

SOC-H1T1 Outdoor humidity & temperature transmitter

Features

- Replaceable sensor element
- Outdoor 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 LCD display (OPC-S) or external display (OPA-S)
- Status LED

Applications

- Outdoor humidity and 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 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 \varnothing 4 – 8 mm (AWG 6 – 1) is included. Contact your local sales contact to order 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
SOC-H1T1-A3-1	40-300156	Signal converter for humidity & temperature sensor, incl. sensor element AES3-HT-A3 and cable gland PG9 (AMC-1)
SOC-H1T1-A3-1-W0	40-300xxx-0	0 Signal range: -40...60 °C (-40...140 °F) (Default)
SOC-H1T1-A3-1-W1	40-300xxx-1	1 Signal range: -35...35 °C (-31...95 °F)
SOC-H1T1-A3-1-W2	40-300xxx-2	2 Signal range: 0...50 °C (32...122 °F)
SOC-H1T1-A3-1-W3	40-300xxx-3	3 Signal range: Special – Specify in order
SOC-H1T1-OP	40-300089	Signal converter for humidity & temperature sensor with operation display, incl. sensor element AES3-HT-A3 and cable gland PG9 (AMC-1)
SOC-H1T1-OP-W0	40-300089-0	0 Signal range: -40...60 °C (-40...140 °F) (Default)
SOC-H1T1-OP-W1	40-300089-1	1 Signal range: -35...35 °C (-31...95 °F)
SOC-H1T1-OP-W2	40-300089-2	2 Signal range: 0...50 °C (32...122 °F)

Sensor element

Item name	Item code	Humidity accuracy [%rH]	Temperature accuracy [K] @25°C (77°F)	Description/Option
AES3-HT-A2	40-500102	± 2%	± 0.3°	Humidity - temperature sensor element
AES3-HT-A3	40-500103	± 3%	± 0.4°	
AES3-HT-A5	40-500104	± 5%	± 0.5°	

Accessories

Item Name	Item code	Description/Option
OPC-S	40-500029	Built in display & programming module
OPA-S	40-500006	External display module
AMS-1	20-100116	Weather shield to protect the sensor element
AMC-2	40-500074	Conduit connector NPT 1/2

Technical Specifications

Important notice and safety advice

This device is for use as a humidity and temperature transmitter. It is not a safety device. Where a device failure could endanger human life and property, it is the responsibility of the client, installer and system designer to add additional safety devices to prevent such a device failure. Ignoring specifications and local regulations may cause equipment damage and endangers life and property. Tampering with the device and misapplication will void warranty.

Power Supply	Operating Voltage	24 VAC 50/60 Hz \pm 10%, 24VDC \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)	
	Measuring Accuracy	See figure 2	
	Repeatability	\pm 0.1 °C, \pm 0.2 °F	
Signal Outputs	Analog Outputs	DC 0-10 V or 0...20 mA	
	Output Signal	10 Bit, 9.7 mV, 0.019.5 mA	
	Resolution	Voltage: \geq 1k Ω Current: \leq 250 Ω	
	Maximum Load		
Environment	Operation	To IEC 721-3-3	
	Climatic Conditions	class 3 K5	
	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	
	Temperature	-40...70 °C (-40...158 °F)	
	Humidity	<95% R.H. non-condensing	
	Mechanical Conditions	class 2M2	
Standards		conformity	
		EMC Directive	2014/30/EU
	Low Voltage Directive	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 to EN 60529	IP63 if correctly mounted with AMS-1	
	Safety Class	III (IEC 60536)	
General	Housing materials	Cover, back part Filter material	PC+ABS (UL94 class V-0) PTFE coated 1 μ m pores
	RoHS compliant according to		2011/65/EU
	Dimensions (H x W x D):		150 x 91 x 47mm (5.9 x 3.7 x 1.9 in)
	Weight (including package)		220g (7.8 oz)

Sensors

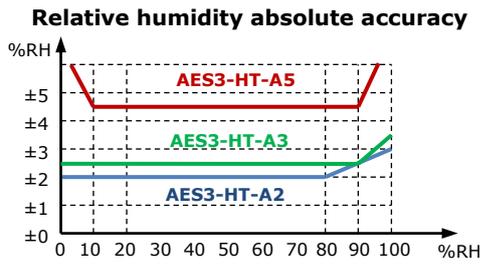


Figure 1: Max RH-tolerance at 25 °C (77 °F) per sensor type

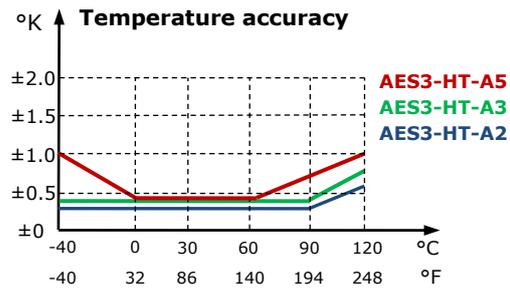
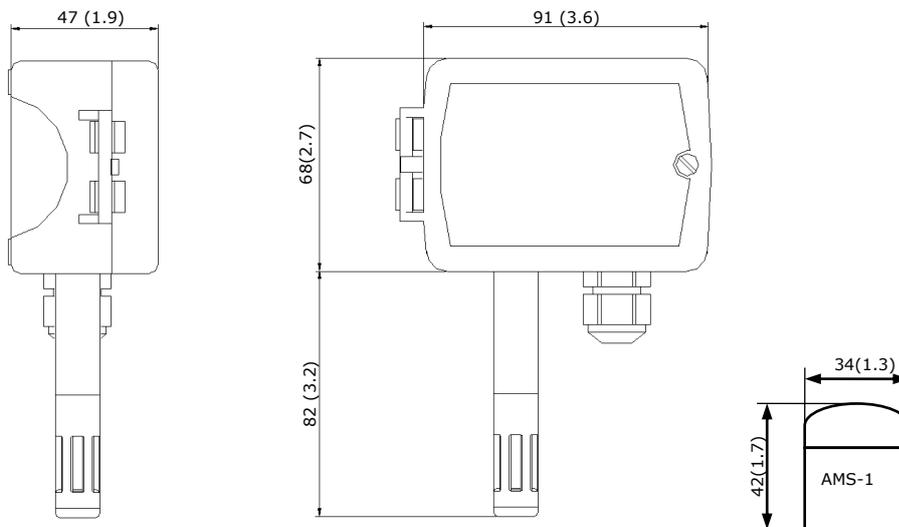


Figure 2: Max T-tolerance by sensor type

Dimension mm(inch)



Mounting location

The transmitter should be installed, probe facing down, directly on the wall, in a weather protected area. The weather shield accessory is recommended, in case the transmitter is exposed to weather and 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.

Mounting instruction / replacing the sensor element

See installation sheet no. 70-000530 (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 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)

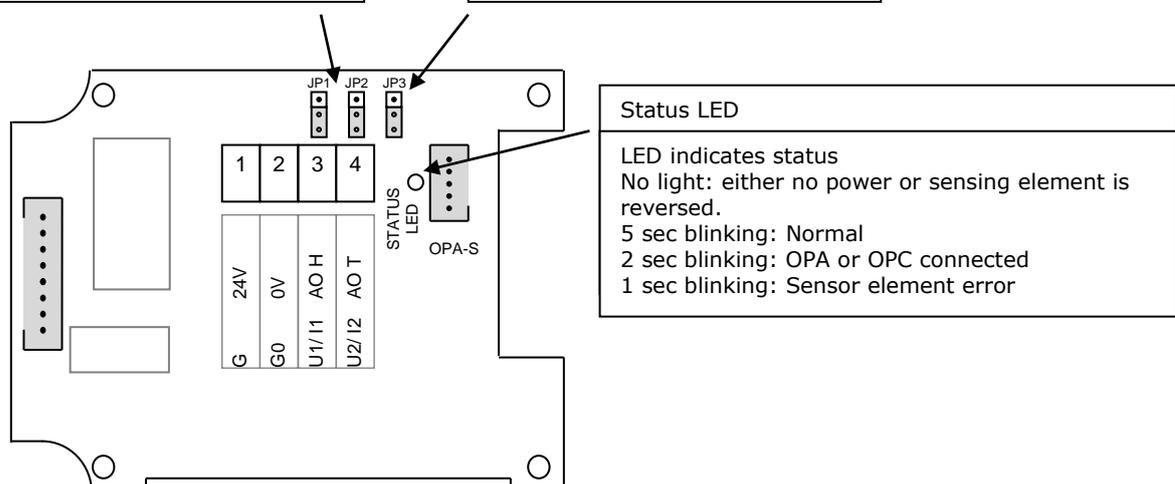
The signal range may be set with JP3 for both analog outputs. JP3 will only operate if the output range specified with OP01 and OP02 or OP04 and OP05 is left at the default position of 0...100%. With any other setting the position of JP3 has no influence and the range defined with the output parameters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

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



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