone humidity, local temperature setpoint adjustments, and other variables identified in the following sections. This data is transmitted to a field controller on the Sensor-Actuator (SA) Bus.

The line of network sensors includes models with a temperature setpoint dial and Liquid Crystal Display (LCD) that allows occupants to view the zone temperature, and view and adjust the zone setpoint. A fan mode push button is included to set the desired fan speed (Auto-Off-Low-Med-High). An occupancy override function allows the user to signal the controller that the zone is occupied to override the scheduled mode.

For communication wiring flexibility, the wires connecting the 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 FC Bus.

Refer to the *Metasys System BACnet Protocol Field Controllers, Network Sensors, and Related Products Product Bulletin (LIT-12011042)* for product application details.

Features

- BACnet Master-Slave/Token-Passing protocol communication provides compatibility with Metasys system Field Controllers in a proven communication network.

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- Backlit LCD (available on some models) provides real-time status of the environment in easy-to-read, plain text messages with backlighting activated during user interaction.
- Simple setpoint adjustment enables user to change the setpoint with the turn of a dial.
- Temporary occupancy (available on some models) provides a timed override command, which temporarily initiates an alternate mode.
- Fahrenheit/Celsius (F/C) button toggles the display temperature between degrees Celsius and degrees Fahrenheit.

Selection Charts

Network Sensor Ordering Information — Temperature and Humidity Models

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB), or Surface-Mounted (SM)	LCD Display	Humidity	Temperature Adjustment: Setpoint (Set), or Warmer/Cooler Dial (W/C)	Occupancy Override	F/C Scale Toggle	Screw Terminals (ST), or Modular Jack (MJ)
NS-APA7001-0	80 x 80	SM	Yes	2%	Set	Yes		MJ
NS-APA7002-0	80 x 80	SM	Yes	2%	Set	Yes		ST
NS-APB7001-0	80 x 80	SM	Yes	2%	Set	Yes	Yes	MJ
NS-APB7002-0	80 x 80	SM	Yes	2%	Set	Yes	Yes	ST
NS-BPB7001-0	120 x 80	WB, SM	Yes	2%	Set	Yes	Yes	MJ
NS-BPB7002-0	120 x 80	WB, SM	Yes	2%	Set	Yes	Yes	ST
NS-AHA7001-0	80 x 80	SM	Yes	3%	Set	Yes		MJ
NS-AHA7002-0	80 x 80	SM	Yes	3%	Set	Yes		ST
NS-AHB7001-0	80 x 80	SM	Yes	3%	Set	Yes	Yes	MJ
NS-AHB7002-0	80 x 80	SM	Yes	3%	Set	Yes	Yes	ST
NS-BHB7001-0	120 x 80	WB, SM	Yes	3%	Set	Yes	Yes	MJ
NS-BHB7002-0	120 x 80	WB, SM	Yes	3%	Set	Yes	Yes	ST

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Network Sensor Ordering Information — Temperature Only Models

Product Code Number	Size (mm), Height x Width	Vertical Wallbox-Mounted (WB), or Surface-Mounted (SM)	LCD Display	Temperature Adjustment: Setpoint (Set), or Warmer/ Cooler Dial (W/C)	Occupancy Override	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	Set	Yes			MJ		
NS-ATA7002-0	80 x 80	SM	Yes	Set	Yes			ST		
NS-ATB7001-0	80 x 80	SM	Yes	Set	Yes	Yes		MJ		
NS-ATB7002-0	80 x 80	SM	Yes	Set	Yes	Yes		ST		
NS-ATC7001-0	80 x 80	SM	Yes	Set	Yes		Yes	MJ		
NS-ATC7002-0	80 x 80	SM	Yes	Set	Yes		Yes	ST		
NS-ATD7001-0	80 x 80	SM	Yes	Set	Yes	Yes	Yes	MJ		
NS-ATD7002-0	80 x 80	SM	Yes	Set	Yes	Yes	Yes	ST		
NS-ATN7001-0	80 x 80	SM						MJ		
NS-ATN7003-0	80 x 80	SM						ST	Yes	
NS-ATP7001-0	80 x 80	SM		W/C	Yes			MJ		
NS-ATP7002-0	80 x 80	SM		W/C	Yes			ST		
NS-ATV7001-0	80 x 80	SM	Yes	Set	Yes	Yes	No[1]	MJ		Yes
NS-ATV7002-0	80 x 80	SM	Yes	Set	Yes	Yes	No[1]	ST		Yes
NS-BTB7001-0	120 x 80	WB, SM	Yes	Set	Yes	Yes		MJ		
NS-BTB7002-0	120 x 80	WB, SM	Yes	Set	Yes	Yes		ST		
NS-BTN7001-0	120 x 80	WB, SM						MJ		
NS-BTN7003-0	120 x 80	WB, SM						ST	Yes	
NS-BTP7001-0	120 x 80	WB, SM		W/C	Yes			MJ		
NS-BTP7002-0	120 x 80	WB, SM		W/C	Yes			ST		
NS-BTV7001-0	120 x 80	WB, SM	Yes	Set	Yes	Yes	No[1]	MJ		Yes
NS-BTV7002-0	120 x 80	WB, SM	Yes	Set	Yes	Yes	No[1]	ST		Yes

1. In the VAV Balancing models, the Fan Control button is replaced by a light bulb button used in the VAV Balancing Process.

Technical Specifications

NS Series Network Sensor			
Sensor Type		With Setpoint Adjustment	Without Setpoint Adjustment
Supply Voltage		9.8 to 16.5 VDC; 15 VDC Nominal	
Current Consumption		25 mA Maximum (Non-Transmitting)	13 mA Maximum (Non-Transmitting)
Terminations		Modular Jack or Screw Terminal Block	
Sensor Addressing on the SA Bus	**NS-xTN7003-0 Model**	NA	DIP Switch Set (200 to 203)
	All Other Models	Fixed Address of 199	Fixed Address of 199
Wire Size	**Modular Jack Models**	26 AWG (0.4 mm Diameter) Recommended; Three Twisted Pair (6 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: 9600, 19.2k, 38.4k, or 76.8k bps	
Mounting		Surface-Mounted (80 x 80) Surface-Mounted or Vertical Wallbox-Mounted (120 x 80)	
Temperature Measurement Range		0.0°C/ 32.0°F to 40.0°C/104.0°F	
Sensor Type		Local Platinum Resistance Temperature Detector (RTD)	
Resolution		±0.5C°/±0.5F°	NA
Sensor Accuracy		±0.6C°/±1.0F°	
Time Constant		10 Minutes Nominal at 10 fpm Airflow	
Default Setpoint Adjustment Range		10.0°C/50.0°F to 30.0°C/86.0°F in 0.5° Increments	±3.0C°/±5.0F°
Ambient Conditions	**Operating**	0 to 40°C (32 to 104°F); 10 to 95% RH, Noncondensing; 29°C (85°F) Maximum Dew Point	
	Storage	-20 to 60°C (-4 to 140°F); 5 to 95% RH, Noncondensing	-40 to 70°C (-40 to 158°F); 5 to 95% RH, Noncondensing
Compliance	**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 CSA C22.2 No. 205, Signal Equipment	
		Industry Canada, ICES-003	
	European Union	CE Mark, EMC Directive 89/336/EEC	
		EN61000-6-3 (2001) Generic Emission Standard for Residential and Light Industry	
		EN61000-6-2 (2001) Generic Immunity Standard for Heavy Industrial Environment	
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant	
Shipping Weight		0.09 kg (0.20 lb) for NS-Axx7xxx-0 0.11 kg (0.25 lb) for NS-Bxx7xxx-0	