TRANSMITTERS

HYGROFLEX3 SERIES

The new HygroFlex3 series is the latest development in HVAC transmitters for relative humidity, temperature and dew point. Based on AirChip3000 technology, the transmitters offer high accuracy at a low cost.

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 HygroFlex3 series offers you maximum reproducibility and a guaranteed system accuracy of ‹±2 %rh and ±0.3 K. The transmitters come in various versions and there are also thermostats/hygrostats available for the duct and wall versions. Many useful functions can be activated with the optional HW4 software.

Applications
HVAC applications in cost-sensitive applications, building management systems, museums, libraries, etc.

Highlights

- Unique calibration and adjustment process
- Highest reproducibility
- Guaranteed system accuracy of ‹2 %rh and 0.3 K
- Space, wall and duct mount versions
- Many useful functions can be accessed with optional HW4 software

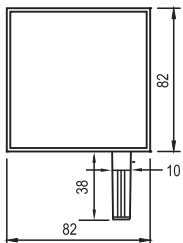AIR CHIP TECHNOLOGY

HF3x Space Mount

Applications

HVAC applications, cost-sensitive installations, building management systems, etc.
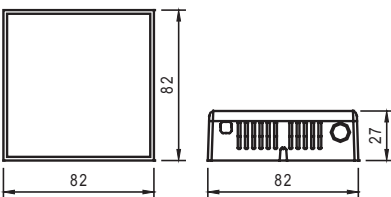
Highlights and common features

- 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 *
- Saves up to 2,000 measurement pairs*
- Use as simulator for system validation *
- UART service interface
- Integrated, extractable probe
- Adjustment profile «Standard», factory certificate
- Adjusted at 23 °C and 10, 35, 80 %rh
- Accuracy: ±2 %rh / ±0.3 K

Space version	HF320-S series	HF320-R series
Type	2- or 2 x 2-wire	
Signals	Signals freely scalable *	
Probe	Fixed	Extractable
Integrated LC display	Optional	

* Optional, requires HW4 software

Space version	HF33x-S series	HF33x-R series
Type	3/4-wire	
Signals	Signals freely selectable and scalable by user *	
Probe	Fixed	Extractable
Integrated display	Optional	

* Optional, requires HW4 software

Type R

Type S

HF3 WALL & DUCT VERSIONS

Applications

HVAC applications, cost-sensitive installations, building management systems, etc.

Highlights and common features

- Measures relative humidity, temperature and dew/frost point
- Range of application -40...60 °C, 0...100 %rh
- Automatic sensor test & drift compensation *
- Saves up to 2,000 measurement pairs*
- Use as simulator for system validation *
- UART service interface
- Adjustment profile «Standard», factory certificate
- Adjusted at 23 °C and 10, 35, 80 %rh
- Accuracy: ±2 %rh / ±0.3 K

Duct version
Type D

Wall version
Type W

Duct version	HF320-D series	HF33x-D series
Type	2- or 2 x 2-wire	3/4-wire
Signals	Signals freely scalable*	Signals freely selectable and scalable*
Filter	Polyethylene filter	

Duct version	HF346-D
Type	Thermostat/Hygrostat with 2 single pole changeover relays
Switching range	Scalable*
Switching parameters	Temperature, humidity, dew point
Switch points	Potentiometer & LED for fine adjustment

* Optional, requires HW4 software

Wall version	HF320-W series	HF33x-W series
Type	2- or 2 x 2-wire	3/4-wire
Signals	Signals freely scalable*	Signals freely selectable and scalable*
Filter	Polyethylene filter	

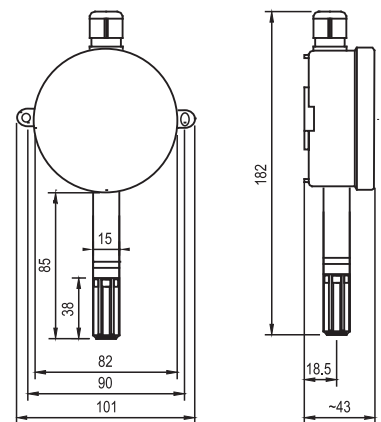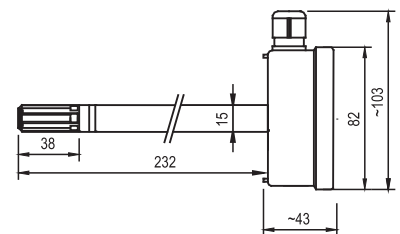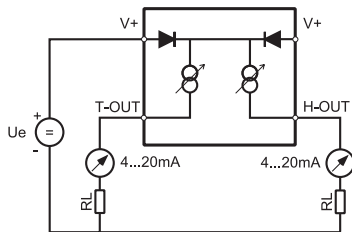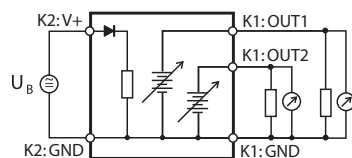| Wall version	HF346-W
Type	Thermostat/Hygrostat with 2 single pole changeover relays
Switching range	Scalable*
Switching parameters	Temperature, humidity, dew point
Switch points	Potentiometer & LED for fine adjustment

* Optional, requires HW4 software
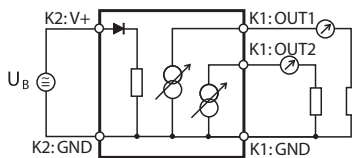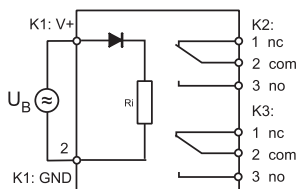
Schematic 2-wire types

Schematic 3-wire types

Schematic hygrostat/thermostat

Order information (for accessories see pages 99-102)

HF3x transmitters with analog signals

Power supply and output signal type

Code	P1	P2	P3	P4	P5	P6	P7	Description
HF320-								2- or 2 x 2-wire, ‹28 VDC, common supply V+, 4…20 mA
HF331-								3/4-wire (15…40 VDC / 12…28 VAC, 0…20 mA)
HF332-								3/4-wire (15…40 VDC / 12…28 VAC, 4…20 mA)
HF333-								3/4-wire (5…40 VDC / 5…28 VAC, 0…1 V)
HF334-								3/4-wire (10…40 VDC / 8…28 VAC, 0…5 V)
HF335-								3/4-wire (15…40 VDC / 12…28 VAC, 0…10 V)

Instrument type

Code	P1	P2	P3	P4	P5	P6	P7	Description
	D			X				Duct mount, Ø 15 x 235 mm (standard)
	S							Space mount
	R							Space mount with external sensor
								(Accuracy: ±1 %rh / 0.2 K)
	W			X				Wall mount, Ø 15 x 85 mm (standard)

Output parameters

Code	P1	P2	P3	P4	P5	P6	P7	Description
		B			X	X	X	Humidity (0…100 %rh) & temperature
		H			X	X	X	Only humidity (0…100 %rh)
		T			X	X	X	Only temperature
		A						Dew point & temperature

Standard scaling temperature *

Code	P1	P2	P3	P4	P5	P6	P7	Description
			1	X				Temperature (0…50 ºC)
			6	X				Temperature (0…100 ºF)

Optional display

Code	P1	P2	P3	P4	P5	P6	P7	Description
				D				Backlit display (only HF33x-S)
				X				Without display

Standard scaling dew point / frost point

Code	P1	P2	P3	P4	P5	P6	P7	Description
					X	X	X	No calculation
					X	B	X	-50…50
					X	C	X	-50…100

Order information (for accessories see pages 99-102)

Hygrostat / Thermostat HF346

Power supply

Code	P1	P2	P3	P4	Description
HF346-					3/4-wire (18…40 VDC / 12…28 VAC)

Instrument type

Code	P1	P2	P3	P4	Description
	D				Duct mount, Ø 15 x 235 mm (standard)
	W				Wall mount, Ø 15 x 85 mm (standard)

Output parameters relay

Code	P1	P2	P3	P4	Description
	B	X	X		Humidity & temperature
	H	X	X	X	Only humidity
	T	X	X	X	Only temperature
	A		X	X	Temperature & dew point

Control range potentiometer temperature *

Code	P1	P2	P3	P4	Description
	1	X			0…50 ºC
	6	X			0…100 ºF

Control range potentiometer dew point / frost point *

Code	P1	P2	P3	P4	Description
		B	X		-50…50

Control range potentiometer humidity*

Code	P1	P2	P3	P4	Description
			4	X	0…100 %rh

* Other scaling on request

Detailed specifications

Power supply / Connections	HF32	HF33	HF34
Supply voltage	10…28 VDC	15…40 VDC or	8…40 VDC
	V min = 10 V + (0.02 x load*)	12…28 VAC	12…28 VAC
Current consumption	Max. 2 x 20 mA	‹50 mA	44 mA
Electrical connections	Type D and W: screw terminals and M16 cable gland		N/A
	Type R & S: screw terminals		

Humidity measurement	HF32	HF33	HF34
Sensor	ROTRONIC Hygromer® IN-1		
Measurement range	0…100 %rh		
Accuracy at 23 °C	±2.0 %rh (type D, S and W) / ±1.0 %rh (type R)		±2.0 %rh
Repeatability	0.3 %rh		
Long term stability	‹1 %rh/year		
Response time	Typically 10 s for 63% of a change 35 → 80 %rh (1 m/sec air flow at sensor)		

Temperature measurement	HF32	HF33	HF34
Sensor	Pt100 1/3 Class B		
Measurement range	-40…60 °C / -40…140 °F		
Accuracy at 23 °C	±0.3 K (type D, S and W) / ±0.2 K (type R)		
Repeatability	0.05 °C		
Long term stability	‹0.1 °C/year		
Response time	4 sec for 63 % of a change from 23 to 80 °C (1 m/sec air flow at sensor)		

Calculated parameters	HF32	HF33	HF34
Psychrometric calculations	Dew point or frost point		
Start-up time	Typically 3.4 s	Typically 1.9 s	
Signal type (freely definable by user)	4…20 mA	0…20 mA, 4…20 mA	No analog
		0…1 V, 0…5 V, 0…10 V	signals
Scale limits	-999.99 … +9999.99 units		
*Minimum/Maximum load (in Ω)	0/500 Ω	0/500 Ω (current signal), min. 1000 Ω (voltage signal)	
Optional display (only types R and S)	LCD, 1 or 2 decimals, without backlight	LCD, 1 or 2 decimals, with backlight and trend indicator	N/A
Probe material	Polycarbonate, except for types R and S		Polycarbonate
Filter material	Polyethylene, except for types R and S		Polyethylene
Housing material / Protection	ABS / IP 65, except for types R and S: IP 20		
Weight	90 g		105 g
CE/EMC compatibility	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 FDA21 CFR Part 11 and GAMP4		
Electronics operating range	-40…60 °C / -10…60 °C (models with display) 0…100 %rh, non-condensing		
Temperature limits at probe	-40…60 °C		
Maximum wind velocity at probe	20 m/s (7,870 ft /min), except for types R and S		

Configurable relay outputs	HF34
Switch point adjustment	Potentiometer with scale (2 one-pole change-over relays)
Switch point limits	-999.99…+9999.99 units (potentiometer minimum and maximum)
Relay status indicator	LED (in housing)
Breaking capacity	250 VAC / 6 A at ohmic load
Service interface	UART IO D78F0114H (universal asynchronous receiver transmitter)