TRANSMITTERS

THE HYGROFLEX SERIES

HygroFlex transmitters the are perfect instruments for constant monitoring of temperature and humidity in building management systems, clean rooms, data centers, museums, storage rooms and libraries. The transmitters are available in duct, wall, and compact space versions and, together with the optional HW4 software package, and a Rotronic datacable can be configured exactly as required. Customer needs and the application determine on the model: for example, the **HygroFlex5** has an interchangeable probe that can be changed in a matter of seconds, while the **HygroFlex1 series** is ideal for cost-sensitive HVAC applications thanks to its unbeatable value for money.

CONTENTS

Transmitters	HF1	HF3
Range of application electronics	-20...50 ºC	-40...60 ºC
with LCD	-20...50 ºC	-10...60 ºC
Temperature limits at probe	-20...50 ºC	-40...60 ºC
Accuracy at 23 ºC	±3.0 %RH	±2 %RH
	±0.3 ºK	±0.3 ºK
FDA / GAMP conformity		✔
Probe		
Probe connection	Not interchangeable	Not interchangeable
Housing		
Space mount version	✔	✔
Wall version	✔	✔
Duct version, 15 mm probe	✔	✔
Duct version, 25/15 mm probe		
Cable version		
Display	✔	✔
Keypad		
IP protection	IP65 (space mount version IP20)	IP65 (space mount version IP20)
Power supply		
15...40 VDC / 12...28 VAC	✔	✔
15...40 VDC / 12...28 VAC galvanically isolated		
85...240 VAC galvanically isolated		
Power over Ethernet(POE)		
Output		
2 or 2 x 2-wire current output	2	2
3/4-wire current or voltage output	2	2
RS-485		
Ethernet		
Wireless		
Analog and digital combinable		
Modbus (ASCII)		
Functions		
Data logging		
Relay		
Hygrostat / Thermostat		
Beep tone		
Analog input		
Psychrometric Parameters		Dew/Frost point

HF4	HF5	HF7	HF8
-40...60 °C	-40...60 °C	-40...85 °C	-40...85 °C
-10...60 °C	-10...60 °C	-10...60 °C	-10...60 °C
-50...100 °C	Probe dependent	-50...100 °C (type W)	Probe dependent
		-100...150 °C (type D)	
		-100...200 °C (type C)	
±1 %RH	Probe dependent	±1 %RH	Probe dependent
±0.2 K		±0.2 K	
✔	✔	✔	✔
Not interchangeable	1x interchangeable HC2 probe	Not interchangeable	2x interchangeable HC2 probes
✔	✔	✔	✔
✔	✔	✔	✔
		✔	
		✔	
✔	✔	✔	✔
✔	✔		✔
IP65	IP65	IP67	IP65
✔	✔	✔	✔
	✔		✔
	✔		✔
	✔		✔
2	2	2	
2	2	2	4
✔	✔		✔
✔	✔		✔
✔	✔		
	✔		✔
✔			
			✔
			4 (2 relays with Ethernet option)
			✔
			✔
			✔
Dew/Frost point	All	Dew/Frost point	All

HF1 SERIES

Features

- Accuracy: ±3 %RH / ±0.3 K at 23 °C ±5 K
- Operating Range - Electronics: -20…50 °C / 0…100 %RH
- Small size
- Easy mechanical installation
- USB service interface
- Adjusted at 35 % RH / 80 %RH

POWER SUPPLY

- Low voltage: 2 x 2 or 3 / 4-wire

SIGNAL OUTPUTS

- Current output
- Voltage output

VERSIONS

- Space mount version with fixed probe, internal
- Duct version
- Wall version

OUTPUT PARAMETERS

- Humidity & temperature

OUTPUT SCALING

- Relative humidity: range selectable, standard 0…100 %RH
- Temperature: range selectable, standard 0…50 °C

DISPLAY

- Display with or without backlight
- Without display

Order code on request.

HF1 DUCT AND WALL VERSIONS

Applications
Measures relative humidity and temperature in HVAC applications.

2 or 2x2-wire

	HF120
Output signals	4...20 mA
Supply voltage	10...28 VDC
Display	Optional (without backlight)

3/4-wire

	HF13x
Output signals	0...1 V 0...5 V 0...10 V 4...20 mA Customer rescaling possible
Supply voltage	15...40 VDC / 12...28 VAC
Display	Optional (with backlight)

Temperature range	Scalable
Probe	Not interchangeable Standard, duct probe 100 mm (optional, duct probe 300 mm)
Filter type	Polyethylene

COMPATIBLE
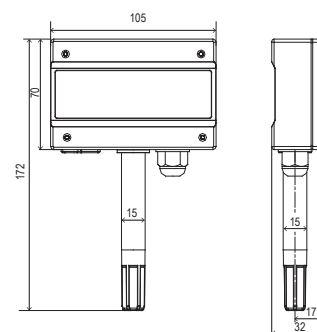• SW21 software , see page 155

INCLUDED
• Factory adjustment certificate
• Short instruction manual

RECOMMENDED ACCESSORIES
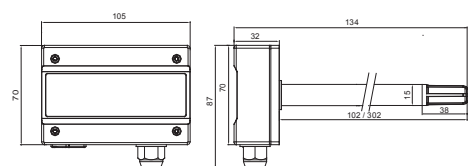• USB service cable: AC0003
• Calibration device: ER-15
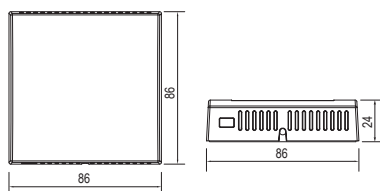• Mounting gland: AC5005

Wall version

Duct version

HF1 SPACE MOUNT VERSION

Type S

Type L

Applications
Measures relative humidity and temperature in offices and rooms where design is important.

2 or 2x2-wire

	HF120
Output signals	4…20 mA
Supply voltage	10…28 VDC
Display	Optional (without backlight)

3/4-wire

	HF13x
Output signals	0…1 V / 0…5 V / 0…10 V / 4…20 mA
	Customer rescaling possible
Supply voltage	15…40 VDC / 12…28 VAC
Display	Optional (with backlight)

Specifications	HF1 Analog 2-wire	HF1 Analog 3/4-wire
General		
Parameters	Humidity and temperature	
Housing material / Protection	ABS / IP65, except type L/S IP20	
Dimensions	105 x 172 x 32 mm (type W), 105 x 87 x 134(334) mm (type D), 86 x 86 x 24 mm (type L/S)	
Weight	140 g	
Probe connection	Fixed	
Filter material	Polyethylene	
Display	LCD, 1 or 2 decimals, without backlight	LCD, 1 or 2 decimals, with backlight
Electrical connections	Type D/W: screw terminals inside, M16 cable gland	
Power supply	10…28 VDC	15…40 VDC / 12…28 VAC
Current consumption	2x20 mA max.	‹55 mA (current output) ‹15 mA (voltage output)
Range of application	-20…50 ºC / 0…100 %RH (non-condensing)	
Service interface	USB Mini	
CE / EMC compatibility	EMC Directive 2004/108/EC	
Humidity measurement		
Sensor	ROTRONIC HYGROMER® IN-1	
Measurement range	0…100 %RH	
Accuracy at 23ºC ±5 K	±3.0 %RH (10…90 %RH)	
Long-term stability	‹1.5 %RH/year	
Response time	‹30 s t63 (63 % of a jump 35…80 %RH) without filter	
Maximum wind velocity	20 m/s with filter	
Temperature measurement		
Sensor	NTC	
Measurement range	-20…50 ºC / 0…100 ºF	
Accuracy at 23ºC ±5 K	±0.3 K	
Response time	4 s	
Analog output		
Number	2	
Current	4…20 mA	4…20 mA
Voltage	N/A	0…1/5/10 V

HF3 series

Features

- Accuracy: ±2 %RH / ±0.3 K at 23°C ±5 K
- Temperature limit at probe: -40…60 °C / 0…100 %RH
- Range of application electronics: -40…60 °C / 0…100 %RH,
  -10…60 °C with LCD
- Service interface
- Adjusted at 23 °C and 10, 35, 80 %RH

Power supply

• Low voltage: 2 x 2 or 3 / 4-wire

Signal outputs

• Current output

• Voltage output

Versions

• Space mount version with fixed probe, internal

• Space mount version with fixed probe, retractable

• Duct version

• Wall version

Output parameters

• Humidity & temperature

• Humidity only or temperature only

• Humidity & dew point

• Temperature & dew point

Output scaling

• Relative humidity: range selectable, standard 0…100 %RH

• Temperature: range selectable

• Dew point: range selectable

Display

• Display with or without backlight

• Without display

Order code on request.

HF3 SPACE MOUNT VERSION

Applications
Measures relative humidity and temperature and calculates the dew/frost point in offices and rooms where design is important.
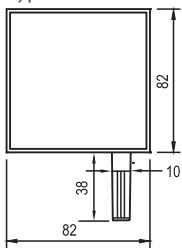
2 or 2x2-wire

	HF320 Type S	HF320 Type R
Output signals	4…20 mA	
Supply voltage	10…28 VDC	
Display	Optional	
	(without backlight)	

3/4-wire

	HF33x Type S	HF33x Type R
Output signals	0…1 V	
	0…5 V	
	0…10 V	
	0…20 mA	
	4…20 mA	
	Customer rescaling possible*	
Supply voltage	18…40 VDC / 13…28 VAC	
Display	Optional	
	(with backlight)	

Temperature range	Scalable*	
Probe	Fixed internal	Retractable
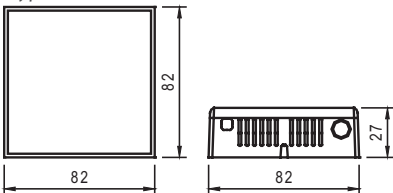
COMPATIBLE
• HW4 software, see page 148

INCLUDED
• Factory adjustment certificate
• Product qualification
• Short instruction manual

RECOMMENDED ACCESSORIES
• Service cable: AC3006 / AC3009* (page 86)
• Calibration device (type R): ER-10MS

Reference
* Requires optional HW4 software and service cable

Type R

Type S

HF3 DUCT AND WALL VERSIONS

Applications

Measures relative humidity and temperature and calculates the dew/frost point in HVAC applications focused on relability and repeatability.

2 or 2x2-wire

	HF320 Type W/D
Output signals	4…20 mA
Supply voltage	10…28 VDC

3/4-wire

	HF33x Type W/D
Output signals	0…1 V 0…5 V 0…10 V 0…20 mA 4…20 mA Customer rescaling possible*
Supply voltage	18…40 VDC / 13…28 VAC

Temperature range	Scalable*
Probe input	Fixed
Filter type	Polyethylene

COMPATIBLE

• HW4 software, see page 148

INCLUDED

• Factory adjustment certificate
• Product qualification
• Short instruction manual

RECOMMENDED ACCESSORIES

• Service cable:	AC3006 / AC3009* (page 86)
• Replacement filter, PE, gray:	NSP-PCG-PE
• Calibration device:	ER-15
• Mounting gland:	AC5005

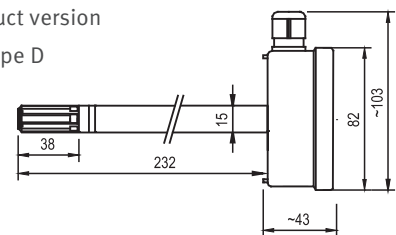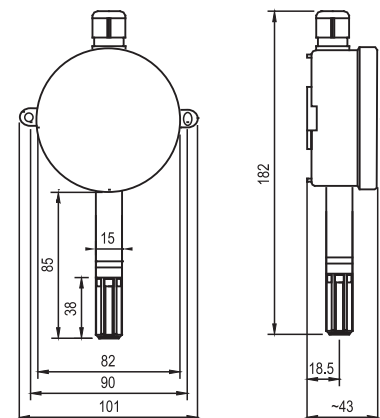## Reference

* Requires optional HW4 software and service cable

Duct version
Type D

Wall version
Type W

Specifications	HF320 Analog 2-wire	HF33x Analog 3/4-wire
General		
Parameters	Humidity and temperature	
Calculated parameters	Dew/Frost point	
Housing material / Protection	ABS / IP65, except type R/S IP20	
Dimensions	101 x 182 x 43 mm (type W), 103 x 82 x 278 mm (type D), 82 x 82 x 27 mm (type S), 120 x 82 x 27 mm (type R)	
Weight	140 g	
Probe material	Polycarbonate	
Probe connection	Fixed, type R retactable	
Filter material	Polyethylene	
Display (only type R/S)	LCD, 1 or 2 decimals, without backlight	LCD, 1 or 2 decimals, with backlight
Electrical connections	Type D/W: screw terminals inside, M16 cable gland	
Power supply	10...28 VDC	18...40 VDC / 13...28 VAC
Current consumption	2x20 mA max.	‹60 mA DC / ‹150 mA AC (type W/D) ‹100 mA DC / ‹250 mA AC (type R/S)
Application temperature	-40...60 °C / -10...60 °C (with LCD)	
housing / electronics	0...100 %RH	
Application temperature probe	-40...60 °C	
Firmware upgrade	Via HW4 software	
Service interface	UART service interface (Universal Asynchronous Receiver Transmitter)	
CE / EMC compatibility	EMC Directive 2004/108/EC	
Fire protection class	Corresponds to UL94-HB	
FDA / GMP conformity	Conforms to 21 CFR Part 11 and GAMP5	
Humidity measurement		
Sensor	ROTRONIC HYGROMER® IN-1	
Measurement range	0...100 %RH	
Accuracy at 23°C ±5 K	±2.0 %RH / ±1.0 %RH (type R)	
Adjustment at 23 °C	10, 35, 80 %RH	
Long-term stability	‹1 %RH/year	
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter	
Scale limits	-999...+9999 units	
Maximum wind velocity	20 m/s with filter	
Temperature measurement		
Sensor	Pt100 Class A	
Measurement range	-40...60 °C / -40...140 °F	
Accuracy at 23°C ±5 K	±0.3 K / ±0.2 K (type R)	
Adjustment points	1	
Long-term stability	‹0.1 °C / year	
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter	
Scale limits	-999...+9999 units	
Analog output		
Number	2	
Current	4...20 mA	0/4...20 mA
Voltage	N/A	0...1/5/10 V
Galvanic isolation	N/A	N/A
Maximum load	2x500 Ω	≤2x500 Ω (current output) ≥1 kΩ/V (voltage output)
Accuracy at 23 °C	0.03 mA	0.02 mA 2 mV (0...1 V), 5 mV (0...10 V)

HF4 series

Features

- Accuracy: ±1 %RH / ±0.2 K at 23ºC ±5 K
- Temperature limit at probe: -50…100 ºC / 0…100 %RH
- Range of application electronics: -40…60 ºC / 0…100 %RH;
  -10…60 ºC with LCD
- Digital outputs
- Use as simulator for system validation *
- Service interface
- Adjusted at 23 ºC and 10, 35, 80 %RH

Power supply

• Low voltage: 2x2 or 3/4-wire

Signal outputs

• Current output

• Voltage output

• RS-485

• Ethernet / WLAN

• Modbus ASCII

Versions

• Duct version

• Wall version

Output parameters

• Humidity & temperature

• Humidity only or temperature only

• Humidity & dew point

• Temperature & dew point

Output scaling

• Relative humidity: range selectable, standard 0…100 %RH

• Temperature: range selectable

• Dew point: range selectable

Display
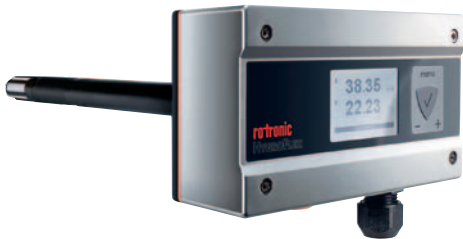
• Display with backlight (excl. 2-wire), trend indicators and keypad

• Without display

Order code on request.

HF4 DUCT AND WALL VERSIONS

Applications

Measures relative humidity and temperature and calculates the dew/frost point.

Suitable for HVAC and light industrial applications.

2 or 2x2-wire

	HF420 Type W/D
Output signals	4…20 mA
Supply voltage	10…28 VDC
Display	Optional (without backlight, keypad) Type D only horizontal version possible with display (see pictures)

3/4-wire

	HF43x Type W/D	HF456 Type W/D (digital)
Output signals	0…1 V 0…5 V 0…10 V 0…20 mA 4…20 mA Customer rescaling possible*	RS-485 Ethernet WLAN Modbus ASCII
Supply voltage	18…40 VDC 13…28 VAC	6…35 VDC 5…28 VAC
Display	Optional (with backlight, keypad) Type D only horizontal version possible with display (see photos)	

Temperature range	Scalable*
Probe input	Fixed
Filter type	Polyethylene

COMPATIBLE

• HW4 software, see page 148

INCLUDED

• Factory adjustment certificate
• Product qualification
• Short instruction manual
• Screws and plugs for mounting
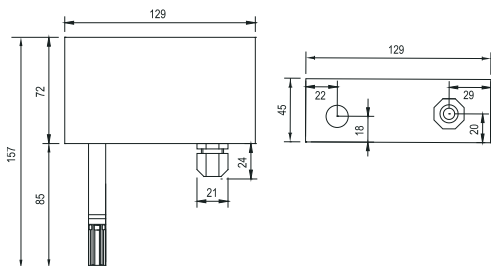• Mounting flange (type D)

RECOMMENDED ACCESSORIES

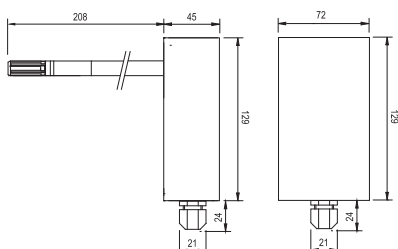| • Service cable:	AC3006 / AC 3009* (page 86)
• Replacement filter, polyethylene, black:	NSP-PCB-PE
• Calibration device:	ER-15
• Mounting kit DIN top-hat rail (type W):	AC5002

Reference

* Requires optional HW4 software and service cable

Wall version, type W

Duct version, type D

Specifications	HF420 Analog 2-wire	HF43x Analog 3/4-wire	HF456 Digital 3/4-wire
General			
Parameters	Humidity and temperature		
Calculated parameters	Dew/Frost point		
Housing material / Protection	ABS / IP65		IP40
Dimensions	129 x 157 x 45 mm (type W), 129 x 253 x 72 mm (type D)		
Weight	220 g		
Probe material	Polycarbonate		
Probe connection	Fixed		
Filter material	Polyethylene		
Display	LCD, 1 or 2 decimals without backlight, menu navigation, 4 keys	LCD, 1 or 2 decimals with backlight, menu navigation, 4 keys	
Electrical connections	Screw terminals inside, M16 cable gland		Socket (USB/Ethernet)
Power supply	10...28 VDC	18...40 VDC / 13...28 VAC	6...35 VDC / 5...28 VAC
Current consumption	2 x 20 mA max.	‹270 mA	‹420 mA
Application temp. housing / electronics	-40...60 ºC / -10...60 ºC (with LCD), 0...100 %RH		
Measurement range	-50...100 ºC		
Firmware upgrade	Via HW4 software		
Service interface	UART service interface (Universal Asynchronous Receiver Transmitter)		
CE / EMC compatibility	EMC Directive 2004/108/EC		
Fire protection class	Corresponds to UL94-HB		
FDA / GMP conformity	Conforms to 21 CFR Part 11 and GAMP5		
Humidity measurement			
Sensor	ROTRONIC HYGROMER® IN-1		
Measurement range	0...100 %RH		
Accuracy at 23ºC ±5 K	±1.0 %RH		
Adjustment at 23 ºC	10, 35, 80 %RH		
Long-term stability	‹1 %RH/year		
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter		
Scale limits	-999...+9999 units		
Maximum wind velocity	20 m/s with polyethylene filter		
Temperature measurement			
Sensor	Pt100 Class A		
Measurement range	-50...100 ºC / -58...212 ºF		
Accuracy at 23ºC ±5 K	±0.2 K		
Adjustment points	1		
Long-term stability	‹0.1 ºC / year		
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter		
Scale limits	-999...+9999 units		
Analog output			
Number	2		No analog outputs
Current	4...20 mA	0/4...20 mA	
Voltage	N/A	0...1/5/10 V	
Galvanic isolation	N/A	N/A	
Maximum load	2x500 Ω	≤2x500 Ω (current output) ≥1 kΩ/V (voltage output)	
Accuracy at 23 ºC	0.03 mA	0.02 mA 2 mV (0...1 V), 5 mV (0...10 V)	
Digital output			
RS-485	No digital outputs		RS-485
USB			USB & RS-485
Ethernet			Ethernet RJ45 & RS-485
Wireless			Wireless & RS-485
Modbus ASCII			Modbus ASCII

HF5 series

Features

- Interchangeable HC2 probes
- Housing material: ABS / Aluminium
- Accuracy: see chapter «Probes», page 4
- Temperature limit at probe: see chapter «Probes»
- Range of application electronics: -40…60 °C / 0…100 %RH; -10…60 °C with LCD
- Digital outputs, also combinable with analog outputs
- Use as simulator for system validation *
- Service interface

Power supply

- Low voltage: 2x2 or 3/4-wire
- Low voltage, galvanically isolated; 3/4-wire
- Mains voltage, galvanically isolated; 3/4-wire
- Power over Ethernet (PoE)

Signal outputs

- Current outputs
- Voltage outputs
- RS-485
- USB
- Ethernet / WLAN

Versions

- Duct version
- Wall version
- Cable version

Output parameters

- Humidity & temperature
- Humidity & all psychrometric parameters
- Temperature & all psychrometric parameters

Output scaling

- Relative humidity: range selectable, standard scale 0…100 %RH
- Temperature: range selectable
- Psychrometric parameters: range selectable

Display

- Display with backlight (excl. 2-wire), trend indicators and keypad
- Without display

Reference

* Requires optional HW4 software and service cable

Note:
HF520 (2-wire version)
is not compatible with HC2-SM, HC2-IE, HC2-IM, HC2-C05 probes

HF5 DUCT AND WALL VERSIONS

Applications

Measures relative humidity and temperature and calculates all psychrometric parameters in applications which require the highest accuracy, repeatablity, and relability. Areas such as pharmaceuticals, precision electronics, and all critical manufacturing areas.

2x2-wire

	HF520 Type W/D
Output signals	4…20 mA
Supply voltage	10…28 VDC
Display	Optional (without backlight, keypad) Type D only horizontal version possible with display (see pictures)

3/4-wire

	HF5xx Type W/D	
Output signals	0…1 V 0…5 V 0…10 V 0…20 mA 4…20 mA Customer rescaling possible*	RS-485 Ethernet WLAN
Supply voltage	Low voltage: 15…40 VDC / 12…28 VAC Galvanically isolated: 9…36 VDC / 7…24 VAC Power over Ethernet (POE)	
Display	Optional (with backlight, keypad) Type D only horizontal version possible with display (see photos)	
Housing	ABS or aluminum	

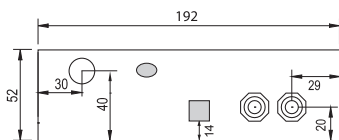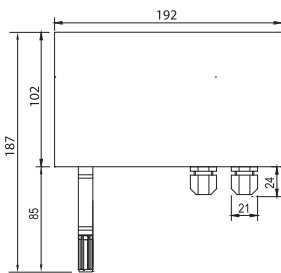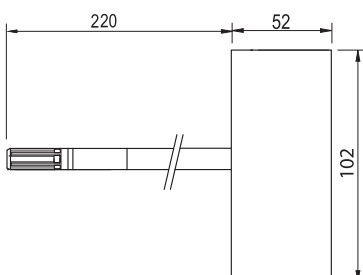| Temperature and humidity ranges and all psychrometric parameters	Scalable*
Probe input	1 interchangeable HC2 probe
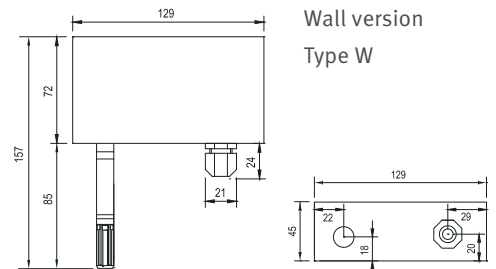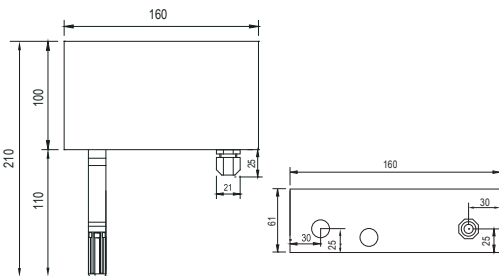
Wall version
Type W
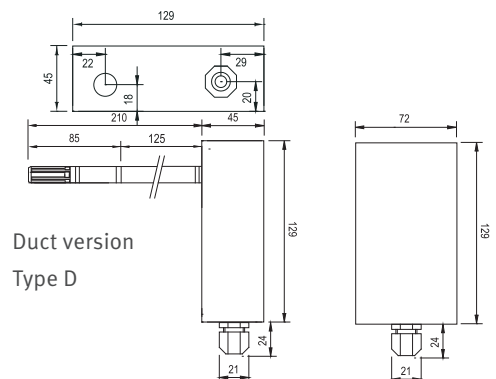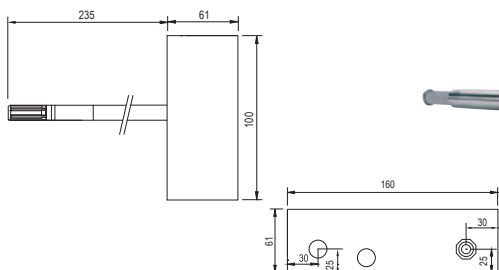
Duct version
Type D

3/4-wire
Mains voltage

	HF5xx Type W/D	
Output signals	0…1 V 0…5 V 0…10 V 0…20 mA 4…20 mA Customer rescaling possible*	RS-485 Ethernet WLAN
Supply voltage	Mains voltage: 85…240 VAC Power over Ethernet: patch cable cat. 5	
Version	Type W, type D (only horizontal possible)	
Display	Optional (with backlight, keypad)	
Probe input	1 interchangeable HC2 probe	
Temperature and humidity ranges and all psychrometric parameters	Scalable*	
Housing	ABS	

COMPATIBLE

- All HC2 probes (order separately), page 4 ff.
- HW4 software, see page 148

INCLUDED

- Product qualification
- Short instruction manual
- Screws and plugs for mounting
- Mounting flange (type D)

RECOMMENDED ACCESSORIES

- Standard climate probe: HC2-S
- Probe extension cable 2 m: E2-02A
- Service cable: AC3006 / AC3009* (page 86)
- Mounting kit DIN top-hat rail (type W):   AC5002
- Calibration cable for HP23 Handheld: AC2001

Reference

* Requires optional HW4 software and service cable

Wall version

Type W

192
187
102
85
24
21

192
52
30
40
14
29
20

Duct version

Type D

220
52
102

Specifications	HF520 2-wire	HF53/4/x 3/4-wire	HF56x, mains voltage 3/4-wire	HF55x, digital 3/4-wire
General				
Parameters	Humidity and temperature			
Calculated parameters	All psychrometric parameters			
Housing material / Protection	ABS / IP65 (models with USB or Ethernet interface, IP40), Al/IP65 (also with Ethernet interface)			
Dimensions	ABS: 129 x 72 x 45 mm (type D/W) Al: 160 x 100 x 61 mm		192 x 102 x 52 mm (type D/W)	ABS: 129 x 72 x 45 mm type D/W Al: 160 x 100 x 61 mm
Weight	ABS: 220 g	ABS: 220 g, Al: 750 g	ABS: 500 g	ABS: 220 g / Al: 750 g
Probe connection / Interface	E2 (threaded coupling) / UART			
Display	LCD, 1 or 2 decimals, without backlight, menu navigation, 4 keys	LCD, 1 or 2 decimals, with backlight, menu navigation, 4 keys		
Electrical connections	Screw terminals inside M16 cable gland Socket (USB/Ethernet)		2xM16 cable gland	Screw terminals inside M16 cable gland Socket (USB/Ethernet)
Power supply	10...28 VDC	15...40 VDC/12...28 VDC galvanically. isolated 9...36 VDC / 7...24 VAC	85...240 VAC	Power over Ethernet (PoE) IEEE 802.3af
Current consumption	2 x 20 mA max.	270 mA max. (without Ethernet) 420 mA max. (with Ethernet)	30 mA max. (without Ethernet) 45 mA max. (with Ethernet)	CLASS 1 (3.8 W)
Application temp. housing / electronics	-25...60 ºC / -10...60 ºC (with LCD), 0...100 %RH	-40...60 ºC / -10...60 ºC (with LCD), 0...100 %RH		
Firmware upgrade	Via HW4 software			
Service interface	UART service interface (Universal Asynchronous Receiver Transmitter)			
CE / EMC compatibility	EMC Directive 2004/108/EC			
Fire protection class	Corresponds to UL94-HB			
FDA / GMP conformity	Conforms to 21 CFR Part 11 and GAMP5			
Humidity measurement				
Humidity measurement	Probe dependent (chapter Probes, page 4)			
Temperature measurement				
Temperature measurement	Probe dependent (chapter Probes, page 4)			
Analog output				
Number	2			No analog outputs
Current	4...20 mA	0(4)...20 mA		
Voltage	N/A	0...1/5/10 V		
Galvanic isolation	N/A	HF54 and HF56		
Maximum load	2x500 Ω	≤2x500 Ω (current output) ≥1 kΩ/V (voltage output)		
Accuracy at 23 ºC	0.06 mA	0.02 mA 10 mV		
Digital output				
RS-485	No digital outputs	RS-485 & analog		RS-485
USB		USB & RS-485 & analog		USB & RS-485
Ethernet		Ethernet RJ45 & RS-485 & analog		Ethernet RJ45 & RS-485
Wireless		Wireless & RS-485 & analog		Wireless & RS-485

HF7 SERIES

Features

- Accuracy: ±1.0 %RH / ±0.2 °K at 23 °C ±5 K
- Temperature limit at probe: max. -100...200 °C[1]
  0...100 %RH
- Range of application electronics: -40...85 °C / 0...100 %RH
  -10...60 °C with LCD
- Aluminum diecast housing and probe of stainless steel or PPS
- Various probe lengths available
- Use as simulator for system validation *
- Service interface
- Adjusted at 23 °C and 10, 35, 80 %RH

POWER SUPPLY

- Low voltage: 2x2 or 3/4-wire

SIGNAL OUTPUTS

- Current outputs
- Voltage outputs

VERSIONS

- Duct version
- Wall version
- Cable version

OUTPUT PARAMETERS

- Humidity & temperature
- Humidity only or temperature only
- Humidity & dew point
- Temperature & dew point

OUTPUT SCALING

- Relative humidity: range selectable, standard scale 0...100 %RH
- Temperature: range selectable
- Dew/Frost point: range selectable

DISPLAY

- Display with backlight (excl. 2-wire), trend indicators
- Without display

Reference
* Requires optional HW4 software and service cable

[1] Short-term peak load

Order code on request.

HF7 DUCT AND WALL VERSIONS

Applications

Measures relative humidity, temperature and dew/frost point in industrial environments and outdoors. For use in harsh conditions.
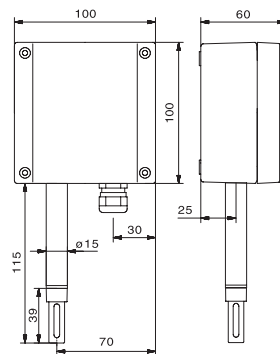
2 or 2x2-wire

	HF720 Type W/D
Output signals	4...20 mA
Supply voltage	10...28 VDC
Probe	Fixed, PPS (stainless steel probe not possible)
Display	Optional (without backlight)

3/4-wire

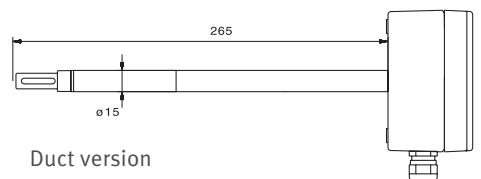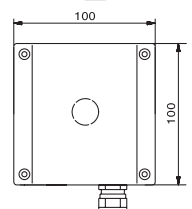|	HF73x Type W/D
Output signals	0...1 V 0...5 V 0...10 V 0...20 mA 4...20 mA Customer rescaling possible
Supply voltage	18...40 VDC / 13...28 VAC
Probe	Fixed, PPS / stainless steel
Display	Optional (with backlight)

Temperature range	Scalable
Temperature limit at probe	-50...100 ºC (type W) -100...150 ºC (type D)
Filter carrier	Slotted sleeve (order filter separately)

Wall version
Type W

Duct version
Type D

HF7 CABLE VERSION

## 2 or 2x2-wire

	HF720 Type W/D
Output signals	4...20 mA
Supply voltage	10...28 VDC
Probe	Fixed, PPS with 2 meter cable
Display	Optional (without backlight)

3/4-wire

	HF73x Type C
Output signals	0...1 V 0...5 V 0...10 V 0...20 mA 4...20 mA Customer rescaling possible
Supply voltage	18...40 VDC / 13...28 VAC
Probe	Fixed, PPS with 2 meter cable Fixed, stainless steel with 2 or 5 meter cable
Display	Optional (with backlight)

Temperature range	Scalable*
Temperature limit at probe	-100...200 °C [1]
Filter carrier	Slotted sleeve (order filter separately)

Cable version

Type C
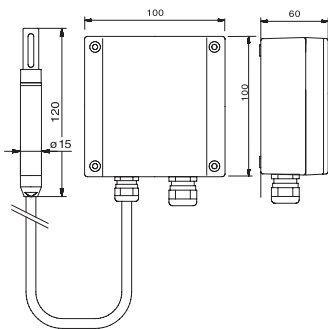
COMPATIBLE

• HW4 software, see page 148

INCLUDED

• Factory adjustment certificate

• Product qualification

• Short instruction manual

• Note: filter must be ordered separately

RECOMMENDED ACCESSORIES

• Teflon filter:	SP-T15
• Sintered steel filter	SP-S15
• Wire mesh filter:	SP-M15
• Service cable:	AC3006 / AC 3009* (page 86)
• Mounting gland:	AC1303-M

Reference

* Requires optional HW4 software and service cable

[1] Short-term peak load

Specifications	HF720, analog 2-wire	HF73x, analog 3/4-wire
General		
Parameters	Humidity and temperature	
Calculated parameters	Dew/Frost point	
Housing material / Protection	Aluminum / IP67 (without display)	
Dimensions	215 x 100 x 60 mm (type W), 325 x 100 x 100 (type D), 100 x 100 x 60 (type C)	
Weight	600 g + 140 g per probe extension unit (150 mm)	
Probe material	PPS	PPS or stainless steel
Probe connection	Fixed, possible with 2/5 meter cable (type C)	
Filter carrier	Slotted sleeve	
Filter material	Filter is not supplied with transmitter (must be ordered separately)	
Display	LCD, 1 or 2 decimals, without backlight	LCD, 1 or 2 decimals, with backlight
Electrical connections	Screw terminals inside, M16 cable gland	
Power supply	10...28 VDC	18...40 VDC / 13...28 VAC
Current consumption	2 x 20 mA max.	150 mA max.
Application temp. housing / electronics	-40...85 °C / -10...60 °C (with LCD), 0...100 %RH	
Measurement range	-100...100 °C (type W) -100...150 °C (type D) -100...200 °C[1] (type C)	
Firmware upgrade	Via HW4 software	
Service interface	UART service interface (Universal Asynchronous Receiver Transmitter)	
CE / EMC compatibility	EMC Directive 2004/108/EC	
Fire protection class	Non flammable	
FDA / GMP conformity	Conforms to 21 CFR Part 11 and GAMP5	
Humidity measurement		
Sensor	ROTRONIC HYGROMER® IN-1	
Measurement range	0...100 %RH	
Accuracy at 23°C ±5 K	±1.0 %RH	
Adjustment at 23 °C	10, 35, 80 %RH	
Long-term stability	‹1 %RH/year	
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter	
Scale limits	-999...+9999 units	
Temperature measurement		
Sensor	Pt100 Class A	
Measurement range	Dependent on probe type, see application temperature for probe	
Accuracy at 23°C ±5 K	±0.2 K	
Adjustment points	1	
Long-term stability	‹0.1 °C / year	
Response time	‹15 s t63 (63 % of a jump 35...80 %RH) without filter	
Scale limits	-999...+9999 units	
Analog output		
Number	2	
Current	4...20 mA	0/4...20 mA
Voltage	N/A	0...1/5/10 V
Galvanic isolation	N/A	N/A
Maximum load	2x500 Ω	≤2x500 Ω (current output) ≥1 kΩ/V (voltage output)
Accuracy at 23 °C	0.03 mA	0.02 mA 2 mV (0...1 V), 5 mV (0...10 V)

[1] Short-term peak load

HF8 series

Features

- 2 interchangeable HC2 or analog probes
- Accuracy: see chapter «Probes», page 4
- Temperature limit at probe: see chapter «Probes», page 4
- Range of application electronics: -40…60 °C / 0…100 %RH
  -10…60 °C with LCD
- Digital outputs, also combinable with analog outputs
- Analog inputs
- Data logging, up to 10,000 measured values
- Relay outputs
- Use as simulator for system validation *
- Service interface

Power supply

- Low voltage: 3/4-wire
- Low voltage, galvanically isolated; 3/4-wire
- Mains voltage, galvanically isolated; 3/4-wire

Signal outputs

- Current outputs
- Voltage outputs
- RS-485
- Ethernet
- Switch outputs (relays)

Versions

- Wall version
- Cable version

Output parameters

- Humidity & temperature
- Humidity & all psychrometric parameters
- Temperature & all psychrometric parameters

Output scaling

- Relative humidity: range selectable, standard scale 0…100 %RH
- Temperature: range selectable
- Psychrometric parameters: range selectable

Display

- Display with backlight, trend indicator and keypad
- Without display

Reference

* Requires optional HW4 software and service cable

Order code on request.

HF8 WALL VERSION

Applications

Measures relative humidity and temperature and calculates all psychrometric parameters in applications which require the highest accuracy, repeatablity, and relability. Areas such as pharmaceuticals, precision electronics, and all critical manufacturing areas.

3/4-wire

	HF8xx Type W	
Output signals	0...1 V 0...5 V 0...10 V 0...20 mA 4...20 mA Customer rescaling possible	RS-485 Ethernet Relays
	Analog and digital combinable	
Supply voltage	Low voltage: 15...40 VDC / 12...28 VAC Galvanically isolated: 9...36 VDC / 7...24 VAC Mains voltage: 85...265 VAC Power over Ethernet (POE)	
Display	Optional (with backlight, keypad)	
Temperature and humidity ranges and all psychrometric parameters	Scalable*	
Probe	2 interchangeable HC2	

Wall version, type W

COMPATIBLE

• All HC2 probes (please order separately), page 4
• HW4 software, see page 148

INCLUDED

• Product qualification
• Short instruction manual
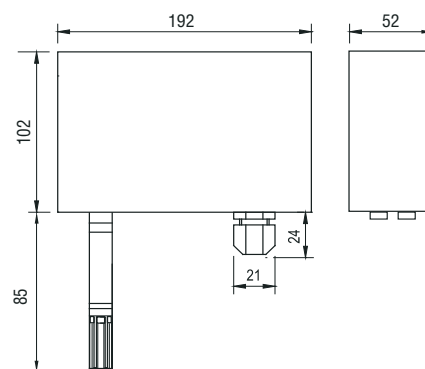• Screws and plugs for mounting

RECOMMENDED ACCESSORIES

• Standard climate probe:	HC2-S
• Industrial probe:	HC2-IC102
• Probe extension cable 2 m:	E2-02A
• Service cable:	AC3006 / AC 3009* (page 86)
• Mounting kit DIN top-hat rail	AC5002

Reference

* Requires optional HW4 software and service cable

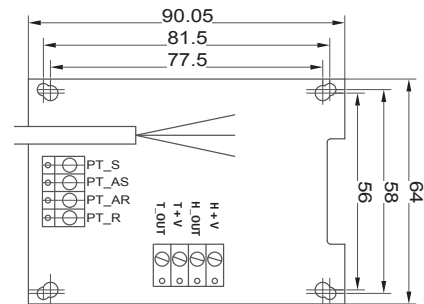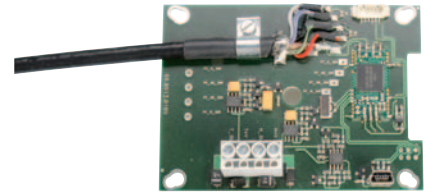| Specifications	HF832 Low voltage	HF842 Low voltage, galvanically isolated	HF862 Mains voltage, galvanically isolated
General			
Parameters	Humidity and temperature		
Calculated parameters	All psychrometric parameters		
Housing material / Protection	ABS / IP65 (models with Ethernet interface, IP40)		
Dimensions / Weight	192 x 102 x 52 mm / 550 g		
Probe connection / Interface	E2 (threaded coupling) / UART		
Display	LCD, 1 or 2 decimals, with backlight, menu navigation, 4 keys		
Electrical connections	Screw terminals inside M16 cable gland Socket (Ethernet)		2xM16 cable gland
Power supply	15...40 VDC 14...28 VAC	9...36 VDC 7...24 VAC	85...265 VAC
Current consumption	380 mA max.		20 mA max. (without Ethernet) 60 mA max. (with Ethernet)
Application temp. housing / electronics	-40...85 °C (-10...60 °C with display), 0...100 %RH		
Firmware upgrade	Via HW4 software		
Service interface	UART service interface (Universal Asynchronous Receiver Transmitter)		
CE / EMC compatibility	EMC Directive 2004/108/EC		
Fire protection class	Corresponds to UL94-HB		
FDA / GMP conformity	Conforms to 21 CFR Part 11 and GAMP5		
Humidity measurement			
Humidity measurement	Probe dependent (chapter Probes, page 4)		
Temperature measurement			
Temperature measurement	Probe dependent (chapter Probes, page 4)		
Analog output			
Number	4		
Current	0/4...20 mA		
Voltage	0...1/5/10 V		
Galvanic isolation	N/A	Yes	
Maximum load	≤4x500 Ω (current output) ≥1 kΩ/V (voltage output)		
Accuracy at 23 °C	0.02 mA 10 mV		
Digital output			
RS-485	RS-485 & analog		
Ethernet	Ethernet RJ45 & RS-485 & analog		
Switch output			
Type	Relay (single pole double throw, latching or non-latching)		
Number	4 (except models with Ethernet 2)		
Switch parameters	Every probe and parameter		
Breaking capacity	250 VAC / 2 A at ohmic load		
Analog input			
Supply	Max. 5V / 10mA		
Pull-up load	1 MΩ / 5 V		
Pull-down load	130 Ω		

XB

The OEM transmitter consists of a cable probe, a printed circuit board and an optional housing. Thanks to its compact size, high accuracy and choice of analog outputs, the transmitter can be adapted to customer requirements and used practically everywhere.

Applications
Climate chambers, incubators, monitoring of industrial processes, etc.

Features

- Accuracy at 23 °C ±5 K: ±1.0 %RH / ±0.2 K
- Range of application probe: depending on probe from
  0...100 %RH / -100 to 200 °C[1]
- Range of application electronics: -40...85 °C
- Large choice of probes
- Freely scalable analog outputs
- Simulator mode*
- Direct 4-wire Pt100 connection (optionally available)
- Power supply
  - Low voltage 3/4-wire (XB3x)
  - Low voltage 2-wire (XB20)
- Signal outputs
  - Current output
  - Voltage output
- Version
  - Printed circuit board with cable probe, optional housing
- Probes
  - PPS and chrome steel probes
  - Probe diameter: 15 mm or 25/15 mm
  - Probe length to 700 mm
  - Cable lengths 2 and 5 m
- Output parameters
  - Humidity & temperature
  - Dew/Frost point & temperature or humidity

COMPATIBLE

- HW4 software

INCLUDED

- Factory adjustment certificate
- Short instruction manual

RECOMMENDED ACCESSORIES

- Service cable AC3006 / AC 3009* (page 86)

Reference

* Requires optional HW4 software and service cable
[1] Short-term peak load

PPS probe Ø 15mm

PPS probe Ø 25/15mm

Chrome steel probe Ø 15mm