SDC-H1 Duct Humidity Transmitter

Features

- Replaceable sensor element
- Humidity measurement for air ducts
- Minimum and maximum value memory
- 0…10 V, 0…20 mA or 2…10 V, 4…20 mA 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

- Humidity measurement for supply and return air ducts in heating, ventilation and air conditioning applications
- Record min. and max. values for critical environments
- Supervision of critical humidity

Humidity transmitter

A unique capacitive sensor element is used for measuring relative humidity. The applied measuring technology guarantees excellent reliability and long term stability. The microprocessor samples the humidity once per second. It calculates an averaging signal over a preset number of seconds and generates the output signal.
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 a display & programming accessory, 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 (item AMC-1) for cables ∅ 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 connector or a built in display module.

Transmitter (default)

Item name	Item code	Description/Option
SDC-H1-08-A3-1	40-30 0146	Transmitter for duct mounting: probe length 8 cm (3”), incl. cable gland AMC-1 and humidity sensor element AES3-HT-A3
SDC-H1-16-A3-1	40-30 0147	Transmitter for duct mounting: probe length 16 cm (6.2”), incl. cable gland AMC-1 and humidity sensor element AES3-HT-A3

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%	± 0.5°	Humidity - temperature sensor element
AES3-HT-A3	40-50 0103	± 3%	± 0.4°	
AES3-HT-A5	40-50 0104	± 5%	± 0.3°	

Accessories

Item name	Item code	Description/Option
OPC-S	40-50 0029	Add-on 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

 ©Vector Controls GmbH, Switzerland, www.vectorcontrols.com

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 VAC 50/60 Hz ± 10%, 24 VDC ± 10% 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 22…13)
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
Signal outputs	Analog outputs Output signal Resolution Maximum load		 0…10 VDC or 0…20 mA 10 Bit, 9.7 mV, 0.019.5 mA Voltage: ⩾ 5 kΩ Current: ⩽ 250Ω
Environment	Operation Climatic conditions Temperature Humidity		To IEC 721-3-3 class 3K5 -40…70 °C (-40…158 °F) < 95% RH non-condensing
	Transport & storage Climatic conditions Temperature Humidity Mechanical conditions		To IEC 721-3-2 and IEC 721-3-1 class 3K3 and class 1K3 -40…80 °C (-40…176 °F) < 95% RH 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		EN 60730–1
	Electromagnetic compatibility for domestic and industrial sector		Emissions: EN 60730-1 Immunity: EN 60730-1
	Degree of protection to EN 60529 Mounted probe down with AMS-1		IP60 IP63
	Safety class		III (IEC 60536)
General	Housing Materials	Cover, back part Filter material	PC+ABS (UL94 class V-0) PTFE coated 1 µm pores
	Dimensions (H x W x D)	Transmitter case Probe	68 x 91 x 47 mm (2.7” x 3.7” x 1.9”) ∅ 14 x 77/157 mm (∅ 0.55 x 3/6.2”)
	Weight (incl. package)	SDC-H1-08-A3-1 SDC-H1-16-A3-1	229 g (8.1 oz.) 264 g (9.3 oz.)

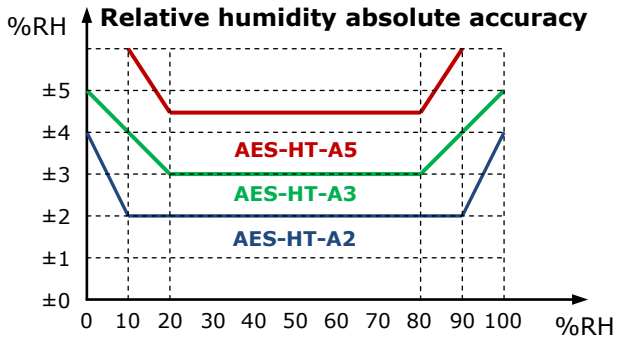
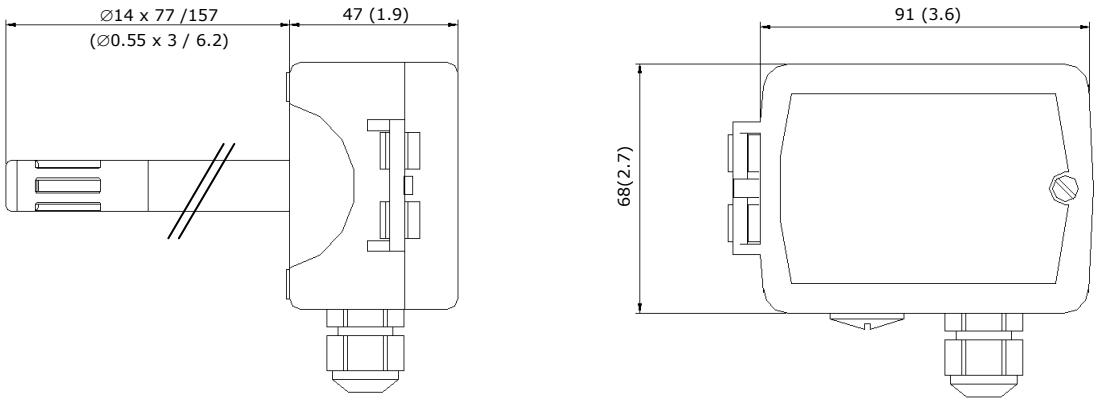


Figure 1: Max RH-tolerance at 25 °C (77 °F) per sensor type

Dimensions mm (inch)



Mechanical 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 (duct tape, Scotch® 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.

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	H1: Show percent	ON, OFF	ON
IP 01	H1: Samples taken for averaging control signal	1…255	10
IP 02	H1: Calibration	-10…10%	0

Output configuration

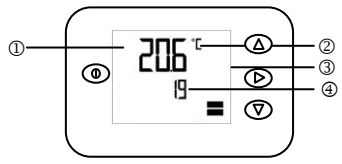
Parameter	Description	Range	Default
OP 00	AO1: Humidity: Configuration of output signal: 0 = Feedback humidity input, 1 = Feedback humidity minimum value 2 = Feedback humidity maximum value	0…2	0
OP 01	AO1: Humidity: Minimum limitation of output signal	0…max%	0%
OP 02	AO1: Humidity: Maximum limitation of output signal	min…100%	100%

Operation of the –OP type sensors

Standard display:
Single input transmitters: The current, minimum or maximum value is shown in the large digits. The small digits indicate the active input (IN 1). The vertical bar on the right side indicates the actual output voltage or current in 10% steps.

Indication and reset of minimum and maximum values
Activate the desired transmitter for dual transmitter by pressing the RIGHT key. Press UP to display maximum values, press DOWN key to display minimum values.
Resetting minimum or maximum values: Pressing either UP or DOWN keys for longer than 3 seconds while the minimum or maximum values are displayed.

Display and keys



Legend:
1: 4-digit display of current value, minimum, maximum or control parameter
2: Unit of *displayed value, °C, °F, % or none*
3: Vertical display of output or input signal with a resolution of 10%
4: 4-digit display of current value or control parameter

Operation keys:

ⓘ	LEFT key:	Exit from parameter menu
△	UP key:	Display maximum values, Press for more than 2 seconds resets maximum value
▽	DOWN key:	Display minimum values, Press for more than 2 seconds resets minimum value
▷	RIGHT key:	Select transmitter, for transmitters with more than one input.

Configuration parameters

The SDC and SOC *intelligent* sensors can be adapted to fit perfect into your application. The preparation of the sensing signal is defined by parameters.

The parameters are password protected. The parameters can be changed as follows:

1. Press UP and DOWN key simultaneously for three seconds. The display will indicate CODE.
2. Select a password using UP or DOWN keys. Dial **09** in order to get access to the configuration parameters. Press the RIGHT key after selecting the correct password.
3. Once logged in, choose IP for input configuration or OP for output configuration using UP or DOWN. Press the RIGHT key after selection.
4. The parameters are now displayed. The small digits show the parameter number, the large one its value.
5. Select the parameters with the UP/DOWN keys. Change a parameter by pressing the RIGHT key. The MIN and MAX symbols show up and indicate that the parameter may be modified now. Use UP and DOWN key to adjust the value.
6. After you are done, press RIGHT or LEFT key in order to return to the parameter selection level.
7. Press the LEFT key again so as to leave the menu. The unit will return to normal operation if no key is pressed for more than 5 minutes.
8. The parameters and its values depend on the transmitter. Please use the respective datasheet for the list of parameters.

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
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 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

