

Humidity, Temperature & Dew Point Transmitter with Replaceable “Humi-chip” Module H3 line and H5 line

The **H3** and **H5** transmitters determine measurements by means of a highly accurate condensation resistant capacitive sensor integrated in a silicon microchip.

This technology provides accurate process measurements, reliability and excellent long-term stability.

Accurate Dew Point calculation is obtained by the integrated humidity and temperature sensors.

The “**Humi-chip**” module that incorporates the sensor can be easily replaced without the need for re-calibration;

“**Humi-chip**” **environmental limits:**

-30...+90°C;

Stability:

Long-term drift <0.5 RH% per year;

Two isolated analogue outputs:

selectable for Relative Humidity (RH), Temperature (T), Dew Point (DP), Temperature and Dew Point Temperature difference (ΔT);

Alarm:

Relay output programable for UR, T, DP, ΔT ;

Real Time Clock (RTC):

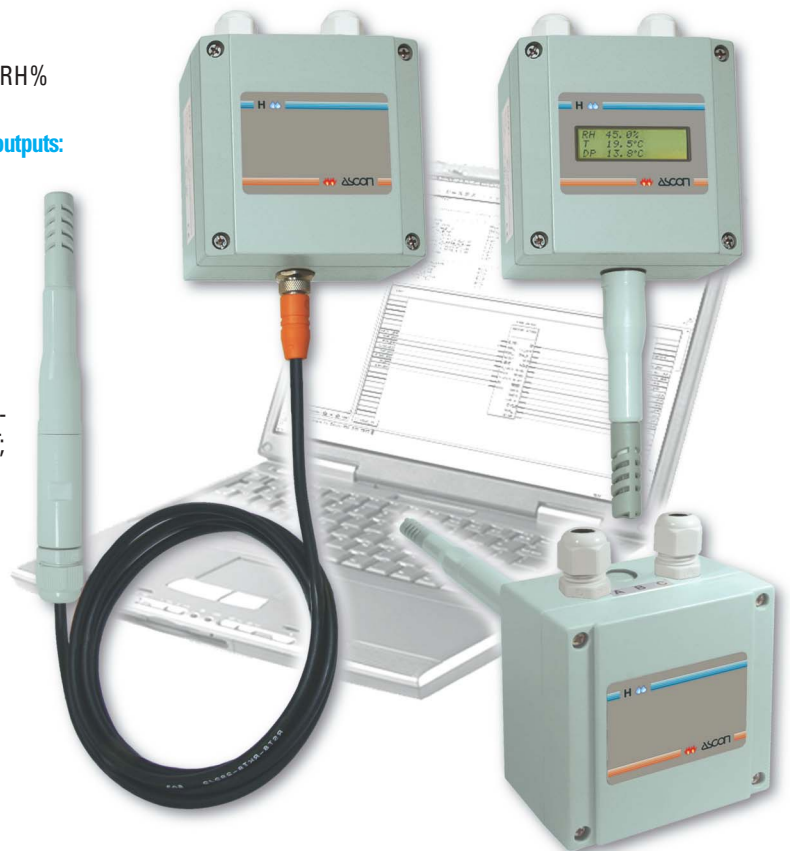
to trace events and correctly store data;

Serial communications:

RS485 Modbus RTU for digital retransmission and PC configuration;

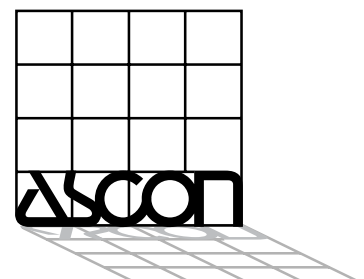
Enclosure rating:

IP66.



E

ISO 9001 Certified



Not only Humidity

but also Dew Point, ΔT , Ser

Hardware and functions

H3 and H5 transmitters can be either wall or duct mounted or remote sensor mounted. The painted aluminum housing with connectors or terminal connections is IP66 rated for industrial applications and field installation.

The standard H3 model measures humidity and temperature on a digital display. Two analogue outputs and serial communications are optional.

The standard H5 model calculates the dew point and the difference between the temperature and the Dew Point temperature (ΔT). Options include alarms, event tracing and data logging.

Busses, Interfaces and Gateways

H3 and H5 transmitters have standard Modbus Protocol RS485 Serial Communications.

The serial port enables the operator to connect supervisory software, via PC, to accurately monitor the measurements, alarm status and stored data.

For fieldbus connection, Ascon offers two Gateway Manager modules:

- **DX** to connect Profibus or DeviceNet
- **DY** to connect CANopen and Ethernet with ModbusTCP protocol and possible integrated Webserver.

Fully software configurable.

3 line LCD to display:
measured values, alarms
and service messages



Humi-chi

pre-calibrated and

Stainless steel wire mesh filter (quickly replaceable)

Polycarbonate probe sheath (duct version)

"Humi-
with capac
stable and

Artificial snow making



Air conditioning and ventilation
in pharmaceutical industries



Supervisor



DY Module



ModBus TCP
or
CANopen

RS485 ModBus
to configure,
set parameters
and supervision

and Temperature, rial Communications and...

Enclosure rating: IP66.
Connections: screw terminals with M16
conduit or 5 pole M12 connectors

Module

and easily replaceable

Wire mesh filter
protection

Stainless steel
sintered filter

Teflon filter

"chip"® Module
sensitive sensor, accurate,
moisture resistant

DX Module

PROFIBUS or
DeviceNet or
Modbus

Configuration

Includes process
measurements alarms

Event storing and Data logging

The H5 model stores event details and Data Logging.

Alarm event details including measured values, date, time and duration are stored using the internal Real Time Clock (RTC).

Measured Data Logging values are stored on an operator determined cycle.

The FIFO memory writes data to an EEPROM that cannot be modified by the operator.

The Alarms

The H5 model allows the operator to configure up to 5 alarms which can be combined with any of the system measurements: Humidity, Temperature, DP, ΔT and **Humi-chip** break.

Each alarm can be configured as minimum or maximum, absolute, deviation or band threshold, instantaneous or delayed, inhibit at activation (Blocking) or acknowledge (Latching).

Alarms can be addressed to a relay output.

Aligning

Transmitters are factory calibrated and no further calibrations are required even after replacing the **Humi-chip** sensor. Humidity and/or Temperature measurements can be aligned by using measurements taken from a reference transmitter. The alignment is made on 1 or 2 points and minimizes measurement errors in real working conditions. The easy sensor calibration requires no accessories.

Storerooms to ripen and preserve fruit and vegetables ...



Storerooms for seasoning meat and cheese ...

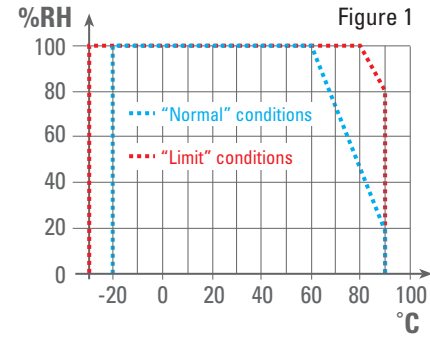


Characteristics at 25°C ambient temperature

Note: Data highlighted in blue apply only to the H5 line.

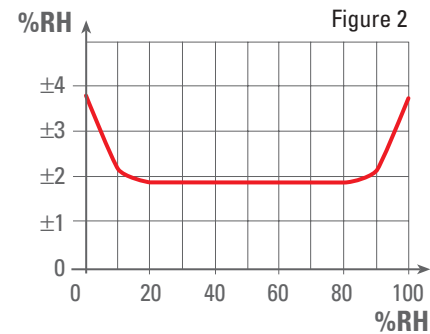
Relative Humidity (RH)	Range	0.0...100.0% RH
	Resolution	12 bit
	Sampling time	1/s
	Temperature limits	-30... +90°C (figure 1)
	Accuracy (figure 2)	1.8% between 10... 90% RH, non-linearity, hysteresis and repeatability included
Temperature (T)	Typical long-term drift	< 0.5 RH% per year
	Available ranges	-30.0... +70.0°C (-22... +158°F)
		-20.0... +30.0°C (-4... +86°F)
		0.0... +50.0°C (32... 122°F)
		0.0... +100.0°C (32... 212°F)
	Other ranges on request in range -40.0... +128.0°C (-40... +262.4°F)	
Resolution	14 bit	
Accuracy (figure 3)	<0.5°C between 0... +50°C (32... 122°F)	
RTD output - alternative to mA or V output	(PT100 IEC 751) Tolerance: Class A (1/2 DIN) - 3 wire connection (figure 3)	
Dew Point (DP)	Available ranges	-30.0... +70.0°C (-22... +158°F) 0.0... +100.0°C (32... 212°F) Other ranges on request in °C or °F
	Accuracy (figure 4)	<1°C between 30... 100% RH and -20... +90°C (-4... +164°F)
ΔT between T and DP	Range	0.0... 50.0°C (32... 122°F)
Analogue outputs 1 and 2	Output type	4... 20 mA; 500 Ω max.
		0... 10 V; 20 mA max.
		0... 1 V; 20 mA max.
	Isolation	0... 20 mA and 0... 5 V can be set through the serial port
Retransmitted measurement	Galvanic isolation of each output: 500 Vdc/1 min	
Serial communications	Typically analogue output 1 transmits RH, analogue output 2 transmits T (H5 can transmit also DP or ΔT)	
	Typical accuracy	Typically analogue output 1 transmits RH, analogue output 2 transmits T (H5 can transmit also DP or ΔT)
LCD Display	Type	Isolated 3 wires RS485, with protocol Modbus RTU Slave
	Baud Rate	Selectable up to 19,200 Baud
	Type	3 lines of 16 characters
	Line height	3.65 mm
LCD Display	Usage	Configuration and display messages
	Indication (menu selectable)	Humidity RH: 0.0... 100.0% RH Temperature T: -30.0... +100.0°C (-22... +212°F) Dew Point DP: -30.0... +100.0°C (-22... +212°F) (H5 only) ΔT = T - DP: 0.0... 50.0°C (32... 122°F) (H5 only)
	Alarms	Number: 5, combinable with each measure (RH, T, DP, ΔT) or Humi-chip break Type: Min./Max., delayed and/or stored Output type: 1 Relay SPST, max. 1 A at 30Vdc or at 120Vac, directly activated by each alarm or with AND/OR logic
Process auditing	Recording method	FIFO buffer in non volatile memory (1,024 records). Data cannot be altered. Record format: event type, RH, T, DP, ΔT and date/time. 5 recording methods available
	Event logging	When an alarm occurs, the system starts storing the event records at a rate different from the data logging rate
	Data logging	The measured values are cyclically recorded. Recording timing: 1... 59 min
Power supply	18... 27Vac or 20... 30Vdc	Power consumption 2W max.
General characteristics	Housing material	Polycarbonate (RAL 7038)
	Probe material	Protection: IP66
	Safety	Polycarbonate Compliance to EN 61010-1, double isolation, pollution class 2, installation class II
	Electromagnetic compatibility	Compliance to CE standards EN 50081-2, EN 50082-2
	Housing environmental temperature	-25... +70°C (-13... +158°F) without display -20... +60°C (-4... +140°F) with display
	Electrical connections	Standard: spring terminal strip, AWG28-16 wire or 5 pole M12 threaded connector, AWG20 wire
	Overall dimensions	See page 5

Working limits of "Humi-chip" module

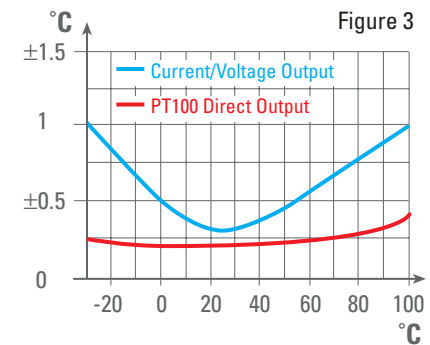


The measured reading accuracy is guaranteed through the "Normal" working conditions. A long-time period, at "Limit" conditions may generate a permanent drift up to +2 RH %.

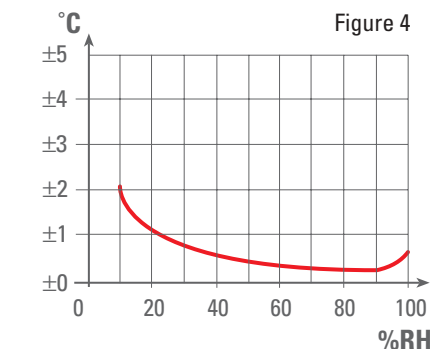
Humidity accuracy



Temperature accuracy



Dew Point calculation accuracy

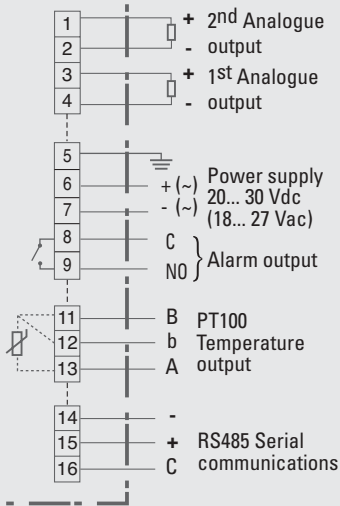


Available functions	H3	H5
Humidity + Temperature	S	S
Dew Point and ΔT calculations		S
Analogue output 1	0	0
Analogue output 2	0	0
LCD display	0	0
Serial port (RS485 Modbus)	0	
Serial port (RS485 Modbus)		0
+ Alarms + Events + Data logging		0

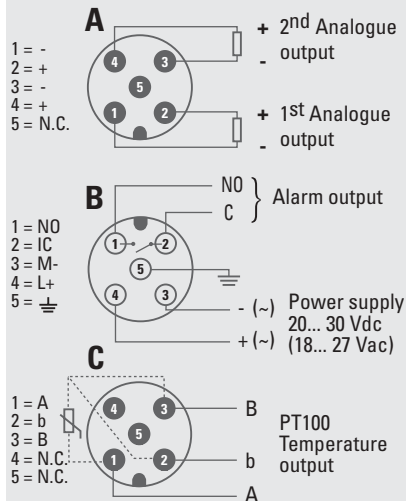
S = Standard; 0 = option

Electrical wiring

Version with internal removable spring terminal strip

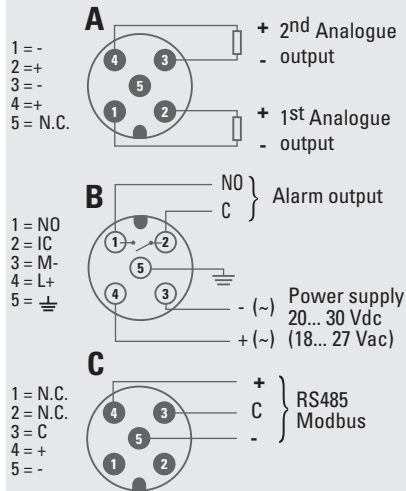


Version with 5 pole M12 connector Models with PT100



Connectors **A** and **C** = Male
Connector **B** = Female
N.C. = Not Connected

Models with RS485 Serial Communications port

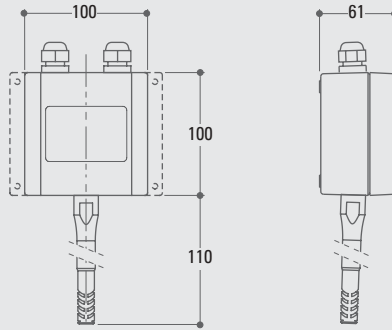


Connectors **A** and **C** = Male
Connector **B** = Female
N.C. = Not Connected

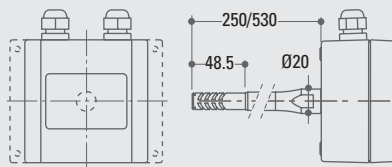
Dimensions

Mounting

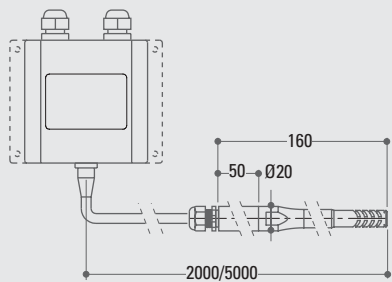
Wall mounting



Duct mounting

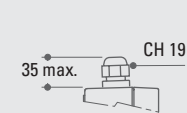


Remote sensor mounting

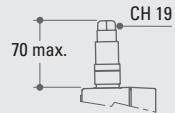


Output

Conduit M16

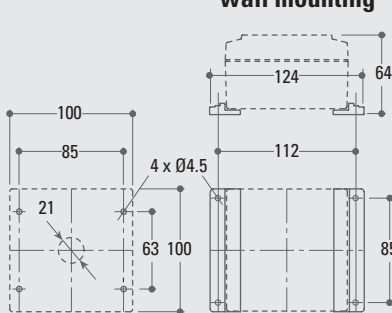


M12 Connector

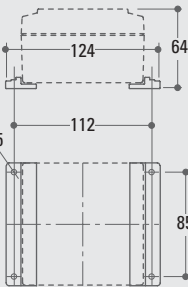


Mounting holes

Standard



Brackets for wall mounting



Accessories and spares

"Humi-Chip®" module

Easy and fast replacement
(no calibration needed)

Ordering code:

Model: **AH-HUMICHIP**



Wire mesh stainless steel filter

with threaded filter protection
Porosity: 25 µm
Response time: 5 s (0...63%)
Suitable for clean environments (no dust and moderate wind conditions)

Ordering code:

Model: **AH-FRI25**



Stainless steel sintered filter

with threaded connection
Porosity: 5 µm
Response time: 10 s (0...63%)
Suitable for dusty environments; not moisture resistant

Ordering code:

Model: **AH-FS105**



Teflon filter

with threaded connection
Porosity: 10 µm
Response time: 120 s (0...63%)
Suitable for aggressive chemical environments, not suitable with high grade humidity

Ordering code:

Model: **AH-FT10**

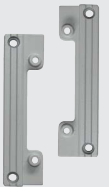


Mounting brackets

for wall mounting
Material: epoxy painted aluminum (RAL 7038)
Distance between centers: 112 x 85

Ordering code:

Model: **AH-SFE2**

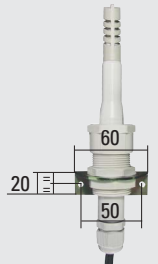


Wall mounting bracket for remote sensor

Material: SS DIN 1.4401
2 x Ø4 screws holes

Ordering code:

Model: **AH-SMP01**



Adjustable flange Ø100 self-locking

for Ø20 probe
Material: anodized aluminum
No. 4 holes Ø11, distance between centers Ø75

Ordering code:

Model: **AH-FLA20**

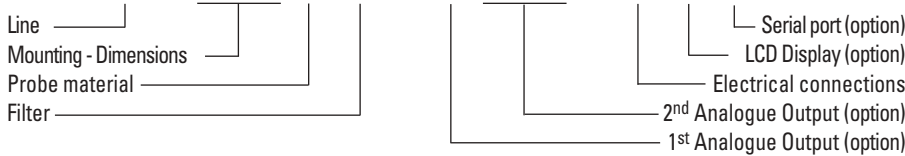




S E R I E S

Ordering codes

Model: **H3** - **A B C D** - **E F G** - **H I L 0**



Mounting	Probe dimensions	A	B
Wall	Ø20 x L110	P	0
Duct	Ø20 x L250	C	2
	Ø20 x L530	C	5
Remote	Ø20 x L160, cable 2m	R	2
	Ø20 x L160, cable 5 m	R	5

Probe material	C
Polycarbonate	0

Filter	D
Stainless steel wire mesh	R
Sintered stainless steel	S
Teflon	T

1st Analogue Output - Humidity	E
Not fitted	0
4... 20 mA / 0... 100% RH	1
0... 10 V / 0... 100% RH	2
0... 1 V / 0... 100% RH	3

Example: **H3-C20R-111-MD00**

Note [1]: In the version with two M12 connectors the RS485 Modbus RTU serial port excludes the PT100 output.

2nd Analogue Output - Temperature	F
Not fitted	0
4...20 mA	1
0...10 V	2
0... 1 V	3
PT100 - Compliance with IEC751 [1]	P

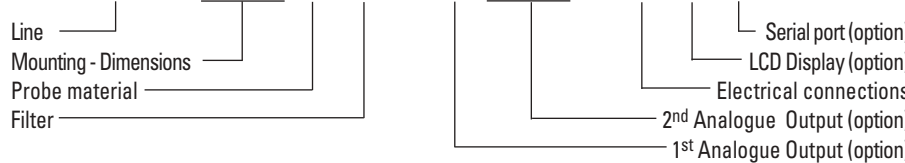
Temperature Range (°F on request) (if F = 0 or F = P)	G
-30... +70°C	1
-20... +30°C	2
0... 50°C	3
0... 100°C	4

Electrical connections	H
Terminals, with M16 conduit	M
2 connectors (M + F) M12, IP66	C

LCD Display (option)	I
Not fitted	0
Internal LCD Display	D

Serial Communications Port	L
Not fitted	0
RS485 Modbus RTU [1]	5

Model: **H5** - **A B C D** - **E F G** - **H I L 0**



Mounting	Probe dimensions	A	B
Wall	Ø20 x L110	P	0
Duct	Ø20 x L250	C	2
	Ø20 x L530	C	5
Remote	Ø20 x L160, cable 2m	R	2
	Ø20 x L160, cable 5 m	R	5

Probe material	C
Polycarbonate	0

Filter	D
Stainless steel wire mesh	R
Sintered stainless steel	S
Teflon	T

1st Analogue Output - Humidity [1] - [2]	E
Not fitted	0
4... 20 mA / 0... 100% RH	1
0... 10 V / 0... 100% RH	2
0... 1 V / 0... 100% RH	3

Example: **H5-R50R-141-MD50**

Notes:

- On request, the 1st analogue output can be used for **T**, **DP** or ΔT .
- Other output ranges available (selectable using the serial communications).
- Temperature ranges suggested:
DP: -30...+70°C or 0...100°C
 ΔT : 0...50°C.
- In the version with two M12 connectors the RS485 Modbus RTU serial port excludes the PT100 output.

2nd Analogue Output - Temperature [2]	F	
Not fitted	0	
Temperature T	4... 20 mA	1
	0... 10 V	2
	0... 1 V	3
	PT100 - IEC751 compliant [4]	P
Dew Point DP	4... 20 mA	4
	0... 10 V	5
	0... 1 V	6
ΔT T - DP	4... 20 mA	7
	0... 10 V	8
	0... 1 V	9

Temperature Range [3] (°F on request) (if F = 0 or F = P)	G
-30... +70°C	1
-20... +30°C	2
0... 50°C	3
0... 100°C	4

Electrical connections	H
Terminals, with M16 conduit	M
2 connectors (M + F) M12, IP66	C

LCD Display (option)	I
Not fitted	0
Internal LCD Display	D

Serial Communications + Special Functions	L
Not fitted	0
RS485 Modbus + Alarms + Events + Data logging [4]	5

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