

TRANSMITTERS

HYGROFLEX4 SERIES

The new HygroFlex4 series is the latest development in HVAC transmitters for relative humidity, temperature and dew point. Based on AirChip3000 technology, these precision instruments achieve a new level of accuracy in this category of product, and are more precise than the HF3 series.

The new generation boasts a unique calibration and adjustment process as well as many other unbeatable innovations. At the same time we have taken the sensor technology to a whole new level of performance and reliability:

The HygroFlex4 series offers maximum reproducibility and a system accuracy of ± 1 %rh and ± 0.2 K. The transmitters are available in wall and duct mount versions. Many useful functions can be activated with the optional HW4 software.

Applications

High performance HVAC applications, building management systems, museums, libraries, etc.

Highlights

- Unique calibration and adjustment process
- Highest reproducibility
- System accuracy of ± 1 %rh and ± 0.2 K
- Wall and duct versions
- Many useful functions can be activated with the optional HW4 software



HF4 WALL & DUCT VERSIONS

Applications

HVAC applications, building management systems, museums, libraries, etc.

Highlights and common features

- Measures relative humidity, temperature and dew/frost point
- Range of application -40...60 °C; -10...60 °C with LCD, 0...100 %rh
- Automatic sensor test & drift compensation *
- Records up to 2,000 measurement pairs *
- Use as a simulator for system validation *
- UART service interface
- Integrated probe
- Adjustment profile «Standard», factory certificate
- Adjusted at 23 °C and 10, 35, 80 %rh
- Accuracy: ± 1 %rh / ± 0.2 K
- Can be mounted on a DIN rail (see accessories, page 102)

Wall version	HF420-W series	HF43x-W series
Type	2- or 2 x 2-wire	3/4-wire
Signals	Signals freely scalable*	Signals freely selectable and scalable*
Features	Alarm indicators, display and keypad (optional)	
Filter	Polyethylene filter	

Duct version	HF420-D series	HF43x-D series
Type	2- or 2 x 2-wire	3/4-wire
Signals	Signals freely scalable*	Signals freely selectable and scalable*
Features	Horizontal version with display/keypad (optional)	
Filter	Polyethylene filter	

* Requires HW4 software

For networkable transmitters see pages 76-81



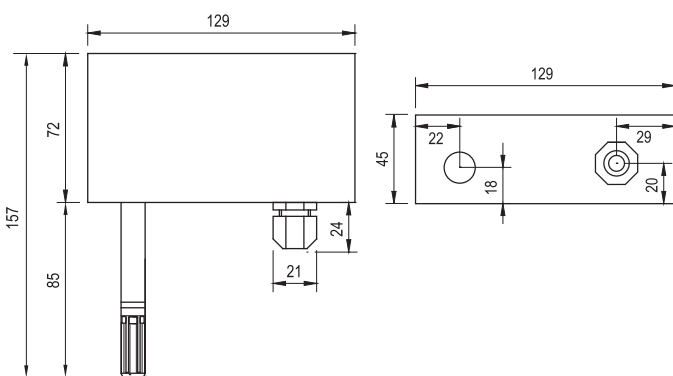
Wall version
Type W



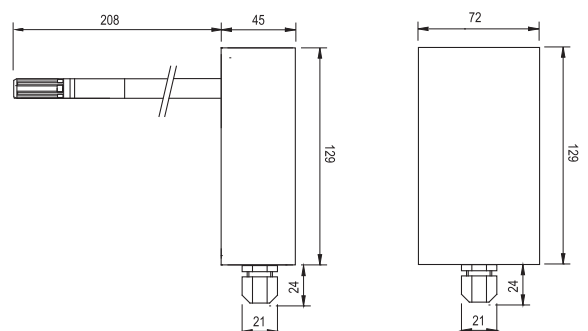
Duct version vertical mounting
Type D



Duct version horizontal mounting
Type D



HF4X wall version



HF4X duct version (vertical mounting)

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Order information (for accessories see pages 99-102)

Transmitters with analog output signals

Power supply and output signal type

HF420-						2- or 2 x 2-wire, <10...28 VDC, common V+, 4...20 mA (Only display without backlight possible)
HF431-						3/4-wire, 15...40 VDC / 12...28 VAC, 0...20 mA
HF432-						3/4-wire, 15...40 VDC / 12...28 VAC, 4...20 mA
HF433-						3/4-wire, 5...40 VDC / 5...28 VAC, 0...1 V
HF434-						3/4-wire, 10...40 VDC / 8...28 VAC, 0...5 V
HF435-						3/4-wire, 15...40 VDC / 12...28 VAC, 0...10 V

Instrument type

	D			X		Duct probe Ø 15 x 208 mm
	W					Wall probe, Ø 15 x 85 mm

Output parameters

	B				X	X	Humidity & temperature
	H	X	X		X	X	Only humidity
	T				X	X	Only temperature
	A						Temperature & dew point

Scaling of the output signals * (humidity: always 0...100 %rh)

		X	X			No temperature output signal
		1	X			0...50 °C
		2	X			10...40 °C
		3	X			-40...60 °C
		4	X			-30...70 °C
		5	X			-40...85 °C
		6	X			0...100 °F
		7	X			0...200 °F
		9	X			-50...200 °F

Optional display

				D		Display with backlight (only for horizontal mounting)
				X		No display

Electrical connections (analogue signals to terminals)

				1		M16 x 1.5 cable gland (horizontal, type D with display and type W)
				2		M16 x 1.5 cable gland (vertical, type D without display)
				3		½" conduit adapter (horizontal, type D with display and type W)
				4		½" conduit adapter (vertical, type D without display)

Standard scaling dew point / frost point

				X	X	No calculation
				B	X	-50...50 °C
				C	X	-50...100 °C
				D	X	-50...200 °F

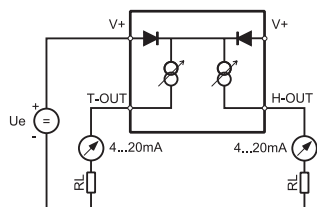
* Others on request

Off-the-shelf types:

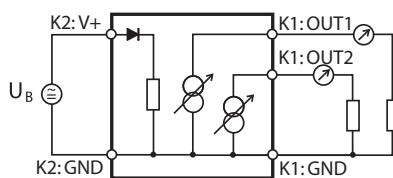
Duct version:	HF420-DB1XX2XX	2-wire, → 4...20 mA = 0...100 %rh / 0...50 °C
	HF432-DB1XX2XX	3/4-wire, → 4...20 mA = 0...100 %rh / 0...50 °C
Wall version:	HF420-WB1XX1XX	2-wire, → 4...20 mA = 0...100 %rh / 0...50 °C
	HF432-WB1XX1XX	3/4-wire, → 4...20 mA = 0...100 %rh / 0...50 °C

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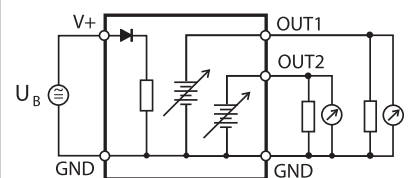
Detailed specifications		
Power supply / Connections	HF42	HF43
Supply voltage	10...28 VDC V min = 10 V + (0.02 x load*)	15...40 VDC / 12...28 VAC
Current consumption	2 x 20 mA	<50 mA
Electrical connections	Screw terminals and M16 cable gland or 1/2" conduit adapter	
Humidity measurement	HF42	HF43
Sensor	ROTRONIC Hygromer® IN-1	
Measurement range	0...100 %rh	
Accuracy at 23 °C	±1.0 %rh	
Repeatability	0.3 %rh	
Long term stability	<1 %rh/year	
Response time	Typically 10 s for 63% of a change from 35 → 80 %rh (1 m/sec air flow at sensor)	
Temperature measurement	HF42	HF43
Sensor	Pt100 1/3 Class B	
Measurement range	-50...100 °C / -58...212 °F	
Accuracy at 23 °C	±0.2 K	
Repeatability	0.05 °C	
Long term stability	<0.1 °C/year	
Response time	Typically 4 s for 63 % of a change from 23 to 80 °C (1 m/sec air flow at sensor)	
Calculated parameters	HF42	HF43
Psychrometric calculations	Dew point or frost point	
Start-up time	Typically 3.4 s	Typically 1.9 s
Signal type	4...20 mA	0...20 mA, 4...20 mA, 0...1 V, 0...5 V, 0...10 V Definable by user
*Minimum/Maximum load (in Ω)	0/500 Ω	0/500 Ω (current signal), min. 1000 Ω (voltage signal)
Service interface	UART IO D78F0114H (universal asynchronous receiver transmitter)	
Service cable maximum length	5 m (16.4 ft)	
General specifications	HF42	HF43
Optional display	LCD, 1 or 2 decimals, without backlight	LCD, 1 or 2 decimals, with backlight and trend indicators
Probe material	Polycarbonate	
Filter material	Polyethylene	
Housing material / Protection	ABS / IP 65 (except with USB or Ethernet interface)	
Weight	250 g	
CE/EMC compatibility	EMC Directive 2004/108/EC:	EN 61000-6-1: 2001, EN 61000-6-2: 2005 EN 61000-6-3: 2005, EN 61000-6-4: 2001 + A11
Solder	Lead-free (RoHS-compliant)	
Fire resistance	Conforms to UL94-HB	
FDA/GAMP compatibility	Conforms to 21 CFR Part 11 and GAMP4	
Electronics operating range	-40...60 °C / (models with display: -10...60 °C) 0...100 %rh, non-condensing)	
Temperature limits at probe	-50...100 °C	
Maximum air velocity at probe	20 m/s (7,870 ft /min)	



Schematic 2-wire types



Schematic 3-wire current signal



Schematic 3-wire voltage signal