

SDC-H1T1

Duct Humidity and Temperature Transmitter

Features

- Replaceable sensor element
- Humidity and temperature measurement for air ducts
- Minimum and maximum value memory
- 0...10 V, 0...20 mA or 2...10 V, 4...20 mA measuring signals selectable with jumpers
- Optional alternative signal ranges programmable
- Selectable averaging signal
- Optional LCD display (OPC-S) or external display (OPA-S)
- Status LED

Applications

- Humidity and temperature measurement for supply and return air ducts in heating, ventilation and air conditioning applications.
- Recording of minimum and maximum values for critical environments
- Supervision of critical humidity and temperatures

Humidity and temperature transmitter

A unique capacitive sensor element is used for measuring relative humidity while temperature is measured by a band-gap sensor. The applied measuring technology guarantees excellent reliability and long term stability. The microprocessor samples the humidity and temperature once per second. It calculates an averaging signal over a preset number of seconds and generates the output signal based on lower and upper signal range values. Standard range is 0...100% RH, -40...60 °C (-40...140 °F) and 10 seconds average. The signal range of the temperature measurement and the averaging samples may be customized.

Standard output signal range and types may be selected by jumpers. Standard signal ranges are: 0...10 VDC, 0...10 VDC, 4...20 mA and 0...20 mA. Other ranges can be defined by using a programming tool (OPA-S or OPC-S). A version with display is possible by ordering the integrated display accessory OPC-S.

Minimum and maximum values

Using the programming tool, the user has the option to read out and reset minimum and maximum values. The minimum and maximum values may as well be used as output signals. The minimum and maximum values are saved into the EEPROM and are available after a power interruption.

Ordering

Per default a sensor element with 3% RH accuracy and a PG9 cable gland for cables Ø 4 – 8 mm (AWG 6 – 1) (item name AMC-1) is included. Contact your local sales contact to order different probe length, sensing elements with different accuracies or if you prefer a sensor with conduit connectors or a built in display module.

Signal converter

Item Name	Item Code	Description/Option
SDC-H1T1-08-A3-1	40-30 0150	Signal converter for duct mounting: probe length 8 cm (3"), incl. cable gland AMC-1 and a sensor AES3-HT-A3
SDC-H1T1-16-A3-1	40-30 0151	Signal converter for duct mounting: probe length 16 cm (6.2"), incl. cable gland AMC-1 and a sensor AES3-HT-A3
SDC-H1T1-24-A3-1	40-30 0110	Signal converter for duct mounting: probe length 24 cm (9.4"), incl. cable gland AMC-1 and a sensor AES3-HT-A3
SDC-H1T1-x-A3-1-W0	40-30 0xxx-0	0 Temperature Range: -40...60°C (-40...140°F) (default)
SDC-H1T1-x-A3-1-W1	40-30 0xxx-1	1 Temperature Range: -35...35°C (-31...95°F)
SDC-H1T1-x-A3-1-W2	40-30 0xxx-2	2 Temperature Range: 0...50°C (32...122°F)
SDC-H1T1-x-A3-1-W3	40-30 0xxx-3	3 Temperature Range: Special – Specify in order

Sensor element (for replacement only)

Item Name	Item Code	Humidity Accuracy [%RH]	Temperature Accuracy [K] @25 °C (77 °F)	Description/Option
AES3-HT-A2	40-50 0102	± 2%	± 0.3°	Humidity - temperature sensor element
AES3-HT-A3	40-50 0103	± 3%	± 0.4°	
AES3-HT-A5	40-50 0104	± 5%	± 0.5°	

Accessories

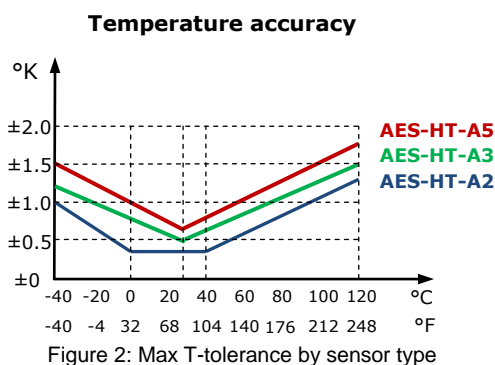
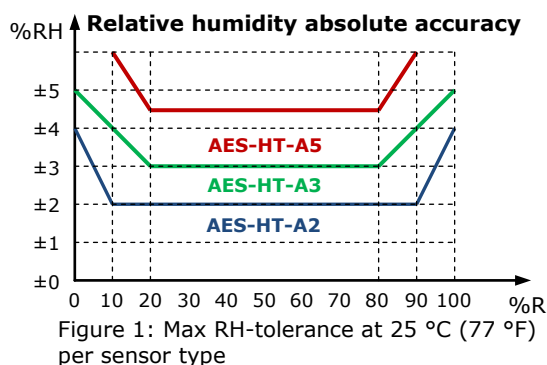
Item Name	Item Code	Description/Option
OPC-S	40-50 0029	Built in display and programming module
OPA-S	40-50 0006	External display module
AMS-1	20-10 0116	Weather shield to protect the sensor element
AMC-2	40-50 0074	Conduit connector NPT 1/2



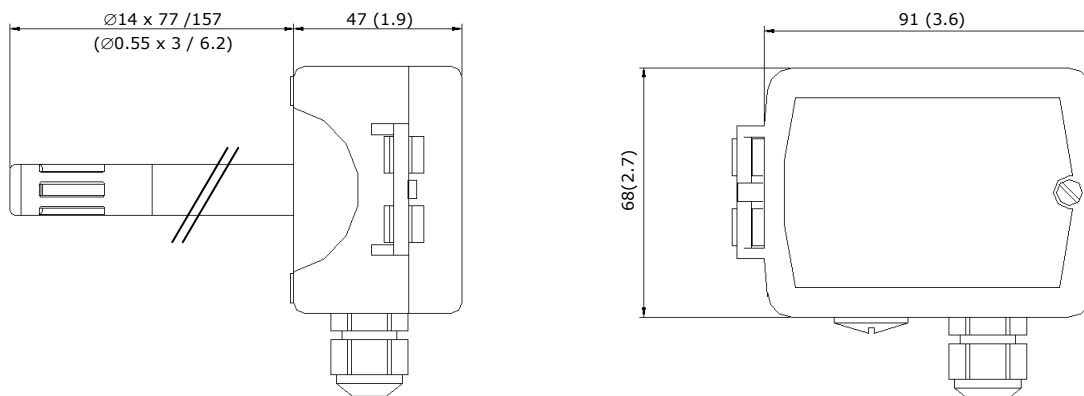
Technical specification

Warning! Safety advice! This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. The manufacturer of this device cannot be held liable for any damage caused by such a failure. Failure to follow specifications and local regulations may endanger life, cause equipment damage and void warranty.

Power supply	Operating voltage	24 V AC 50/60 Hz \pm 10%, 24 VDC \pm 10%
	Transformer	SELV to HD 384, Class II, 48 VA max.
	Power consumption	Max. 2 VA
	Terminal connectors	For wire 0.34...2.5 mm ² (AWG 24...12)
Sensing probe	Humidity sensor	Capacity sensor element
	Range	0...100% RH
	Measuring accuracy	See Figure 1
	Hysteresis	\pm 1%
	Repeatability	\pm 0.1%
	Stability	< 0.5% / year
	Temperature sensor	Bandgap sensor
	Range	-40...70 °C (-40...158 °F)
Signal outputs	Measuring accuracy	See Figure 2
	Repeatability	\pm 0.1 °C, \pm 0.2 °F
	Analog outputs	DC 0-10 V or 0...20 mA
	Output signal	10 Bit, 9.7 mV, 0.019.5 mA
Environment	Resolution	Voltage: \geq 1k Ω Current: \leq 250 Ω
	Maximum load	
	Operation	To IEC 721-3-3
	Climatic conditions	class 3 K5
Standards	Temperature	-40...70 °C (-40...158 °F)
	Humidity	<95% R.H. non-condensing
	Transport & storage	To IEC 721-3-2 and IEC 721-3-1
	Climatic conditions	class 3 K3 and class 1 K3
General	Temperature	-40...80 °C (-40...176 °F)
	Humidity	<95% R.H. non-condensing
	Mechanical conditions	class 2M2
	Standards	
CE conformity	EMC directive	2004/108/EC
	Low voltage directive	2006/95/EC
	Product standards automatic electrical controls for household and similar use	EN 60 730 -1
	Electromagnetic compatibility for domestic and industrial sector	Emissions: EN 60 730-1 Immunity: EN 60 730-1
General	Degree of protection to EN 60529	IP60
	Mounted probe down with AMS-1	IP63
	Safety class	III (IEC 60536)
	Housing materials	PC+ABS (UL94 class V-0)
General	Cover, back part	PTFE coated 1 μ m pores
	Filter material	
	Dimensions (H x W x D)	Transmitter case 68 x 91 x 47 mm (2.7" x 3.7" x 1.9") Probe \varnothing 14 x 77/157 mm (\varnothing 0.55 x 3/6.2")
	Weight (incl. package)	SDC-H1T1-08-A3-1 227g (7.9 oz) SDC-H1T1-16-A3-1 262g (9.2 oz)



Dimensions mm(inch)



Installation and storage

Mounting location

The transmitter should be installed on the duct in an area where the air stream is well mixed:

- Locate a supply air sensor two or three meters downstream from the nearest fan and coil.
- Mount the return air sensor close to the air inlet but downstream from a return fan if one is present.

Mounting instruction / replacing the sensor element

See installation sheet no. 70-000525 (www.vectorcontrols.com).

Warning about storage, packaging and usage environment

The sensing part is a polymer, which measures the humidity in the ambient air. For proper sensor operation some mandatory precautions need to be taken during storage, packaging and usage.

The transmitter and its sensing element should not be packaged, stored or used in out-gassing plastic materials, which could cause sensor contamination. In particular, it is recommended not to use any glue or adhesive tapes (Sellotape, Scotch-Tape, Tesa-Film, etc.) within the package or close proximity of the sensor. Foamed materials often cause contamination problems and should not be used to package the transmitter. Best packaging material is a simple cardboard box or a deep-drawn plastic case in a cardboard box.

Configuration

The transmitter can be adapted to fit perfectly into any application by adjusting the software parameters. The parameters are set with the operation terminals OPA-S or OPC-S. The OPA-S may also be used as remote indicator.

Input configuration

Parameter	Description	Range	Default
IP 00	TI1: Celsius or Fahrenheit, C = OFF, F = ON	ON, OFF	OFF
IP 01	TI1: Samples taken for averaging control signal	1...255	10
IP 02	TI1: Calibration	-10...10	0
IP 03	TI1: Minimum temperature	-40...215 °C/F	0 °C
IP 04	TI1: Maximum temperature	-40...215 °C/F	50°C
IP 05	H1: Show Percent	ON, OFF	ON
IP 06	H1: Samples taken for averaging control signal	1...255	10
IP 07	H1: Calibration	-10...10%	0

Output configuration

Parameter	Description	Range	Default
OP 00	AO1: Humidity: Configuration of output signal: 0 = Feedback humidity input, 1 = Feedback humidity minimum value 2 = Feedback humidity maximum value	0 – 2	0
OP 01	AO1: Humidity: Minimum limitation of output signal	0 – Max %	0%
OP 02	AO1: Humidity: Maximum limitation of output signal	Min – 100%	100%
OP 03	AO2: Temperature: Configuration of output signal: 0 = Feedback temperature input, 1 = Feedback temperature minimum value 2 = Feedback temperature maximum value	0 – 2	0
OP 04	AO2: Temperature: Minimum limitation of output signal	0 – Max %	0%
OP 05	AO2: Temperature: Maximum limitation of output signal	Min – 100%	100%

Output signal configuration

The analog output signal type may be configured with a jumper for 0-10 VDC or 0-20 mA control signals. The jumpers are located next to the terminal connector of each analog output. See table below for jumper placement. The factory setting is to 0-10 VDC.

Signal Type	JP1, JP2
0 – 10 V	(1-2)
0 – 20 mA	(2-3)

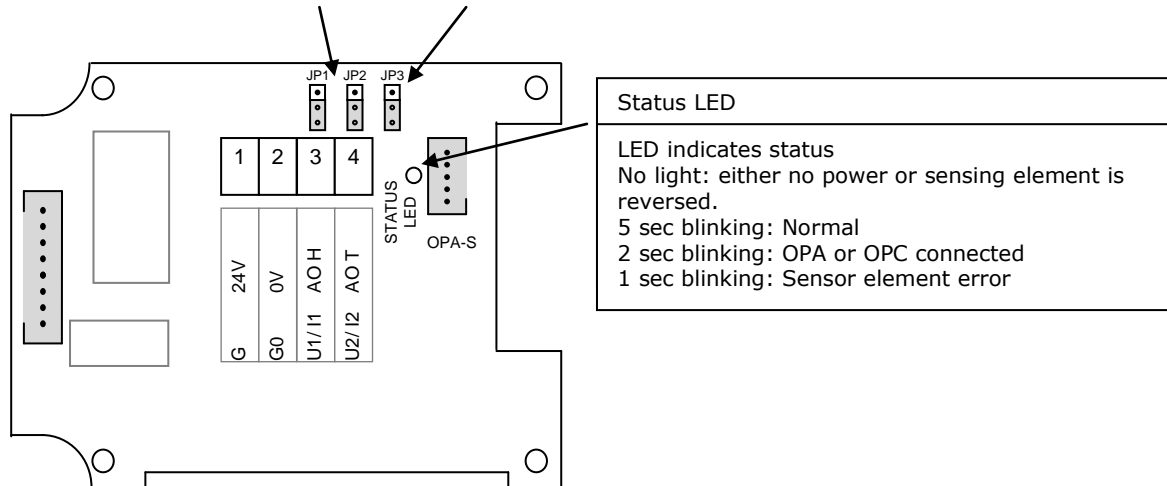
The signal range may be set with JP3 for both analog outputs. JP3 will only operate if the output range specified with OP01 and OP02 or OP04 and OP05 is left at the default position of 0...100%. With any other setting the position of JP3 has no influence and the range defined with the output parameters applies.

Jumper Settings

Signal Range	JP3
0 – 10 V, 0 – 20 mA	(1-2)
2 – 10 V, 4 – 20 mA	(2-3)

JP1, JP2 Signal type	
3 2 1	U1 / U2 0-10V, 2-10V
3 2 1	I1 / I2 0-20mA, 4-20mA

JP3 Signal range	
3 2 1	U1, U2: 0-10V I1, I2: 0-20mA
3 2 1	U1, U2: 2-10V I1, I2: 4-20mA



Status LED

LED indicates status
No light: either no power or sensing element is reversed.
5 sec blinking: Normal
2 sec blinking: OPA or OPC connected
1 sec blinking: Sensor element error