Duct Sensor Humidity / Temperature

Duct mounted combined humidity (VDC) and temperature sensor. 2% accurate rH, available with dual active outputs or passive for temperature. Nema 4X / IP65 rated enclosure. Field selectable output for rH, absolute humidity, enthalpy and dewpoint.

5 YEAR WARRANTY

Type Overview

Type	Output signal active humidity	Output signal active temperature	Output signal passive temperature
22DTH-51M	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	-
22DTH-51MB	DC 0...5 V, DC 0...10 V	-	PT1000
22DTH-51ME	DC 0...5 V, DC 0...10 V	-	Ni1000 (JCI)
22DTH-51ML	DC 0...5 V, DC 0...10 V	-	NTC10k2
22DTH-51MM	DC 0...5 V, DC 0...10 V	-	NTC10k3
22DTH-51MQ	DC 0...5 V, DC 0...10 V	-	NTC20k

Technical Data

Electrical Data	Power supply DC	15...24 V, ±10%, 0.4 W
	Power supply AC	24 V, ±10%, 0.8 VA
	Electrical connection	removable spring loaded terminal block max. 11 GA [2.5 mm²]
	Cable entry	Cable gland with strain relief Ø6...8 mm (1/2" NPT conduit adapter included)
Functional Data	Sensor Technology	polymer capacitive sensor with stainless steel wire mesh
	Multirange	4 fields selectable
	Output signal passive temperature	PT1000 Ni1000 (JCI) NTC10k2 NTC10k3 NTC20k
	Output signal active note	output DC 0 to 5/10 V with jumper adjustable voltage output: min. 10 kΩ load
	Media	air

Measuring Data	Measuring values	temperature relative humidity dew point enthalpy absolute humidity
	Measuring range humidity	0 to 100% RH non-condensing
	Measuring range temperature	passive sensor: -30...160 °F [-35...70 °C] Active sensor: range selectable Attention: max. measuring temperature is restricted by max. medium temperature (see Safety data)

Setting	range [°C]	range [°F]	Factory setting
S0	-40°C to 60°C	-40°F to 160°F	
S1	0°C to 50°C	40°F to 140°F	
S2	-15°C to 35°C	0°F to 100°F	
S3	-20°C to 80°C	0°F to 200°F	✓

	Measuring range absolute humidity	adjustable at the transducer: 0 to 50 g/m³ (default setting) 0 to 80 g/m³
	Measuring range enthalpy	0 to 85 kJ/kg
	Measuring range dew point	adjustable at the transducer: 40°F to 140°F [0°C to 50°C] (default setting) 0°F to 200°F [-20°C to 80°C]
	Accuracy humidity	±2% between 10 to 90% RH @ 70°F [21°C]
	Accuracy temperature active	±0.9 °F @ 77 °F [±0.5 °C @ 25 °C]
	Accuracy temperature passive	passive sensors depending on used type PT.. = ±0.5 °F @ 32 °F [±0.3 °C @ 0 °C] Ni.. = ±0.7 °F @ 32 °F [±0.4°C @ 0 °C] NTC.. = ±0.3 °F @ 77 °F [±0.2 °C @ 25 °C]
Materials	Cable gland	PA6, black
	Housing	cover: lexan, orange base: lexan, orange seal: 0467 NBR70, black
Safety Data	Ambient temperature	-30...120 °F [-35...50 °C]
	Medium temperature	-30...120 °F [-35...50 °C]
	Operating condition air flow	max. 40 ft/s [12 m/s]
	Protection class IEC/EN	III safety extra-low voltage (selv)
	Protection class UL	UL Class 2 Supply
	EU Conformity	CE-Kennzeichnung
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-13
	Certification UL	cULus acc. to UL60730-1A/-2-9/-2-13, CAN/CSA E60730-1:02/-2-9, CE acc. to 2004/108/EC and 2006/95/EC, NEMA 4X, IP65, UL Enclosure Type 4X
	Degree of protection IEC/EN	IP65
	Degree of protection NEMA/UL	NEMA 4X
	Quality Standard	ISO 9001

Safety Notes

⚠️ The installation and assembly of electrical equipment should only be performed by authorized personnel.

This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application. Unauthorised modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten human, animals or assets.
Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with
• Local laws, health & safety regulations, technical standards and regulations
• Condition of the device at the time of installation, to ensure safe installation
• This data sheet and installation manual

Remarks

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor/element. Touching the sensitive surface will void warranty.

For standard environmental conditions the manufacturing accuracy specified in the datasheet will be covered by the calibration warranty for two years. When exposed to harsh environmental conditions such as; high ambient temperature and/or high levels of humidity or presence of aggressive gases (i.e. chlorine, ozone, ammonia) the sensor element may be affected and readings may be outside specified accuracy. Replacement of deteriorated humidity sensor due to harsh environmental conditions are not subject of the general warranty.

Scope of delivery

mounting flange
1/2" NPT conduit adapter
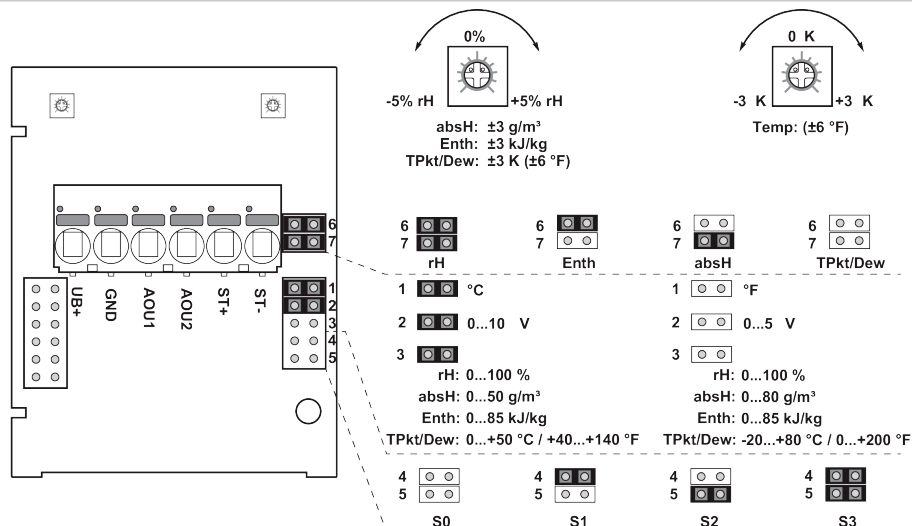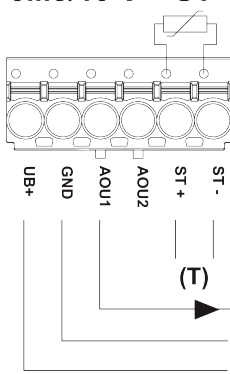
Accessories

Optional accessories	Description	Type
	mounting flange for duct humidity and CO_2 sensor	A-22D-A34

Wiring Diagram

0%
-5% rH ____ +5% rH
absH: ±3 g/m³
Enth: ±3 kJ/kg
TPkt/Dew: ±3 K (±6 °F)

0 K
-3 K ____ +3 K
Temp: (±6 °F)

| 6 7 rH | 6 7 Enth | 6 7 absH | 6 7 TPkt/Dew |

1 °C
2 0...10 V
3
rH: 0...100 %
absH: 0...50 g/m³
Enth: 0...85 kJ/kg
TPkt/Dew: 0...+50 °C / +40...+140 °F

1 °F
2 0...5 V
3
rH: 0...100 %
absH: 0...80 g/m³
Enth: 0...85 kJ/kg
TPkt/Dew: -20...+80 °C / 0...+200 °F

| 4 5 S0 | 4 5 S1 | 4 5 S2 | 4 5 S3 |

22..TH-..1..
0...5/10 V + ST

UB+ GND AOU1 AOU2 ST + ST -

(T)

DC 0 ... 5/10 V (rH)

⊥ –
~ + } AC/DC 24 V

22..TH-..1..
2 x 0...5/10 V

UB+ GND AOU1 AOU2 ST + ST -

DC 0 ... 5/10 V (T)
DC 0 ... 5/10 V (rH)

⊥ –
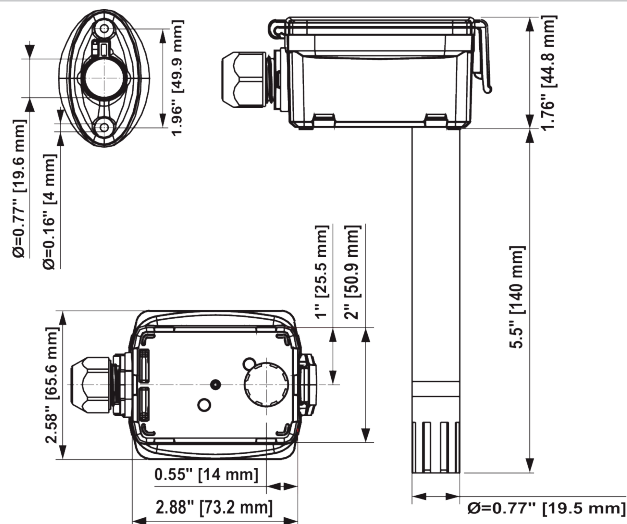~ + } AC/DC 24 V
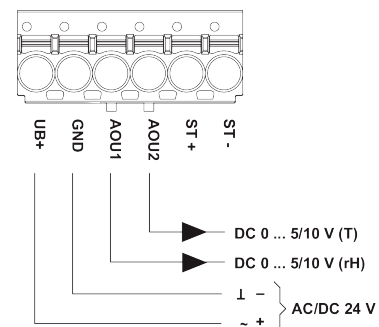
rH Relative humidity

absH Absolute humidity

EntH   Enthalpy

TPkt/Dew   Dew point

the adjustment of the measuring ranges is made by changing the bonding jumpers
the output value in the new measuring range is available after 2 seconds

Setting	range [°C]	range [°F]	Factory setting
S0	-40°C to 60°C	-40°F to 160°F	
S1	0°C to 50°C	40°F to 140°F	
S2	-15°C to 35°C	0°F to 100°F	
S3	-20°C to 80°C	0°F to 200°F	✔

Dimensions

Dimensions

Ø=0.77" [19.6 mm]
Ø=0.16" [4 mm]
1.96" [49.9 mm]
1.76" [44.8 mm]
1" [25.5 mm]
2" [50.9 mm]
5.5" [140 mm]
2.58" [65.6 mm]
0.55" [14 mm]
2.88" [73.2 mm]
Ø=0.77" [19.5 mm]

Type	Probe length	Weight
22DTH-51M	5.5" [140 mm]	0.27 lb [0.12 kg]
22DTH-51MB	5.5" [140 mm]	0.27 lb [0.12 kg]
22DTH-51ME	5.5" [140 mm]	0.27 lb [0.12 kg]
22DTH-51ML	5.5" [140 mm]	0.27 lb [0.12 kg]
22DTH-51MM	5.5" [140 mm]	0.27 lb [0.12 kg]
22DTH-51MQ	5.5" [140 mm]	0.27 lb [0.12 kg]