

SRC-H1T1 Indoor Humidity and 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 (OPU-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 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 (OPU-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 is included. Contact your local sales contact to order sensing elements with different accuracies.

Signal converter

Item Name	Item Code	Description/Option
SRC-H1T1-A3	40-30 0142	Signal converter for humidity & temperature sensor
SRC-H1T1-A3-W0	40-30 0142-0	0 Signal Range: -40...60°C (-40...140°F) (Default)
SRC-H1T1-A3-W1	40-30 0142-1	1 Signal Range: -35...35°C (-31...95°F)
SRC-H1T1-A3-W2	40-30 0142-2	2 Signal Range: 0...50°C (32...122°F)
SRC-H1T1-A3-W3	40-30 0142-3	3 Signal Range: Special – Specify in order

Sensor element


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
OPU-S	40-50 0006	External display module

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 Transformer	24 V AC 50/60 Hz \pm 10%, 24VDC \pm 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 \pm 1% \pm 0.1% < 0.5% / year
	Temperature Sensor: Measuring Accuracy Repeatability	Bandgap sensor See Figure 2 \pm 0.1°C, \pm 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 Voltage: \geq 1k Ω Current: \leq 500 Ω
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	 conformity EMC Directive Low Voltage Directive	2014/30/EU 2014/35/EU
	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
	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
	RoHS compliant according to	2011/65/EU
	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.)

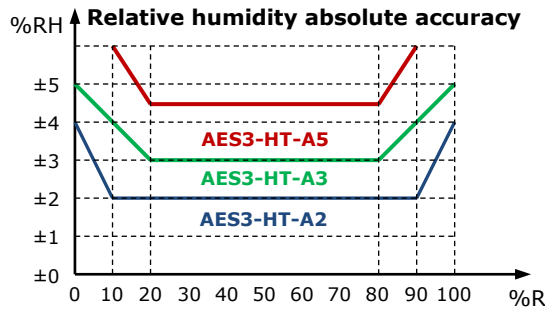


Figure 1: Max RH tolerance at 25°C (77°F) per sensor type

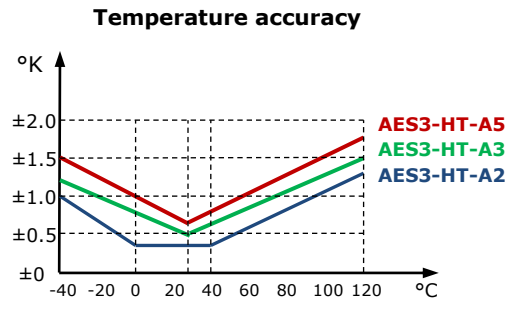
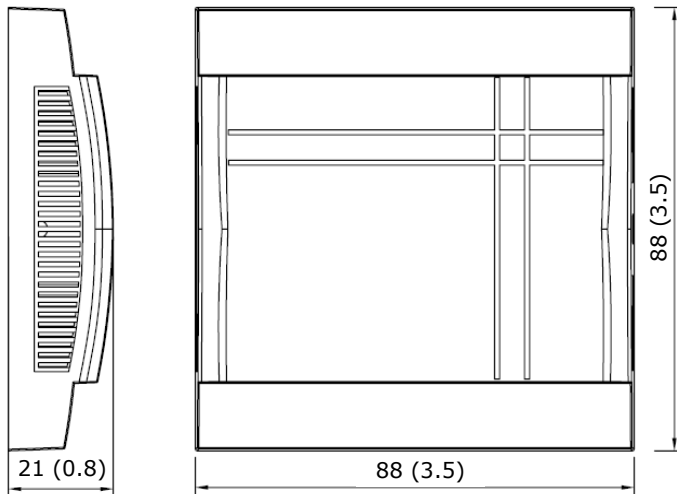


Figure 2: Max T tolerance by sensor type

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

Dimensions mm(inch)



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 (Scotch® tape, duct tape, 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.

Mounting instruction / replacing the sensor element

See installation sheet no. 70-000568 (www.vectorcontrols.com).

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 OPU-S. The OPU-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)

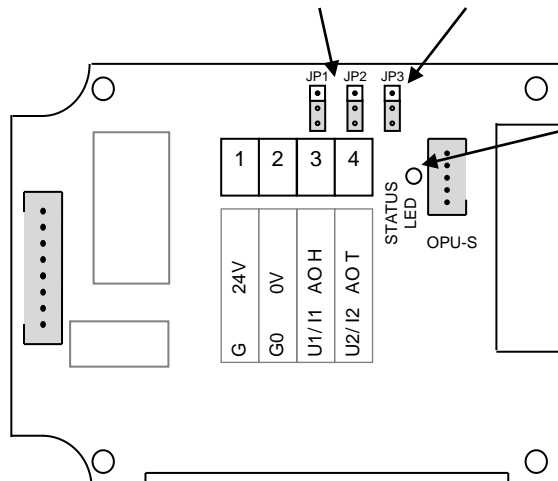
The signal range may be set with JP3 for both analog outputs. JP3 will only operate if the output range specified with OP01 and OP02 or OP04 and OP05 is left at the default position of 0...100%. With any other setting the position of JP3 has no influence and the range defined with the output parameters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

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

Jumper Settings

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: OPU-S connected 1 sec blinking: Sensor element error