ASCON TECNOLOGIC

B.T. 15.03.H3.5/E

H SERIES

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 sensor must not be used in presence of chemical contaminants or aggressive compounds.

The "Humi-chip" module that incorporates the sensor can be easily replaced without the need for recalibration;

"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 outptut programmable 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

Ascon Tecnologic srl
via Indipendenza 56, 27029 Vigevano (PV)
Tel.: +39-0381 69 871, Fax: +39-0381 69 8730
Web site: www.ascontecnologic.com
E-mail: vendite@ascontecnologic.com

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.

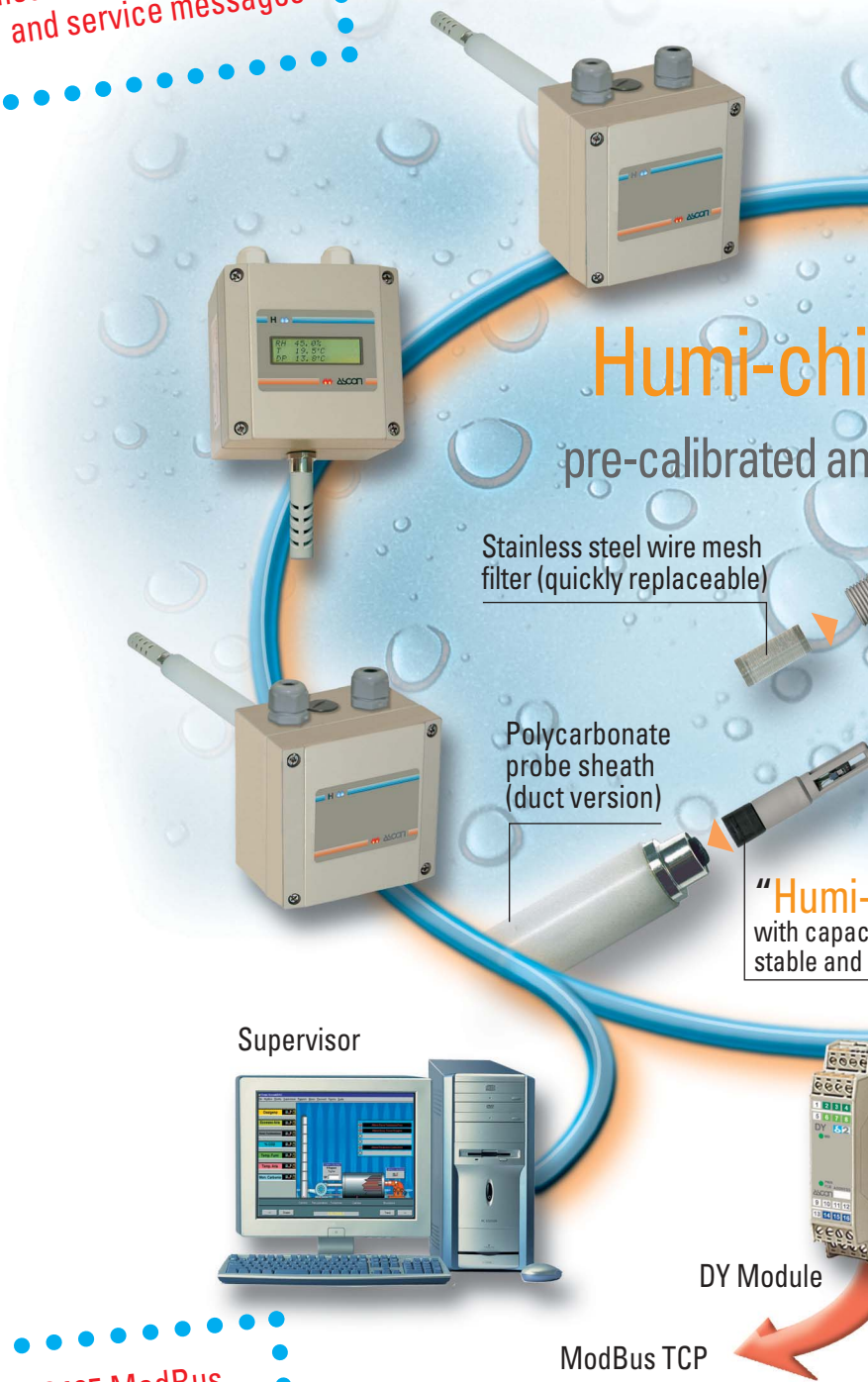
The serial port enables the operator to connect supervisory software, via PC, to accurately monitor the measurements, alarm status and stored data.

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



RS485 ModBus to configure, set parameters and supervision

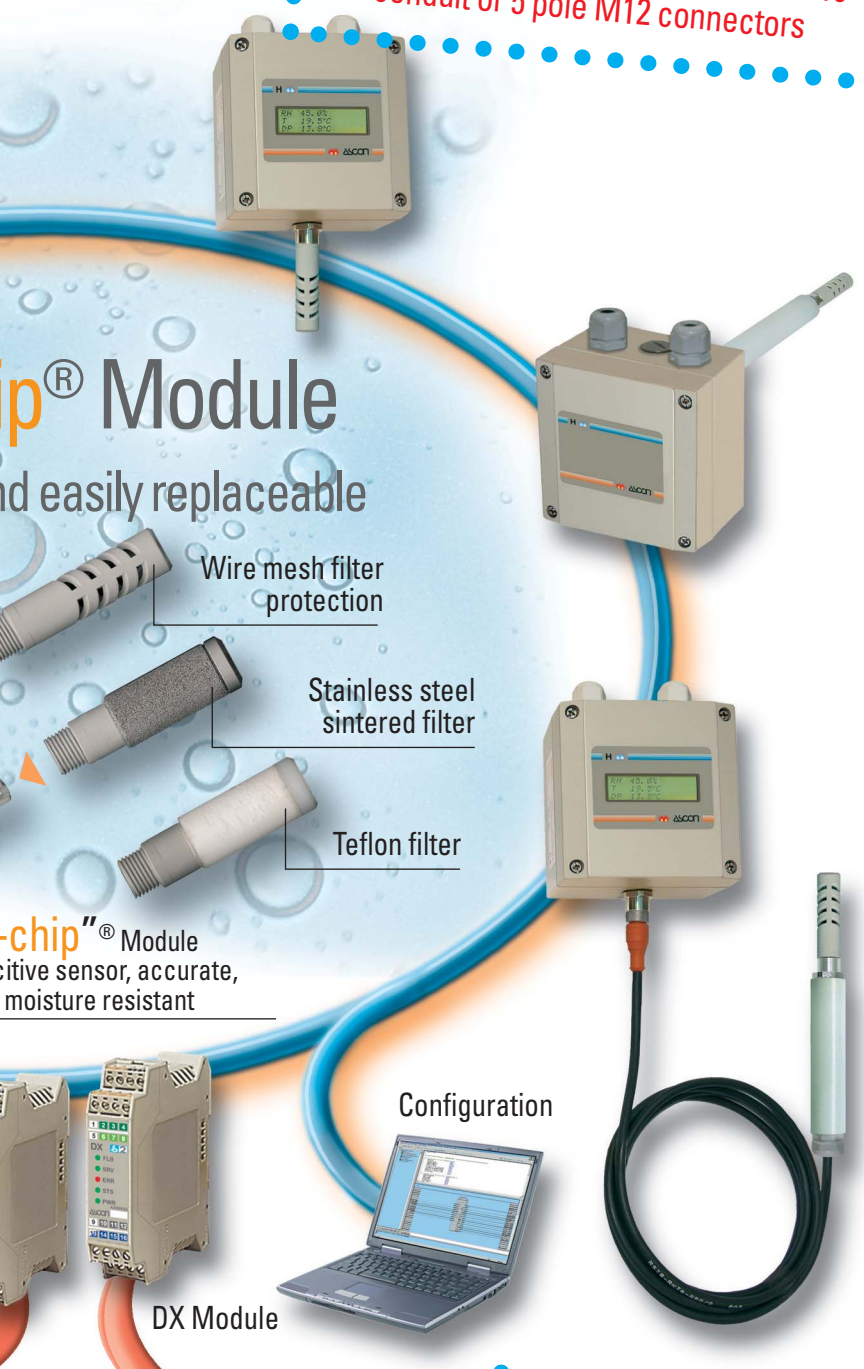
Artificial snow making

Air conditioning and ventilation in pharmaceutical industries

and Temperature,

rial Communications and…

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



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, istantaneous 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 ...

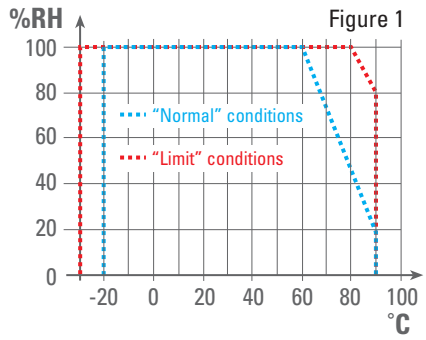
Characteristics at 25°C ambient temperature

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
	Typical long-term drift	< 0.5 RH% per year
Temperature **(T)**	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.
		0... 20 mA/0... 5 V can be set through the serial port (H5 only)
	Isolation	Galvanic isolation of each output: 500 Vdc/1 min
	Retransmitted measurement	Typically analogue output 1 transmits **RH**, analogue output 2 transmits **T** (H5 can transmit also DP or ΔT)
Serial communications	Type	Isolated 3 wires RS485, with protocol Modbus RTU Slave
	Baud Rate	Selectable up to 19,200 Baud
LCD Display	Type	3 lines of 16 characters
	Line height	3.65 mm
	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)
		Protection: IP66
	Probe material	Polycarbonate
	Safety	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
	Overall dimensions	See page 5

Working limits of "Humi-chip" module

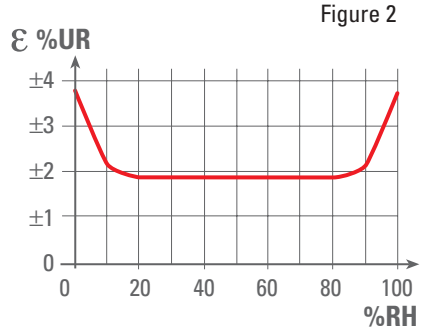
Figure 1



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.

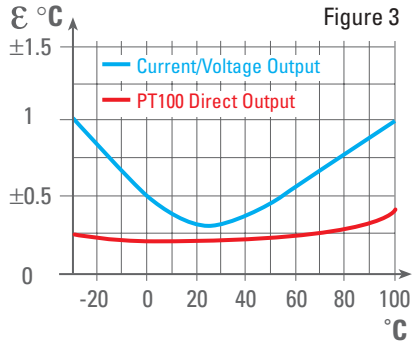
Humidity accuracy

Figure 2



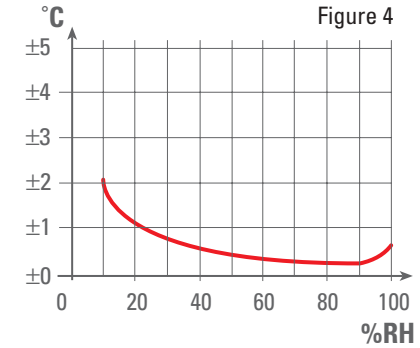
Temperature accuracy

Figure 3



Dew Point calculation accuracy

Figure 4

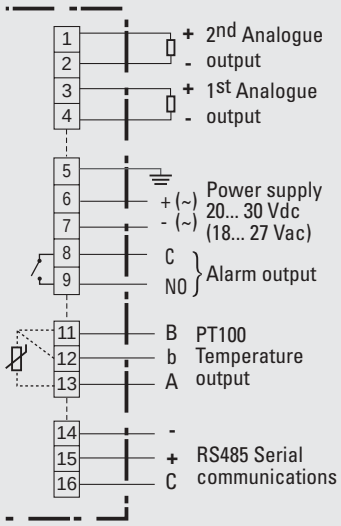


Available functions	H3	H5
Humidity + Temperature	S	S
Dew Point and ΔT calculations		S
Analogue output 1	O	O
Analogue output 2	O	O
LCD display	O	O
Serial port (RS485 Modbus) + Alarms + Events + Data logging		O

S = Standard; **O** = option

Electrical wiring

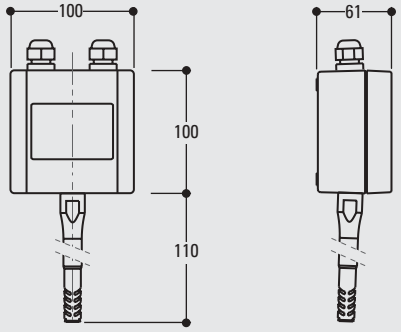
Version with internal removable spring terminal strip



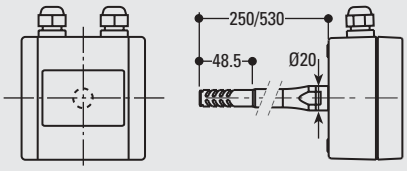
Dimensions

Mounting

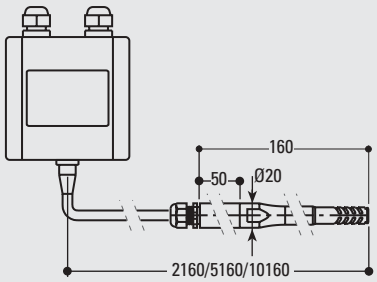
Wall mounting



Duct mounting



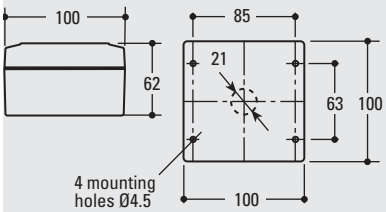
Remote sensor mounting



Output

Conduit M16

Mounting holes



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**

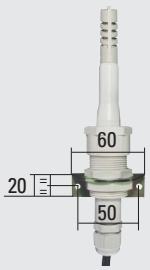
Stainless steel sintered filter
with threaded connection
Porosity: 5 µm
Response time: 10 s (0...63%)
Suitable for dusty environments; not moisture resistant

Ordering code:
Model: **AH-FSI05**

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**

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**

Ordering codes

Model: **H3 - A B 0 D - E F G - M I 0 0**

- Line
- Mounting - Dimensions
- Filter
- 1st Analogue Output (option)
- 2nd Analogue Output (option)
- LCD Display (option)

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
	Ø20 x L160, cable 10 m	R	5

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

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

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

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

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

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

- Line
- Mounting - Dimensions
- Filter
- 1st Analogue Output (option)
- 2nd Analogue Output (option)
- LCD Display (option)
- Serial port (option)

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
	Ø20 x L160, cable 10 m	R	5

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

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

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	5

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

Notes:

[1] On request, the 1st analogue output can be used for **T**, **DP** o **ΔT.**

[2] Other output ranges available (selectable using the serial communications).

[3] Temperature ranges suggested:
DP: -30...+70°C or 0...100°C
ΔT: 0...50°C.

Ascon Tecnologic srl
via Indipendenza 56, 27029 Vigevano (PV)
Tel.: +39-0381 69 871,
Fax: +39-0381 69 8730
Web site:
www.ascontecnologic.com
E-mail:
vendite@ascontecnologic.com