

# HYGROMET METEOROLOGICAL PROBES

## MP102H/402H for interchangeable probes\* HC2-S3

MP102H and MP402H series probes provide truly class leading accuracy and stability . Based on the HygroClip HC2-S3 probe, they provide linear voltage or current outputs for secure transmission over extended cable lengths. An RS485 interface is available on request.

With direct 4 -wire Pt100 temperature measurement available in the same probe assembly as the new AirChip3000 technology, this ultimate meteo probe combination offers outstanding performance within a single shield installation.

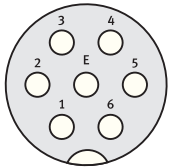
### Applications

Weather stations, snow guns, building management systems

### Highlights

- Range of application (temperature): -40...85 °C
- Current or voltage output signal
- Optional: directly connected Pt100 sensor
- UART & service interface to PCB

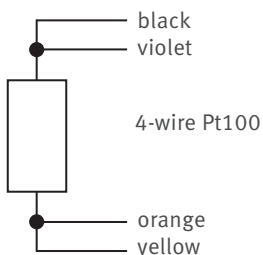
Tuchel 7-pin connector plug



Pin configuration / Wire colors

Term	Colour	Pin
+VDC	Green	1
Ground	Grey	2
Humidity	White	3
Temperature	Brown	4
RS485 +	Red	5
RS485 -	Blue	6
Protection		E

Separate Pt100 (for both types):



Order code				
MP102H-				Meteorology transmitter with voltage output
MP402H-				Meteorology transmitter with current output
	0			Without additional Pt100
	3			Separate Pt100 1/3 Class B, passive, 4-wire
	5			Separate Pt100 1/5 Class B, passive, 4-wire
	A			Separate Pt100 1/10 Class B, passive, 4-wire
Output signals MP102H				
	1			0...1 V = 0...100 %rh / -0.4...0.6 V = -40...60 °C
	2			0...1 V = 0...100 %rh / -30...70 °C
	3			0...1 V = 0...100 %rh / -40...60 °C
Output signals MP402H				
	4			0...20 mA = 0...100 %rh / 0...100 °C
	5			0...20 mA = 0...100 %rh / -40...60 °C
	6			0...20 mA = 0...100 %rh / -30...70 °C
	7			4...20 mA = 0...100 %rh / 0...100 °C
	8			4...20 mA = 0...100 %rh / -40...60 °C
	9			4...20 mA = 0...100 %rh / -30...70 °C
(03-99)		03		PUR connection cable (03 m standard, max. 99 m)
		T7		7-pin Tuchel connector (not for passive 4-wire Pt100)
		00		Open ends

\*Order HygroClip probe HC2-S3 separately  
(Meteo probe with direct dew point output available on request)

## HYGROCLIP HC2-S3 (AIRCHIP3000)

### Applications

Meteorology stations, building automation systems, agricultural meteorology

### Use

Meteorology probe MP102H & MP402H series, OEM applications

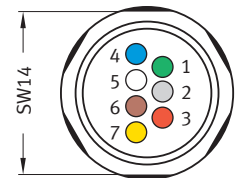
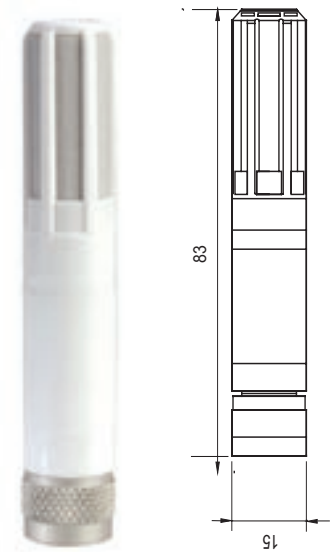
### Highlights

- Measures relative humidity, temperature and dew/frost point
- Hygromer® V-1 sensor
- Saves up to 2,000 measurement pairs \*
- Range of application 0...100 %rh / -50...100 °C
- UART interface and freely scalable analog signals 0...1 V
- Standard scaling 0...1 V = 0...100 %rh / -40...60 °C
- Probe with adjustment profile «Standard», factory certificate

Order code	HC2-S3	HC2-S3H
Adjustment	At 23 °C and 10, 35, 80 %rh	
Accuracy	±0.8 %rh / ±0.1 K	±0.5 %rh / ±0.1 K
Probe	Ø15 x 85 mm	
Color	White	
Housing	Polycarbonate	
Filter	Polyethylene, white ~ 40 µm pore size	

Order code	HC2-R3
Probe	Interchangeable probe with new humidity sensor

\* Requires HW4 software



Electrical connections:  
(all HygroClip2 probes with connector)

- 1 ● V+ (3.2 VDC to max. 5 VDC, ±0%; recommended: 3.3 VDC)
- 2 ● GND (ground, digital and power)
- 3 ● RXD (UART)
- 4 ● TXD (UART)
- 5 ○ Analog signal %rh (0...100 %rh=0...1 V)
- 6 ● Analog signal °C (-40...60 °C = 0...1 V)
- 7 ● AGND (analog ground)

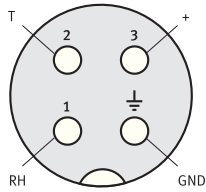
## ANALOG METEOROLOGY PROBES

Standard meteorology probes with fixed sensors; analog technology  
Hygromer® V-1 sensor

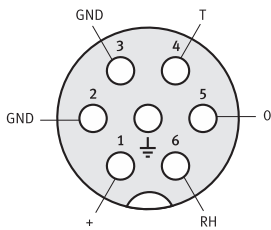
Order code	MP100A-xx	MP400A-xx
Output	Linear voltage output	Linear current output
Precision	Long term stability < 1 %rh / year	
Resistance	Condensation, thawing and dust particles	
Range of application	-40...60 °C	
Measurement	Temperature with Pt100 – direct or linear output signal	
Cable length	Cable-length compensation – no measurement deviations at a distance of up to 100 m	
Filter	Wire filter ~ 20 µm pore size	



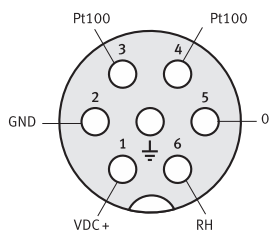
Pin configuration of the Tüchel connector plug for MP100 & MP400 series



Tüchel T4



Tüchel T7 MP100



Tüchel T7 with separate Pt100

Order code			
MP100A-		Output signals: voltage	
MP101A-		0...1 VDC = 0...100 %rh	-0.4...0.6 V = -40...60 °C
MP102A-		0...1 VDC = 0...100 %rh	0...1 V = -30...70 °C
MP103A-		0...1 VDC = 0...100 %rh	0...1 V = -40...60 °C
MP106A-		0...1 VDC = 0...100 %rh	Separate Pt100 in 4-wire circuit
MP400A-		Output signals: current	
MP400A-		0...20 mA = 0...100 %rh	Pt100, 4-wire passive
MP401A-		4...20 mA = 0...100 %rh	Pt100, 4-wire passive
MP402A-		4...20 mA = 0...100 %rh	2-wire, only %rh
MP403A-		4...20 mA = 0...100 %rh	2-wire / Pt100 4-wire passive
MP404A-		0...20 mA = 0...100 %rh	0...20 mA = 0...100 °C
MP405A-		0...20 mA = 0...100 %rh	0...20 mA = -40...60 °C
MP406A-		0...20 mA = 0...100 %rh	0...20 mA = -30...70 °C
MP407A-		4...20 mA = 0...100 %rh	4...20 mA = 0...100 °C
MP408A-		4...20 mA = 0...100 %rh	4...20 mA = -40...60 °C
MP409A-		4...20 mA = 0...100 %rh	4...20 mA = -30...70 °C
Common parameters			
	T4		Signals & supply to Tüchel 4-pin connector plug on the probe
	T7		Signals & supply to Tüchel 7-pin connector plug on the probe
	CG		PUR cable, grey
	02		Cable length (02 -99) in m
	C4		Cannon 4-pin connector plug at the end of the cable
	00		Open ends, tin-plated
	- W4W		Sensor protection: wire filter

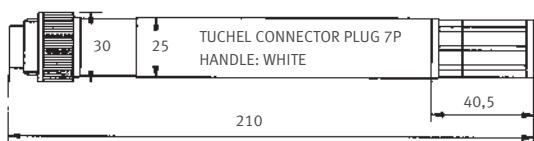
## Order codes, standard probes:

Humidity range: 0...100 %rh = 0...1 V (MP100A) or 4...20 mA (MP400A)

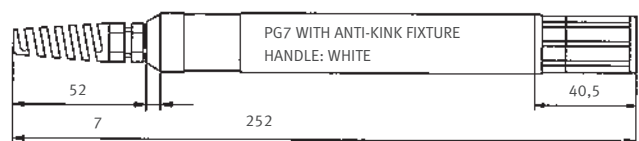
Order code	Range (°C)	Connector	Cable compensation
MP101A-T4-W4W	-0.4...0.6 V = -40...60 °C	Tüchel 4-pin connector plug	No
MP101A-T7-W4W	-0.4...0.6 V = -40...60 °C	Tüchel 7-pin connector plug	Yes
MP408A-T4-W4W	4...20 mA = -40...60 °C	Tüchel 4-pin connector plug	No
MP408A-CGXX-W4W	4...20 mA = -40...60 °C	Open ends	No

XX = length in m

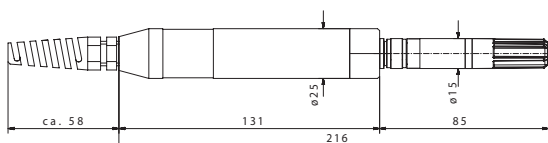
## Dimensional drawings



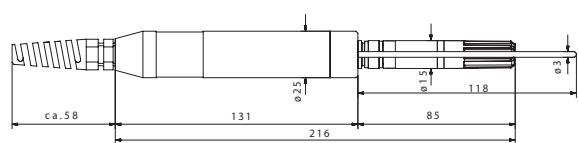
MP100A-T7



MP100A-CG



MP102H / MP402H /-0



MP102H / MP402H /-3/-5/-A

## HYGROCLIP PROBES for agricultural and other outdoor applications

New cable probes for agricultural and outside applications are equipped with a fast sensor and new filter technology which offers significantly improved protection against the growth of biofilm. Typical applications: weather stations and data recording systems.

### Applications

Agriculture, OEM and meteorology

### Use

Handheld devices, data loggers, transmitters, OEM products

### Highlights

- Measures relative humidity, temperature and dew/frost point
- Hygromer® V-1 sensor
- Saves up to 2,000 readings measurement pairs \*
- Range of application 0...100 %rh / -50...100 °C
- UART interface and freely scalable analog signals 0...1 V
- Standard scaling 0...1 V = 0...100 %rh / -40...60 °C
- Probe with adjustment profile «Standard», factory certificate

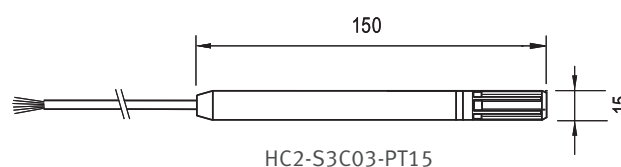
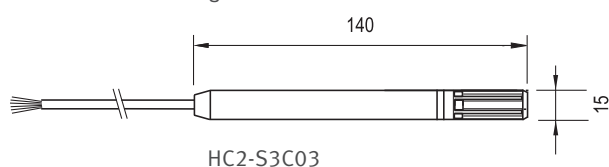
Order code	HC2-S3C03	HC2-S3C03-PT15
Adjustment	At 23 °C and 10, 35, 80 %rh	
Accuracy	±1 %rh / ±0.2 K	±1 %rh / ±0.1 K (passive Pt100)
Filter	Polyethylene, white ~ 40 µm pore size	
Color	White	
Probe	3 m TPU open-ended cable probe	PT100 1/5 Class B
Voltage	5...24 VDC / 5...16 VAC	
Dimensions	Ø15 x 140 mm	On request

\* Optional, requires HW4 software



TECHNOLOGY

### Dimensional drawings



## METEOROLOGY

### Adapter with voltage regulator for meteorological applications (permissible voltages 5...24 VDC / 5...16 VAC)

Order code	Adapter
E3-01XX-ACT	Adapter with voltage regulator for HC2-S3 probe, 1 m cable, open-ended
E3-02XX-ACT	Adapter with voltage regulator for HC2-S3 probe, 2 m cable, open-ended
E3-05XX-ACT	Adapter with voltage regulator for HC2-S3 probe, 5 m cable, open-ended

### Specifications MP-100/400 series

Series	MP102H	MP402H	MP100A (analog)	MP400A (analog)
Output signal type	Voltage	Current	Voltage	Current
Supply voltage	5...24 VDC	15...24 VDC  V min = 10 V + (0.02 x load*)	4.8...30 VDC	MP402/403: 8 V+ (0.02 x load) Others: 5 V+ (0.02 x load) max. 26 VDC
Current consumption	<6 mA	<50 mA	6 mA	20 mA / 2x20 mA
* Load (in $\Omega$ )	>1 k $\Omega$	<500 $\Omega$	>1 k $\Omega$	<500 $\Omega$
Cable-length compensation	Yes	N/A	Up to 99 m	N/A
Range of application electronics	-40...85 °C	-40...85 °C	-40...60 °C 0...100 %rh	-40...60 °C 0...100 %rh
Humidity measurement range	0...100 %rh	0...100 %rh	0...100 %rh	0...100 %rh
Temperature measurement range	Freely scalable	Freely scalable	According to order number	According to order number
Humidity sensor	N/A, HC2-S3 probe	N/A, HC2-S3 probe	Hygromer® V-1	Hygromer® V-1
Temperature sensor	N/A, HC2-S3 probe	N/A, HC2-S3 probe	Pt100 1/3 Class B	Pt100 1/3 Class B
Separate Pt100 DIN (optional)	According to order number	According to order number	N/A	N/A
Accuracy (humidity)	Same as HC2-S3 probe	Same as HC2-S3 probe	10...95 %rh: $\pm 1.5$ %rh, <10, >95 %rh: $\pm 2.5$ %rh	
Accuracy (temperature)	Same as HC2-S3 probe	Same as HC2-S3 probe	$\pm 0.3$ K	$\pm 0.3$ K
Reproducibility	Same as HC2-S3 probe	Same as HC2-S3 probe	<0,5 %rh/ $\pm 0.1$ K	<0,5 %rh/ $\pm 0.1$ K
Long term stability (humidity sensor)	< $\pm 1$ %rh/year	< $\pm 1$ %rh/year	< $\pm 1$ %rh/year	< $\pm 1$ %rh/year
Response time	<12 s	<12 s	<12 s	<12 s
Adjustment points				
Humidity (analog)	N/A	N/A	35, 80, H(min.)	35, 80, H(min.)
Temperature (analog)	N/A	N/A	Tmin, Tmax	Tmin, Tmax
Humidity & temperature (digital)	Adjustment of the probe	Adjustment of the probe	N/A	N/A
Housing material	POM	POM	POM	POM
Protection	IP 65	IP 65	IP 65	IP 65
Weight	Approx. 200 g	Approx. 200 g	Approx. 200 g	Approx. 200 g