VECTOR

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SRC-H1T1
Indoor Humidity & Temperature Transmitter

Features

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

Applications

- Indoor humidity & temperature measurement for heating, ventilation and air conditioning applications.
- Recording of minimum and maximum values for critical environments
- Supervision of critical humidity and temperatures

Humidity & 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 an 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.

The output signal range and type may be customized by jumpers and if required by a programming tool. Standard signal ranges are 0-10VDC, 2-10VDC, 4-20mA and 0-20mA. These ranges can be set by jumpers. Other ranges can be set by using the external display and programming module. (OPA-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

In order to receive an operational unit, the signal converter and the sensor element need to be ordered.

Signal converter

Item Name	Item Code	Description/Option	
SRC-H1T1	40-30 0066	Signal converter for humidity & temperature sensor	
SRC-H1T1-W0	40-30 0066-0	**0**	**Temperature Range: -40…60°C (-40…140°F) (Default)**
SRC-H1T1-W1	40-30 0066-1	1	Temperature Range: -35…35°C (-31…95°F)
SRC-H1T1-W2	40-30 0066-2	2	Temperature Range: 0…50°C (32…122°F)
SRC-H1T1-W3	40-30 0066-3	3	Temperature Range: Special – Specify in order

Sensor element

Item Name	Item Code	Humidity Accuracy [%rH]	Temperature Accuracy [K] @25°C (77°F)	Description/Option
AES-HT-A2	40-50 0031-2	2%	± 0.5°	
AES-HT-A3	40-50 0031-3	3%	± 0.4°	Humidity - temperature sensor element
AES-HT-A5	40-50 0031-5	4.5%	± 0.3°	

Accessories

Item Name	Item Code	Description/Option
OPA-S	40-50 0006	External display module

Technical Specification

|		
Power Supply	Operating Voltage Transformer	24 V AC 50/60 Hz ± 10%, 24VDC ± 10% SELV to HD 384, Class II, 48VA max
	Power Consumption	Max 2 VA
	Terminal Connectors	For wire 0.34…2.5 mm^2 (AWG 24…12)
Sensing Probe	Humidity Sensor: Range Measuring Accuracy Hysteresis Repeatability Stability	Capacity sensor element 0…100 % rH See Figure 1 ± 1% ± 0.1% < 0.5% / year
	Temperature Sensor: Measuring Accuracy Repeatability	Bandgap sensor See Figure 2 ± 0.1°C, ± 0.2°F
Signal Outputs	Analog Outputs Output Signal Resolution Maximum Load	 DC 0-10V or 0…20mA 10 Bit, 9.7 mV, 0.019.5 mA 20 mA, 500Ω
Environment	Operation Climatic Conditions Temperature Humidity	To IEC 721-3-3 class 3 K5 0…60°C (32…140°F) <95% R.H. non-condensing
	Transport & Storage Climatic Conditions Temperature Humidity Mechanical Conditions	To IEC 721-3-2 and IEC 721-3-1 class 3 K3 and class 1 K3 -40…70°C (-40…158°F) <95% R.H. non-condensing class 2M2
Standards	CE conformity EMC Directive Low Voltage Directive	 2004/108/EC 2006/95/EC
	Product standards Automatic electrical controls for household and similar use Special requirement on temperature dependent controls	EN 60 730 –1 EN 60 730 – 2 – 9
	Electromagnetic compatibility for domestic and industrial sector	Emissions: EN 60 730-1 Immunity: EN 60 730-1
	Degree of Protection	IP30 to EN 60 529
	Safety Class	III (IEC 60536)
General	Housing Materials Cover Mounting Plate	Fire proof ABS plastic Galvanized Steel
	Dimensions (H x W x D)	21 x 88 x 88 mm (0.8 x 3.5 x 3.5 in)
	Weight (including package)	160 g (5.6 oz)
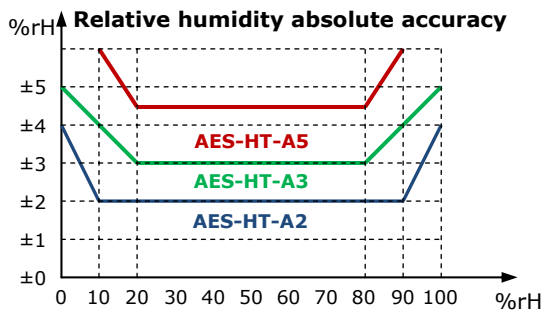
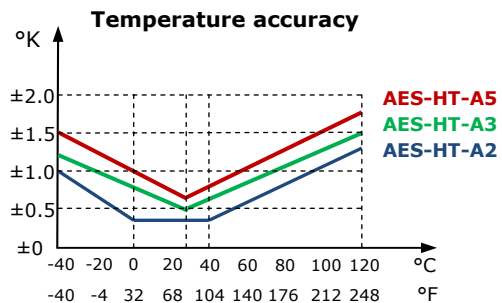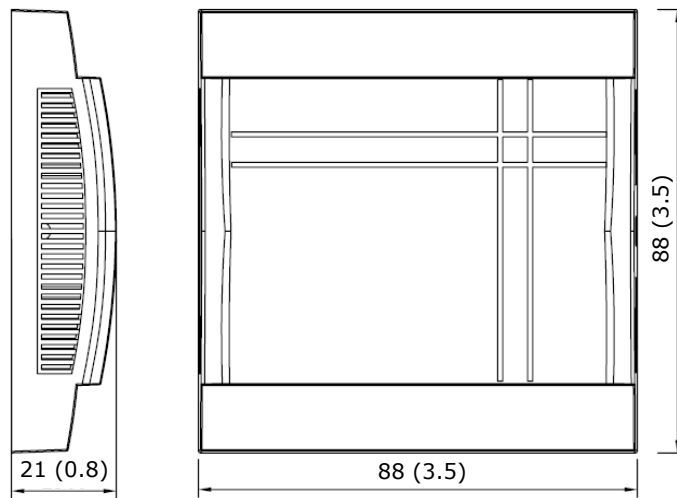Figure 1: Max RH-tolerance at 25°C (77°F) per sensor type

Figure 2: Max T-tolerance by sensor type

Note on accuracy: Allow 1 hour after power up for compensation swing in until described accuracy is reached.

Dimensions mm(inch)

21 (0.8) 88 (3.5) 88 (3.5)

Mechanical design and installation

The unit consists of two parts: (a) The mounting plate and (b) the cover with the transmitter.

Mounting location

Mount the transmitter on a flat interior wall of the room to be controlled. Do avoid obstructions such as shelves, curtains and recesses. Do not place near heat sources, draft channels. Do not expose to direct sunlight.

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.

Installation

1. Open the single screw on the cover and remove cover from mounting plate.
2. Fix the mounting plate to the flush mounting box or the wall surface
3. Connect the conductors to the terminals of the back part according to wiring diagram
4. The end of the conduit at the sensor must be sealed to prevent false measurements due to draughts through the conduit.
5. Slide the two hooks on top of the cover into the two latches on top of the mounting plate.
6. Close the cover.
7. With a Philips-type screw driver of size #2, carefully tighten the front holding screw to secure the cover to the back part. There is no need to tighten the screw too much.

Connection terminals

24V ADC

| 1 G | **SRC-H1T1** | |
| 2 G0 | 3 U1/I1 | 4 U2/I2 |

0VAC -24VDC   rH out   T out
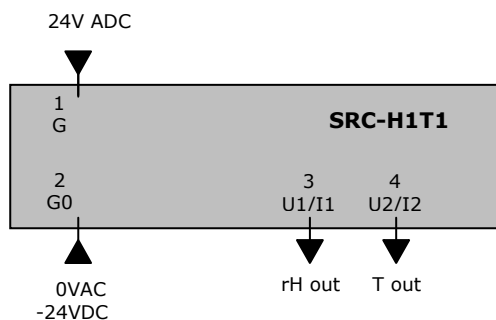
1: G   Power supply 24VAC, +24VDC
2: G0   Power supply 0VAC, -24VDC
3: U1   JP1 = 1-2, voltage output of humidity transmitter 0…10V or 2…10V (JP3)
3: I1   JP1 = 2-3, current output of humidity transmitter 0…20mA or 4…20mA (JP3)
4: U2   JP2 = 1-2, voltage output of temperature transmitter 0…10V or 2…10V (JP3)
4: I2   JP2 = 2-3, current output of temperature transmitter 0…20mA or 4…20mA (JP3)

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.

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

Jumper Settings

Configuration parameters

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. 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%

Replacing the sensing element

Remove the transmitter from the wall and turn it around. (See under chapter installation for detailed instructions)

1

Remove the sensor by pulling it out of the plug with the help of a pair of tweezers. Try not to touch the sensor element by hand.

2

PCB

3

Observe orientation of the new sensor before plugging it into the connector. The front of the connector is unsymmetrical to prevent wrong placement. Make sure the PCB is not in the way of the sensor plug. If it is turn the sensor plug 180°.

Push the new sensor into the plug until a click is felt and there is no air between connector and