

## SOC-H1T1 Outdoor Humidity and 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 output selectable with jumpers
- Optional alternative signal ranges programmable
- Selectable averaging signal
- Optional LCD display (OPC-S) or external display (OPU-S)
- Status LED

### Applications

- Outdoor humidity and temperature measurement for HVAC 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 (OPU-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) 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	40-30 0156	Signal converter for humidity & temperature sensor, incl. sensor element AES1-HT-A3 and cable gland PG9 (AMC-1)
SOC-H1T1-A3-1-W0	40-30 0xxx-0	<b>0 Temperature range: -40...60 °C (-40...140 °F) (Default)</b>
SOC-H1T1-A3-1-W1	40-30 0xxx-1	<b>1 Temperature range: -35...35 °C (-31...95 °F)</b>
SOC-H1T1-A3-1-W2	40-30 0xxx-2	<b>2 Temperature range: 0...50 °C (32...122 °F)</b>
SOC-H1T1-A3-1-W3	40-30 0xxx-3	<b>3 Temperature range: Special – Specify in order</b>

#### Sensor element

Item name	Item code	Humidity accuracy [%rH]	Temperature accuracy [K] @25°C (77°F)	Description/option
AES1-HT-A2	40-50 0067	± 2%	± 0.3°	Humidity - temperature sensor element
AES1-HT-A3	40-50 0068	± 3%	± 0.4°	
AES1-HT-A5	40-50 0069	± 5%	± 0.5°	

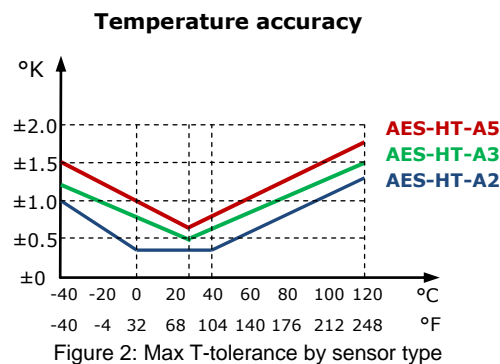
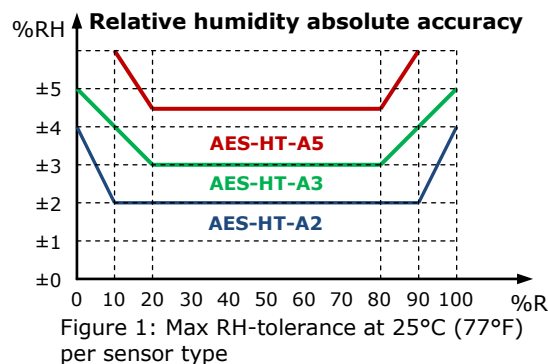
#### Accessories

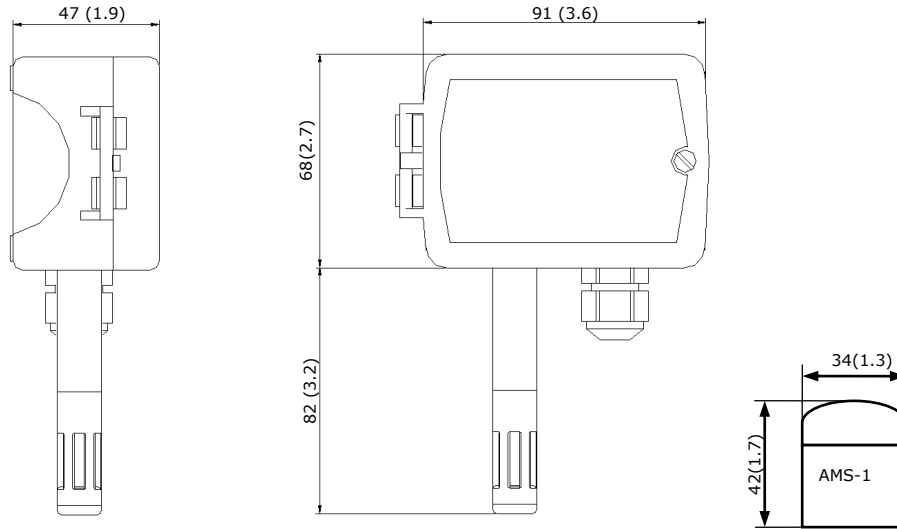
Item Name	Item Code	Description/Option
OPC-S	40-50 0029	Built in display & programming module
OPU-S	40-50 0006	External display module
AMS-1	20-10 0116	Weather shield to protect the sensor element
AMC-2	40-50 0074	Conduit connector NPT 1/2

## 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%, 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 <sup>2</sup> (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 $\Omega$ Current: $\leq$ 250 $\Omega$
	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
Standards	Temperature	-40...80 °C (-40...176 °F)
	Humidity	<95% R.H. non-condensing
	Mechanical Conditions	class 2M2
	CE conformity	2004/108/EC
	EMC Directive	2006/95/EC
	Low Voltage Directive	
General	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)
	Housing materials	PC+ABS (UL94 class V-0)
General	Cover, back part	PTFE coated 1 $\mu$ m pores
	Filter material	
	Dimensions (H x W x D):	150 x 91 x 47mm (5.9" x 3.7" x 1.9")
General	Weight (including package)	220g (7.8 oz)



**Dimensions mm(inch)****Mechanical Design and Installation**

The unit consists of two parts: (a) The back part with the probe and (b) the cover.

**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](http://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 or OPC-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)

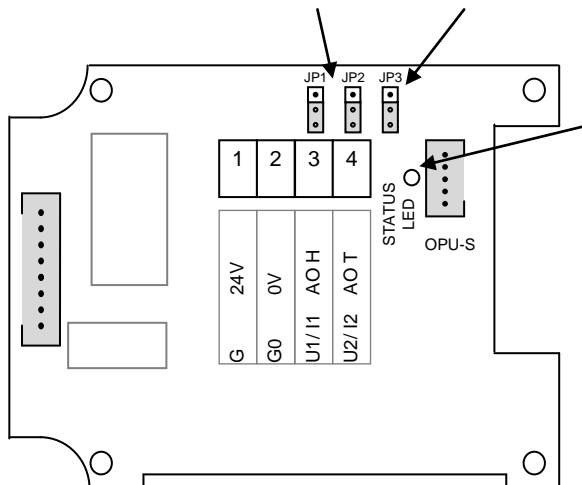
The signal range may be set with JP3 for both analog outputs. JP3 will only operate if the output range specified with OP01 and OP02 or OP04 and OP05 is left at the default position of 0...100%. With any other setting the position of JP3 has no influence and the range defined with the output parameters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