Data Sheet

HT/S

Space Humidity and Temperature Sensor

Space Humidity and Temperature Sensor

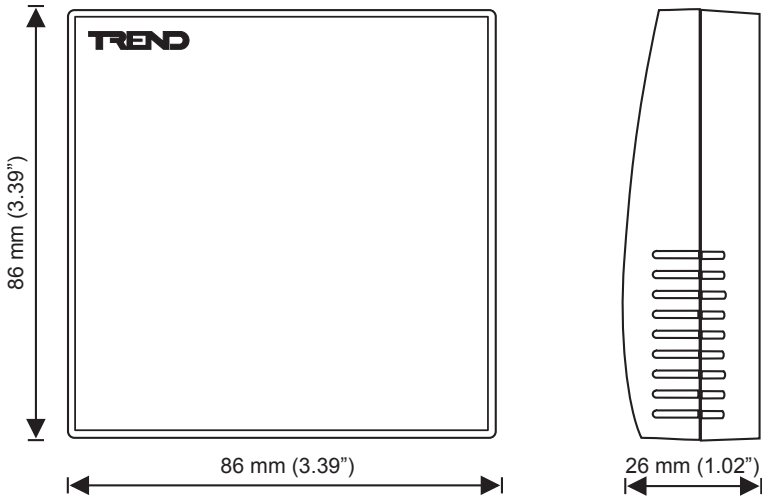
Description

Wall mounted relative humidity measurement combined with temperature measurement. The certified 2% high accuracy (HT/S/2%) and standard 3% (HT/S) versions offer excellent linearity and stability over a wide humidity range.

Features

- Precalibrated for ease of commissioning
- Operates over 0 to 100 %RH non-condensing
- ± 2%, and 3% accuracy versions
- 2 part connectors for ease of installation
- Capacitive humidity sensing element provides excellent long term stability

Physical



FUNCTIONALITY

The HT/S humidity and temperature sensors can be used for a wide range of HVAC applications, operating over a 0 to 100 %RH (non-condensing) range. They use a capacitive humidity sensing element which exhibits excellent long term stability.

There are two versions: HT/S and HT/S/2%.

HT/S

Humidity output: 4 to 20 mA signal corresponding to 0 to 100%RH with a 3% humidity measurement accuracy over a defined %RH range.

Temperature output: Directly connected thermistor temperature sensor.

HT/S/2%

The HT/S/2% is a higher accuracy variation of the HT/S.

Humidity output: 4 to 20 mA signal corresponding to 0 to 100%RH with a 2% humidity measurement accuracy over a defined %RH range

Temperature output: 4 to 20 mA output corresponding to 0 to 40 °C (32 to 104 °F) from a platinum resistance temperature sensor.

INSTALLATION

The HT/S sensors both have 2 parts (front panel and a backplate) for surface mounting on a flat surface or wall box. The backplate is designed to be surface mounted on surface conduit, mini trunking, wall box or end box (BESA), or directly onto a wall or other flat surface.

Note that the sensor should not be mounted on a surface which could be washed or splashed.

Supply Voltage: The minimum supply voltage is 15 V when used with an IQ controller; if used with another device, the minimum voltage should be calculated from the equation:

minimum voltage = 10 + 0.02xR_{in} (where R_{in} is input resistance)

e.g. if R_{in} = 500 ohms

minimum voltage = 10 + 0.02x500 = 10 + 10 = 20 V

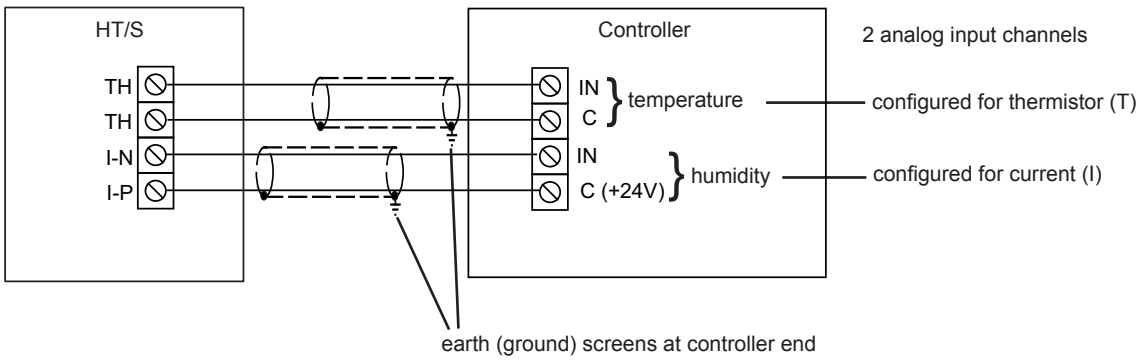
The installation involves:

- choose location
- separate front panel and backplate
- remove cable knockouts (if required)
- mount backplate
- wire sensor cables
- push front panel onto backplate
- configure controller inputs
- configure IQ sensor modules
- test sensor

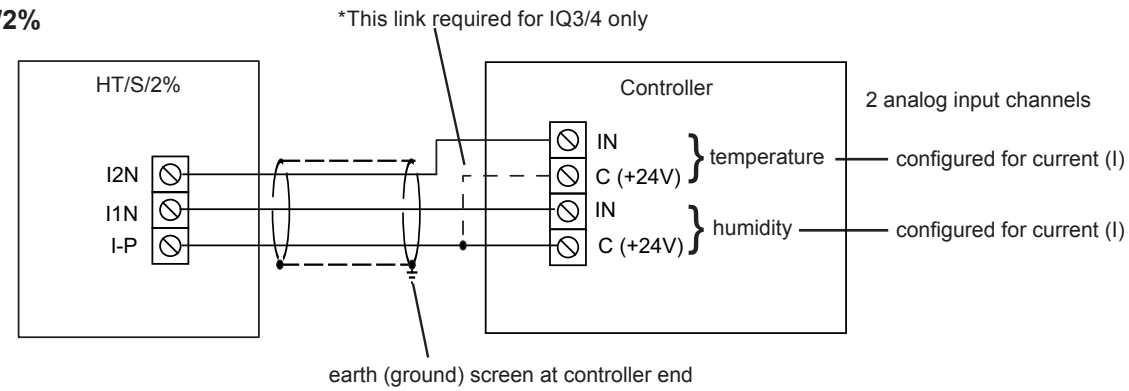
Full installation details are given in the HT/S Installation Instructions TG200990.

CONNECTIONS

HT/S



HT/S/2%



CONNECTIONS (continued)

**Note that when connecting to IQ3/4, in order to provide sufficient supply current to the sensor, the sensor I-P terminal must be connected to both channels' 24 V terminals.*

Note that in order to maintain the HT/S/2% temperature sensor accuracy, the temperature sensor should only be used if the humidity sensor is also used.

FIELD MAINTENANCE

The removal of dust is covered in the HT/S installation instructions.

ORDER CODES

HT/S/2%	Space humidity and PRT temperature sensor with ±2% humidity accuracy over 30 to 70 %RH and ±3% over 20 to 90 %RH. Complete with calibration certificate
HT/S	Space humidity and thermistor temperature sensor, ±3% humidity accuracy over 30 to 75 %RH, and ±4.5 % over 20 to 95 %RH.

DISPOSAL

WEEE Directive :

At the end of their useful life the packaging and product should be disposed of by a suitable recycling centre.
Do not dispose of with normal household waste.
Do not burn.

SPECIFICATIONS

ELECTRICAL

Supply Voltage :15 to 30 Vdc. See calculation on page 2 if connected to a non-IQ device

Humidity

Operating range :0 to 100 %RH non-condensing
Humidity element :Capacitive RH element
Linearity :(0 to 98 %RH) <±1.5 %RH
Stability :(20 to 30 °C,68 to 86 °F, 20 to 80 %RH)
HT/S :drift <1.5 %/year
HT/S/2% :drift <1%/year
Accuracy of sensor (at 23 °C, 73.5 °F, and 24 Vdc supply)
HT/S :±3 %RH (30 to 75 %RH), ±4.5 %RH (20 to 95 %RH)
HT/S/2% :±2 %RH (30 to 70 %RH), ±3 %RH (20 to 90 %RH)
Temperature dependence :(at 60 %RH)
HT/S typically -0.18%RH/°C (-0.1%RH/°F)
HT/S/2% typically 0.06%RH/°C (0.03%RH/°F)
Hysteresis :typically 1.7%RH
Resolution :0.05%RH
Response time :(at 23 °C, 73.5 °F) t_{90} <=20 s
Humidity output signal :4 to 20 mA for 0 to 100 %RH

Temperature

Measurement range :0 to +40 °C (32 to 104 °F) (recommended)
Temperature element
HT/S :Thermistor 10 kΩ at 25 °C (77 °F)
HT/S/2% :Pt1000 (tolerance class A, DIN EN60751). 0 to 40 °C, 32 to 104 °F, ±0.65 °C, ±1.17 °F typical
Temperature accuracy :of sensor
HT/S :(0 to 40 °C, 32 to 104 °F) ±0.5 °C , ±0.9 °F
HT/S/2% :(at 23 °C, 73.5 °F) ±0.4 °C, ±0.7 °F
Temperature output signal
HT/S :Thermistor 10 kΩ at 25 °C (77 °F)
HT/S/2% :4 to 20 mA for 0 to 40 °C (32 to 104 °F)

INPUT CHANNELS AND SENSOR SCALING

The IQ controller's input channels and sensor type modules must be set up as described below. SET should be used to set the sensor type modules to use the appropriate SET Unique Sensor Reference. If required the scaling can be set manually For all IQ2 controllers with firmware version less than 2.1, or earlier controllers, see the Sensor Scaling Reference Card TB100521A.

Input Channels and Unique Sensor References

Humidity Input

	Input Channel Configuration	SET Unique Sensor Reference
HT/S, HT/S/2%	Current	Humidity I

Temperature Input

	Input Channel Configuration	SET Unique Sensor Reference
HT/S	Thermistor	Thermistor HTST DT (°C) or Thermistor HTST DT F (°F)
HT/S/2%	Current	PRTI 0+40 (°C) or PRTI +32+104 F (°F).

Manual Scaling

Humidity Input

HT/S, HT/S/2%

Parameter		Value	
*Scaling mode		5 - Characterise	
Input type		2 (current mA)	
*Exponent		3	
Upper Limit		100	
Lower Limit		0	
Points Used		2	
Points	x	Input x	Output x
	1	4	0
	2	20	100

Temperature Input

HT/S

Parameter		Value		
*Scaling mode		5 - characterise		
Input type		1 (thermistor volts)		
*Exponent		3		
Points Used		6		
			°C	°F
Upper Limit			50	122
Lower Limit			-5	23
Points	x	Input x	Output x	
			°C	°F
	1	2.641	50	122
	2	3.47	40	104
	3	4.46	30	86
	4	6.663	10	50
	5	7.668	0	32
	6	8.102	-5	23

HT/S/2%

Parameter		Value		
*Scaling mode		5 - characterise		
Input type		2 (current mA)		
*Exponent		3		
Points Used		2		
			°C	°F
Upper Limit			40	104
Lower Limit			0	32
Points	x	Input x	Output x	
			°C	°F
	1	4	0	32
	2	20	40	104

**Note that for IQ3 and IQ4 the scaling mode and exponent do not need to be set up.*

MECHANICAL

Dimensions	:86 mm (3.39”) x 86 mm (3.39”) x 26 mm (1.02”)
Enclosure Material	:Flame retardant (V0) ABS
Connectors	:Two part rising cage terminals for 0.2 to 2.5 mm² (24 to 16 AWG) cable
Weight	:86 gm (3.03 oz)

ENVIRONMENTAL

CE Compatibility	:EN61000-6-1, EN61000-6-3
Working ambient limits	
temperature	:-5 °C (23 °F) to +55 °C (131 °F)
humidity	:0 to 100 %RH non-condensing
Storage Temperature	:-25 °C (-13 °F) to +60 °C (140 °F)
Protection	:IP20 (NEMA1)

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TR CU Certification

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