

# 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 ( $\Delta T$ );

**Alarm:**

Relay output programable for UR, T, DP,  $\Delta T$ ;

**Real Time Clock (RTC):**

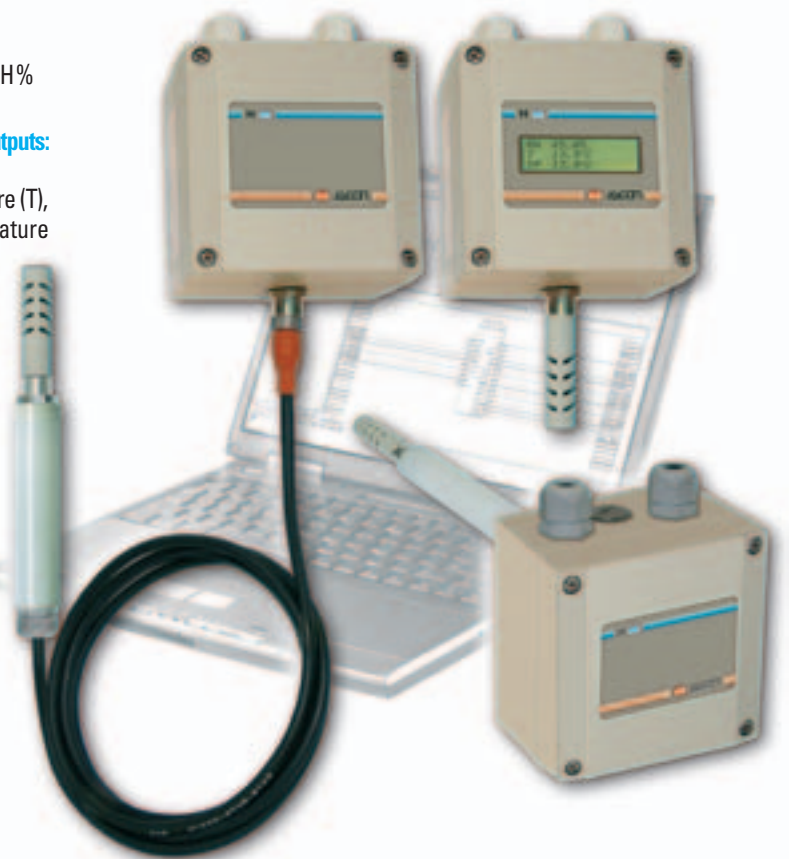
to trace events and correctly store data;

**Serial communications:**

RS485 Modbus RTU for digital retransmission and PC configuration;

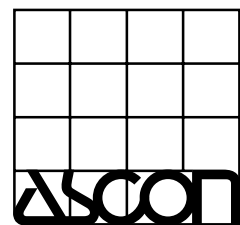
**Enclosure rating:**

IP66.



E

ISO 9001 Certified



# Not only Humidity

## but also Dew Point, $\Delta T$ , 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 ( $\Delta T$ ). 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)

PVDF 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

Configuration

DX Module

PROFIBUS or  
DeviceNet or  
Modbus

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,  $\Delta T$  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 ...

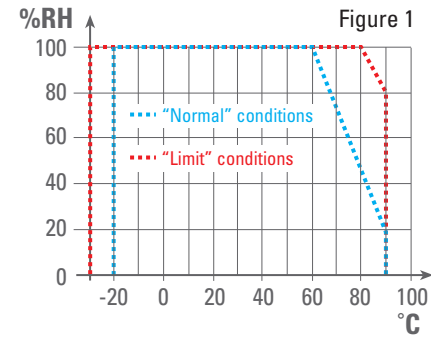


## Characteristics at 25°C ambient temperature

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

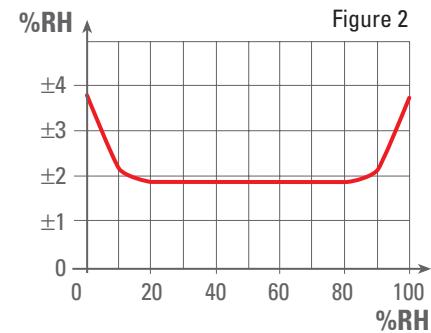
Relative Humidity (RH)	Range	0.0...100.0% RH
	Resolution	12 bit
	Sampling time	1/s
	Temperature limits	-30... +90°C (figure 1)
	Accuracy (figure 2)	1.8% between 10... 90% RH, non-linearity, hysteresis and repeatability included
Temperature (T)	Typical long-term drift	< 0.5 RH% per year
	Available ranges	-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 B (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.
	Isolation	0... 1 V; 20 mA max.
		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 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 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 (H5 only) ΔT = T - DP: 0.0... 50.0 (32... 122°F) (H5 only)
	Indication (menu selectable)	
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 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	Epoxy painted aluminum (RAL 7038) Protection: IP66
	Probe material	PVDF - probe for duct mounting version
	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
	Environmental temperature housing	-25... +70°C standard -20... +60°C with display
	Electrical connections	Standard: spring terminal strip, AWG28-16 wire or 5 pole M12 threaded connector, AWG20 wire
	Overall dimensions	See page 3

### Working limits of "Humi-chip" module

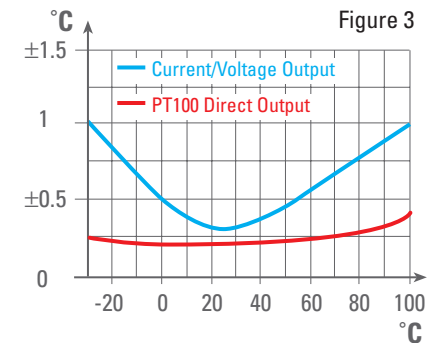


The measured reading tolerance is guaranteed through the "Normal" working conditions. A long-time period, at "Limit" conditions may generate a permanent drift up to +2 RH %.

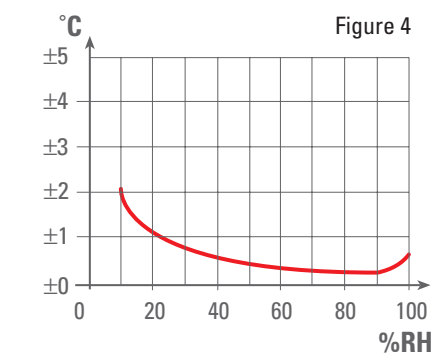
### Humidity Tolerance



### Temperature Tolerance



### Dew Point calculation Tolerance



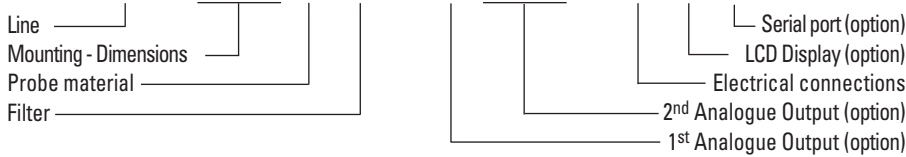
Available functions	H3	H5
Humidity + Temperature	S	S
Dew Point and ΔT calculation	S	S
Analogue output 1	0	0
Analogue output 2	0	0
LCD display	0	0
Serial port (RS485 Modbus)	0	
Serial port (RS485 Modbus)		0
+ Alarms + Events + Data logging		0

S = Standard; 0 = option



## Ordering codes

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



Mounting	Dimensions	A	B
Wall	Ø13 x L52	P	0
Duct	Ø20 x L250	C	2
	Ø20 x L500	C	5
Remote	Ø20 x L100, cable 2m	R	2
	Ø20 x L100, cable 5 m	R	5

Probe material	C
PVDF Plastic	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% UR	1
0... 10 V / 0... 100% UR	2
0... 1 V / 0... 100% UR	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

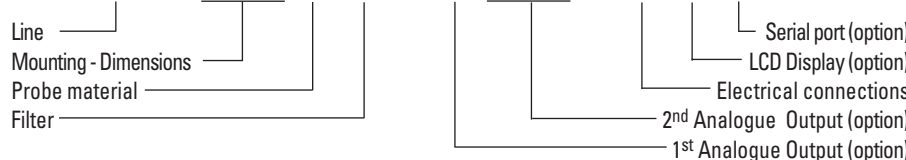
Temperature Range (°F on request) (if F = 0 or F = P)	G
-30... +70°C	1
-20... +30°C	2
0... 50°C	3
0... 100°C	4

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	Dimensions	A	B
Wall	Ø13 x L52	P	0
Duct	Ø20 x L250	C	2
	Ø20 x L500	C	5
Remote	Ø20 x L100, cavo 2m	R	2
	Ø20 x L100, cavo 5 m	R	5

Probe material	C
PVDF Plastic	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% UR	1
0... 10 V / 0... 100% UR	2
0... 1 V / 0... 100% UR	3

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

**Notes:**

- On request, the 1st analogue output can be used for **T**, **DP** or  $\Delta T$ .
- Other output ranges available (selectable using the serial communications).
- Temperature ranges suggested:  
**DP:** -30...+70°C or 0...100°C  
 **$\Delta T$ :** 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 <b>T</b>	4... 20 mA	1
	0... 10 V	2
	0... 1 V	3
	PT100 - IEC751 compliant [4]	P
Dew Point <b>DP</b>	4... 20 mA	4
	0... 10 V	5
	0... 1 V	6
$\Delta T$ <b>T - DP</b>	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

### ASCON spa

Via Falzarego, 9/11  
 20021 Baranzate  
 (Milano) Italy  
 Tel. +39 02 333 371  
 Fax +39 02 350 4243  
<http://www.ascon.it>  
[sales@ascon.it](mailto:sales@ascon.it)

### ASCON FRANCE

2 bis, Rue Paul Henri Spaak  
 ST. THIBAUT DES VIGNES  
 F-77462 LAGNY SUR MARNE  
 - Cedex  
 Tél. +33 (0) 1 64 30 62 62  
 Fax +33 (0) 1 64 30 84 98  
[ascon.france@wanadoo.fr](mailto:ascon.france@wanadoo.fr)

### AGENCE EST

Tél. +33 (3) 89 76 99 89  
 Fax +33 (3) 89 76 87 03

### AGENCE SUD-EST

Tél. +33 (0) 4 74 27 82 81  
 Fax +33 (0) 4 74 27 81 71

### ASCON CORPORATION

1884 East Fabyan Parkway  
 Batavia, Illinois 60510  
 Tel. +1 630 482 2950  
 Fax +1 630 482 2956  
[www.asconcorp.com](http://www.asconcorp.com)  
[info@asconcorp.com](mailto:info@asconcorp.com)

### WORLDWIDE NETWORK OF DIRECT SALES CENTERS, DISTRIBUTORS AND VARs

#### Europe

Belgium, Croatia, Czech Rep., Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Holland, Ireland, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine

#### Americas

Argentina, Brazil, Canada, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela

#### Rest of the world

Algeria, Australia, China, Egypt, Hong Kong, India, Indonesia, Iran, Israel, Malaysia, Morocco, New Zealand, Pakistan, Saudi Arabia, Singapore, Taiwan, Thailand, Tunisia, South Africa & South East Africa, UAE