TS300 Series Sensor

Self-Contained Interoperable Controller Model UCP-1

SUPERSEDES: January 11, 2011   EFFECTIVE: June 11, 2012

Job: _____   Engineer: _____

Contractor: _____   Rep: _____

Date: _____   Tag/Item #: _____

TS300 SERIES SENSORS

iWorx® TS300 Series Sensors are a family of wall-mounted digital temperature and humidity sensors for use with iWorx® HVAC Controllers. These sensors feature a Sensor Link (S-Link) communication protocol which provides a simple two-wire interface for power and exchange of sensor and control information. Control information includes occupancy override selection, heat/cool status, temperature setpoints, and fan mode.

Overview

Available in six models, these iWorx® TS300 Series Sensors provide integral analog to digital conversion for elimination of noise effects and wire resistance offset between sensor and controller.

Using the digital wall sensor, the operator can monitor performance and edit operational settings.

iWorx® TS300 Series Sensors are suitable for direct-wall, 2 x 4 electrical box, 1/4 DIN electrical box, or surface box mounting.

The TS300 series sensor measures room conditions and transmits the information to the controller via the S-Link. A single sensor is connected directly to an application-specific iWorx® Series controller via low-cost, unshielded, twisted pair cable. The connection between the sensor and controller is not polarity-sensitive.

Features

- Contemporary, low-profile packaging.
- Digital zone temperature indication (selectable for 0.1 or 1 degree display resolution of °F or °C).
- Self-compensating temperature conversions remove the need to calibrate over time.
- Digital zone humidity indication (selectable for 0.1 or 1% RH display resolution).
- Long-life humidity sensing element with excellent resistance to contamination and condensation.
- Pushbutton override capabilities allow occupants to switch to timed occupied mode for after hours operation.
- Displays selected system values such as setpoints, and operating mode.
- Directly connects to selected iWorx® controllers via low-cost, unshielded, twisted-pair cable, which provides both power and communication.
- Separate wiring subbase and electronics.

SPECIFICATIONS

Sensors

Temperature Sensor (TS301, TS303, TS305)

- Type: Precision thermistor
- Accuracy: ±3 °F (1.7 °C)
- Range: 32 to 122°F (0 to 50 °C)

Temperature Sensor (TS302, TS304, TS306)

- Type: Band gap semiconductor
- Accuracy: ±1.3 °F (0.7 °C)
- Range: 32 to 122 °F (0 to 50 °C)

Humidity Sensor (TS302, TS304, TS306)

- Type: Thermoset polymer capacitive sensor
- Accuracy: ±2% RH at 77 °F (25 °C)
- Range: 5% to 95% non-condensing
- Hysteresis: ±1.2% RH maximum
- Immersion: Extended exposure to equal to or greater than 90% RH causes a reversible 3% shift. Sensor will recover from short term exposure to liquid water or condensation. Repeated exposure will degrade the performance of the sensor.

General

Enclosure

- Dimensions: 4-21/32 H x 3 W x 1 D in (118.5 x 76.2 x 24 mm)
- Conforms to NEMA-1 requirements

Weight

- Controller Weight: 0.2 pounds (0.09 kilograms)
- Shipping Weight: 0.35 pounds (0.16 kilograms)

Wiring Terminals

- Four (4) screw terminals. AWG #18 to #24 (0.823 mm2 maximum) wire

Wire Length

- 200 feet max. (61 meters) between sensor and controller

Electrical Rating

- 16 Volt DC max. Class 2

Display

- Setpoints, input spans, and units vary with the controller application

Range

- -99 to 999 or -9.9 to 99.9

Units

- °F, °C, or %

System Mode

- Heat/Cool/Off/Auto (except TS305, TS306)

Fan Mode

- Off/On/Auto

Override

• Occupied/Unoccupied (except TS305, TS306)

Ambient Limits

• Operating temperature: 32 to 122 °F (0 to 50 °C).

• Shipping and storage temperature: -40 to 160 °F

• Humidity: 5 to 95% RH, non-condensing

Agency Listings

• UL-916 (Category PAZX)

• UL Listed to Canadian Safety Standards (CAN/CSA C22.2)

Agency Compliances

• FCC Part 15 Class B

• European Community - EMC Directive 89/336/EEC: Emissions and Immunity EN61326

• Surge immunity: IEEE C62.41 (IEEE-587, Category A & B)

Software

Digital Display

• Custom field-configurable sensor displays

• Auto-ranging of displayed values

• Occupant command capabilities

• Adjustable minimum/maximum limit setpoint values

• Controller driven, automatically configured, customized display/command values

Table 1: Typical TS300 Series Display/Change Values

Model	Value	Display	Change
TS301-TS306	Zone Temperature	Yes	No
TS303-TS306	Outdoor Air Temperature	Yes	No
TS303-TS306	Percent Humidity	Yes	No
TS301-TS306[a]	Heating Setpoint, Cooling Setpoint, Unoccupied with Override	Yes	Yes
TS303-TS304	Mode Heating/Cooling/Auto/Off	Yes	Yes
TS303-TS306	Fan (Off/On/Auto)	Yes	Yes

a TS301, TS302, TS305, and TS306 models have a single setpoint.

Communications

Sensor Link (S-Link) communications wiring provides power and communication interface to the iWorx® TS300 series sensors. It uses two-wire, unshielded cable and is not polarity sensitive. From these sensor models, the user can view and adjust application parameters. Maximum wire length allowed between a controller and the iWorx® TS300 series sensor is 200 ft. (61 m).

Table 2: Models

Model		Description	Keypad	Display
Temperature Sensor	**Temperature and Humidity Sensor**			
TS301	TS302	Sensor with setpoint adjustment and override	Three button	Digital LCD[a,b] and LED Override Status Indication
TS303	TS304	Sensor with setpoint adjustment, override, and heat/cool/auto/off.	Six button	Digital LCD[b,c] and LED Override Status Indication
TS305	TS306	Sensor with adjustable setpoint, fan on/off/auto	Six button	Digital LCD[b,c] and LED Fan Status Indication

a LCD displays value and setpoint.
b Allows viewing of alarms and diagnostics.
c LCD displays values and setpoints.

CONTROLS MADE EASY®

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