VH20 Electronic Humidity Transmitter Series

Description

The VH20 series, microcomputer-based humidity transmitters are designed for accurate humidity sensing in non-corrosive commercial applications such as: hospitals, schools, office buildings, retail stores, museums and computer rooms.

Features		Benefits
Microcomputer-based	⇒	Exceptional accuracy and linearity
2% models 10 point calibration 3% models 3 point calibration	⇒	Increased accuracy and linearity across the required control range
Timed RH level status LED	⇒	Rapid trouble-shooting and commissioning. Humidity level is proportional to a 10 second duty cycle. Ex, using a time clock, if pulse duration is 6.5 seconds, sensed % RH by transmitter is 65% RH
Elegant aesthetic design	⇒	Blends well in all environments
Various additional temperature sensor options available	⇒	More functionality for DDC system installation by combining local temperature and humidity sensing in a single component

Available models

Model	Output		Accuracy		Temperature Sensor			Mounting		Extension
VH2	0	0-5 / 0-10 V	2	+/- 2%	0	None		W	Wall	
	1	4-20 mA	3	+/- 3%	1	3K Ohms thermistor	+/- 1%	D	Duct	
					2	10K Ohms Type 2	+/- 1%	E	Outdoor	
					3	10K Ohms Type 3	+/- 1%			
					4	100K Ohms thermistor	+/- 1%			
					5	1K Ohm NIFE				
					6	100 Ohms Platinum				
					7	1K Ohm Platinum				
VH2	**0**		**2**		**2**			**W**		**1000**

Example: Above model is **VH2022W1000** for wall mount, 2% accuracy, 0-10 or 0-5 Vdc output with 10K Ohms Type 2 temperature sensor.

Models description

Model:	Description:	Application:	Picture:
VH20 Wall	Room sensor	• Remote room humidity sensing • Accessory temperature sensor available	
VH20 Duct	Duct sensor with junction box	• Remote return air humidity sensing with the sensor mounted on the return air duct. • Outside air humidity sensing with the sensor installed in the fresh air plenum. • Supply air humidity sensor • Accessory temperature sensor available	
VH20 Exterior	Outside air sensor, NEMA 4 enclosure	• Outside air humidity sensing with the sensor installed directly exposed to the elements. • Sensor uses a water resistant NEMA 4 PVC enclosure for outdoor applications • Accessory temperature sensor available	

Installation of room sensors (VH20 Wall) (Fig. 1 & 2)

- Remove security screw on the bottom of sensor cover.
- Open up by pulling on the bottom side of sensor. (Fig.1)

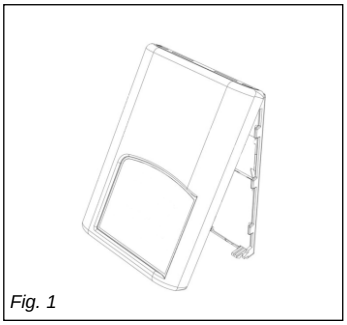


Fig. 1

Location:

1- Should <u>not</u> be installed on an outside wall.
2- Must be installed away from any heat source.
3- Should not be installed near an air discharge grill.
4- Should not be affected by direct sun radiation.
5- Nothing must restrain vertical air circulation to the sensor.

Installation:

1. Remove security screw on the bottom of thermostat cover.
2. Open up by pulling on the bottom side of thermostat.
3. Pull out cables 6" out of the wall.
4. Wall surface must be flat and clean.
5. Insert cable in the central hole of the base.
6. Flip printed circuit board to access mounting hole
7. Align the base and mark the location of the two mounting holes on the wall.
8. Install proper side of base up.
9. Install anchors in the wall.
10. Insert screws in mounting holes on each side of the base. DO NOT OVERTIGHTEN
11. Strip each wire 1/4 inch.
12. Insert each wire according to wiring diagram.
13. Gently push back into hole excess wring back into the wall.
14. Press back printed circuit board into place
15. Install the cover, top side first
16. Install security screw.

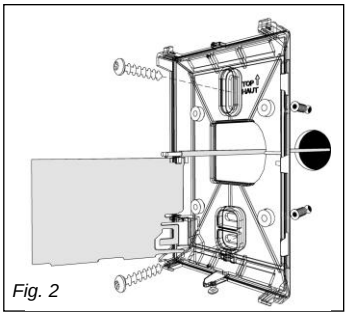


Fig. 2

Installation of duct sensors (VH20 Duct) – (Fig.3)

1. Drill 1" [25mm] hole mid height on the side of the duct to insert the probe.
2. Direct the probe so that the flat side of probe tip is facing the airflow.
3. Mark the position of the two holes to be drilled for mounting the sensor on the duct. Fasten the sensor to the duct with the two self-taping screws (not-included). Do not overtighten!
4. Junction box must be directed downwards or sideways.
5. For best results, locate sensor as far as you can from heating/cooling source.

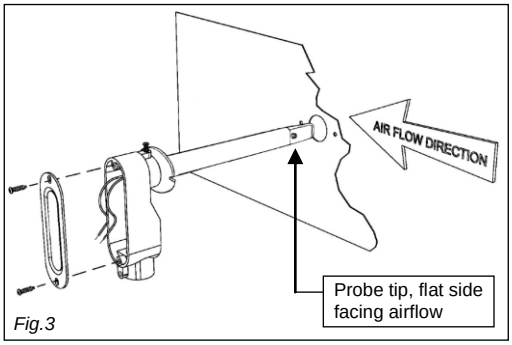


Fig.3

Installation of outside air sensor (VH20 Outdoor) – (Fig.4)

1. Install sensor using mounting holes on each side.
2. Install on a vertical surface, respect mounting orientation
3. Remove the four screws and remove the cover.
4. Strip each wire 1/4 inch.
5. Insert each wire according to wiring diagram.
6. Install the cover with supplied screws.
7. In snowy area allow sufficient height for snow accumulation.

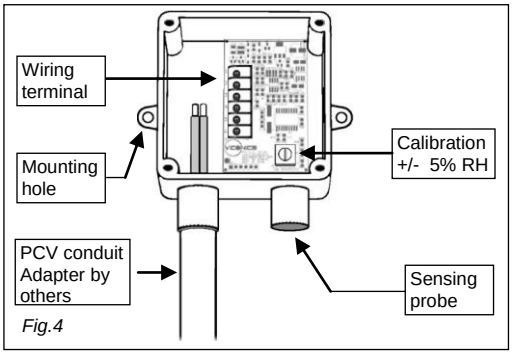
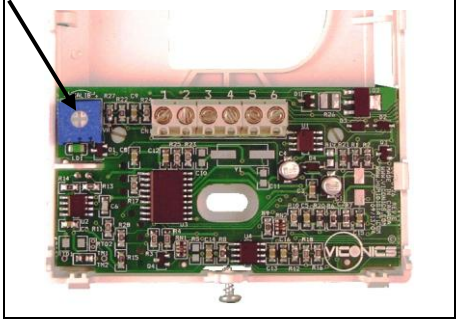
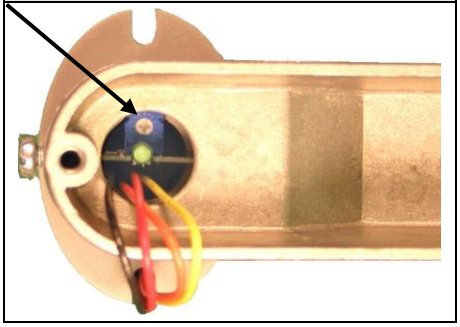
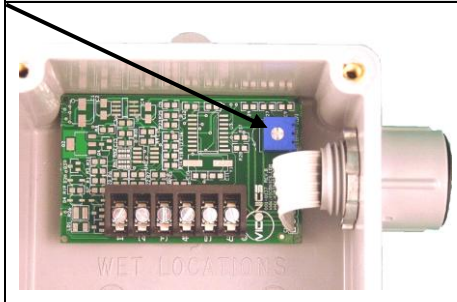


Fig.4

Maintenance of transmitter

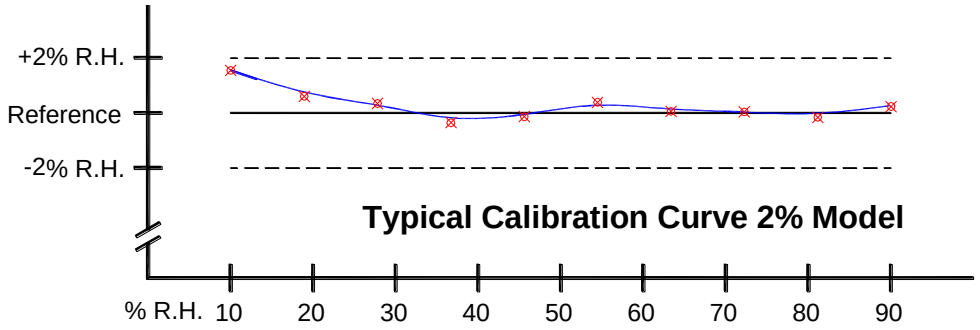
Calibration: The transmitter is factory calibrated. However, it can be field recalibrated by using the (-5%, 0%, 5%) potentiometer inside the transmitter to adjust the zero. The transmitter is already factory calibrated to the center of the potentiometer. To recalibrate the transmitter to the factory preset, turn the potentiometer to the 0% adjustment. (see pictures below)

VH20 Wall mounted	VH20 Duct mounted	VH20 Outdoor
		

Cleaning: The VH20 duct sensor probe needs inspection annually to be cleaned of any excess dirt on the sensing element tip. The whole filter tip can be ordered and replaced if it cannot be cleaned properly. Part number: VH20DuctTip.

Typical calibration curve

The VH20 2% series, microcomputer-based humidity transmitters are calibrated with a 10 point curve with each point equally spread from 10% to 90%



Wiring of VH20 transmitter

0 to 10 Vdc / 0 to 5 Vdc output models 4 wires / terminals

VH20 Duct model

Black	Common (-)
Red	Power (+) 12-30 Vdc / 24 Vac
Orange	0 to 10 Vdc Output
Yellow	0 to 5 Vdc Output

VH20 Wall and Outdoor models

1	1	Common (-)
2	2	Power (+) 12-30 Vdc / 24 Vac
3	3	0 to 10 Vdc Output
4	4	0 to 5 Vdc Output

0 to 10 Vdc / 0 to 5 Vdc output models With optional temperature sensor 6 wires / terminals

VH20 Duct model

Black	Common (-)
Red	Power (+) 12-30 Vdc / 24 Vac
Orange	0 to 10 Vdc Output
Yellow	0 to 5 Vdc Output
White	Temperature sensor
White	Temperature sensor

VH20 Wall and Outdoor models

1	1	Common (-)
2	2	Power (+) 12-30 Vdc / 24 Vac
3	3	0 to 10 Vdc Output
4	4	0 to 5 Vdc Output
5	5	Temperature sensor
6	6	Temperature sensor

4 to 20 mA output models 2 wires / terminals

VH20 Duct model

Black	4 to 20 mA Output
Red	Vdc Power (+) 12-30 Vdc

VH20 Wall and Outdoor models

1	1	4 to 20 mA Output
2	2	Vdc Power (+) 12-30 Vdc

4 to 20 mA output models With optional temperature sensor 4 wires / terminals

VH20 Duct model

Black	4 to 20 mA Output
Red	Vdc Power (+) 12-30 Vdc
White	Temperature sensor
White	Temperature sensor

VH20 Wall and Outdoor models

1	1	4 to 20 mA Output
2	2	Vdc Power (+) 12-30 Vdc
5	5	Temperature sensor
6	6	Temperature sensor

Specifications:

General for all sensors

Power supply Vdc models output	Linear output 0 to 10 Vdc / 0 to 5 Vdc into 2KΩ resistance min. 24 Vac / Vdc -15%, +10% Vac 50/60 Hz; 1 VA
Power supply 4-20 mA models output	Linear output 4 to 20 mA 12-30 Vdc
Calibration	10 point for 2% models; 3 point for 3% models
Humidity sensing element	10 points calibrated bulk polymer type sensor
Temperature effect	% RH is temperature compensated. Effect is less than 0.1% over the full range (0-100%)
Stability	Less than 1.0 % yearly (typical drift)
Field calibration	-5% / 0% factory / +5% trimmer
Optional temperature sensor	1 % accuracy typical
Maximum wire length	5,000 feet [1,525 m] for 24 GA wire and up
Warranty	18 months from date of purchase or 12 months from date of installation

Room sensors (VH20 Wall) (*Fig.5*)

Operating conditions:	32 °F to 122 °F (0 °C to 50 °C) 0% to 95% R.H. non-condensing
Time constant:	Less than 1 minute at 63% Δ
Storage conditions:	-22 °F to 122 °F (-30 °C to 50 °C) 0% to 95% R.H. non-condensing
Dimensions:	(refer to drawing Fig.5)
Appr. shipping weight:	0.4 LBS (0.2 kg)
Enclosure plastic type:	ABS - FRI [WT1337V] UV stabilized

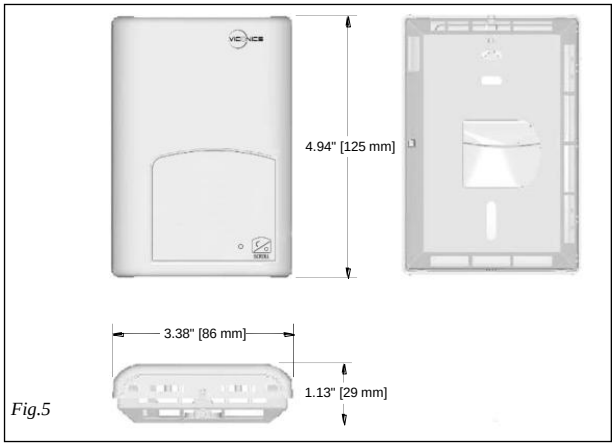


Fig.5

Duct sensor (VH20 Duct) (*Fig.6*)

Operating conditions:	-40 °F to 122 °F (-40 °C to 50 °C) 0% to 95% R.H. non-condensing
Time constant:	Less than 10 seconds at 63% Δ Min. 100 FPM max. 1200 FPM
Storage conditions:	-40 °F to 122 °F (-40 °C to 50 °C) 0% to 95% R.H. non-condensing
Dimensions:	(refer to drawing Fig.6)
Appr. shipping weight:	0.8 LBS [0.4 Kg]
Probe tip plastic type:	Fire retardant grade "HB" ABS

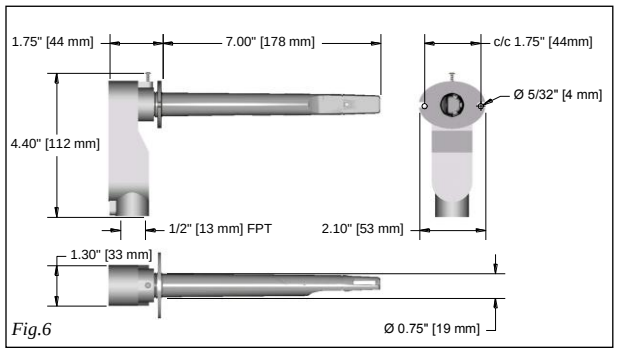


Fig.6

Outside air sensor (VH20 Exterior) (*Fig.7*)

Operating and storage conditions:	-40 °F to 122 °F (-40 °C to 50 °C) 0% to 100% R.H.
Time constant:	Less than 1 minute at 63% Δ
Dimensions:	(refer to drawing Fig.7)
Appr. shipping weight:	1.3 LBS [0.6 Kg]
Enclosure plastic type:	NEMA 4 PVC

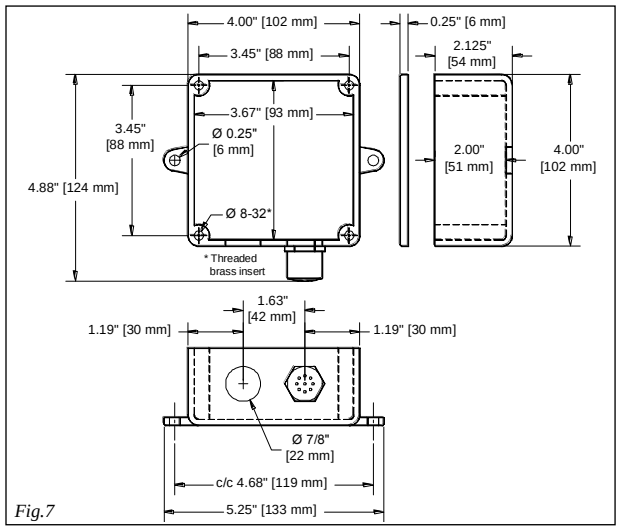


Fig.7

Notes:

- Humidity sensor is suitable for normal clean air.
- Not to be used in corrosive or harmful environment.
- Specifications and equipment are subject to change without prior notice.

Important notice

All VH20 series sensors are for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verifications prior to shipment to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user / installer / electrical system designer to incorporate safety devices (such as relays, flow switch, high and low limits, thermal protections, etc…) and/or alarm system to protect the entire system against such catastrophic failures. Tampering of the devices or mis application of the device will void warranty.

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