



## HD 2817T... TRANSMITTER, INDICATOR, ON/OFF REGULATOR, TEMPERATURE AND HUMIDITY DATA LOGGER WITH INTERCHANGEABLE PROBE

The instruments of the HD2817T... serie are transmitters, indicators, and ON/OFF regulators with data logging functions, they measure temperature and humidity.

They are fitted with a graphic 128x64 backlit display.

The main feature of these instruments is their **interchangeable probe**. The probe can be replaced by the user without process interruption. Thus, the probe can be calibrated or repaired at a later time.

The instrument is available in three different versions: with horizontal probe (**S.TO**), vertical probe (**S.TV**) or with remote probe (**S.TC**), having the probe connected to the electronics by means of a cable of various lengths. The S.TO and S.TV probes are made of stainless steel AISI304, the S.TC probes can be of stainless steel AISI304 or POCAN (plastic material). For the measurement of dew point in compressed air systems, the S.TC2.480.2 probe can be used.

The probe is factory calibrated and ready to use, it is provided with a **SICRAM2** module

which stores the calibration data of the probe, allowing its interchangeability. The instruments measure:

- Temperature in Celsius or Fahrenheit scales
  - Relative humidity
- and calculate:
- Dew point
  - Absolute humidity
  - Mixing Ratio
  - Wet bulb temperature

All models have both current and voltage outputs.

Some models are fitted with two control relays and one alarm relay, configurable by the user. All models are fitted with a multistandard RS232/RS485 serial port and an auxiliary RS232C standard serial output. The RS485 serial output allows the management of more than one device in a network.

The models HD2817T... are fitted with a large graphic backlit LCD (128x64 pixel). The display shows contemporaneously three measured physical quantities or the real time graphic of one of the measured quantities.

The **data logger** function allows to store the measures with a selectable storage interval.

The instrument setup remains permanently stored, while the real time clock is protected by an apposite Lithium battery against temporary mains voltage interruptions.

The power supply can be chosen, at the time of placing the order, between 24Vac/dc or universal 90...240Vac.

### Instrument versions and available probes

Relay	
HD2817Tx.DO	Absent
HD2817Tx.DR	2 control relays with change-over contact, 1 alarm relay with normally open contact.

Type of probe	
HD2817Tx.Dx	Instrument with vertical probe <b>S.TV</b> or probe with cable <b>S.TC</b> .
HD2817T0.Dx	Instrument with horizontal probe <b>S.TO</b> .

### Probes complete with SICRAM2 module for instruments HD2817Tx.Dx

<b>S.TV</b>	Vertical probe L= 130mm AISI 304.
The material of the S.TC...probes can be chosen between stainless steel AISI 304 or POCAN plastic material.	
<b>S.TC1.2</b>	Probe L=135mm with cable 2m. AISI304.
<b>S.TC1.2P</b>	Probe L=135mm with cable 2m (POCAN probe)
<b>S.TC1.5</b>	Probe L=135mm with cable 5m. AISI304.
<b>S.TC1.5P</b>	Probe L=135mm with cable 5m (POCAN probe)
<b>S.TC1.10</b>	Probe L=135mm with cable 10m. AISI304.
<b>S.TC1.10P</b>	Probe L=135mm with cable 10m (POCAN probe)
<b>S.TC2.2</b>	Probe L=335mm with cable 2m. AISI304.
<b>S.TC2.2P</b>	Probe L=335mm with cable 2m (POCAN probe)
<b>S.TC2.5</b>	Probe L=335mm with cable 5m. AISI304.
<b>S.TC2.5P</b>	Probe L=335mm with cable 5m (POCAN probe)
<b>S.TC2.10</b>	Probe L=335mm with cable 10m. AISI304.
<b>S.TC2.10P</b>	Probe L=335mm with cable 10m (POCAN probe)

Probe with cable for the measurement of humidity in pipes:

<b>S.TC2.480.2</b>	Length of the cable 2m. Measuring range: -40...+60°C, -40...+60°C DP 1/4" italian standard quick coupling. Working pressure up to 16bar. Measuring chamber made of AISI304.
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Humidity



HD2817T.Dx

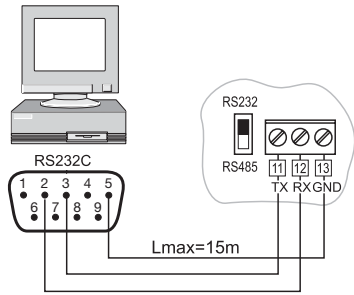


HD2817T0.Dx

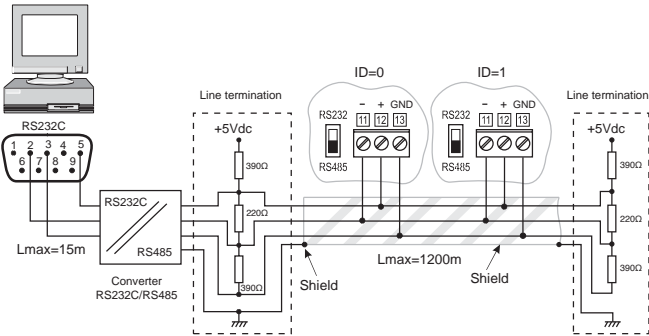


Horizontal probe S.TO2

Probes complete with SICRAM2 module for instruments HD2817T0.xx AISI 304	
S.T01	horizontal probe L= 135mm
S.T02	horizontal probe L= 335mm



**PC connection: instrument with serial communication protocol RS232C.**

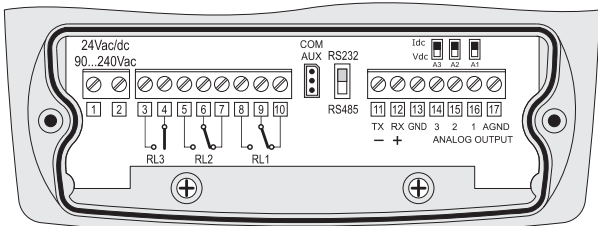


**PC connection: instrument with the RS485 communication protocol for distances up to 1200 m using the RS232C/RS485 converter.**

On both ends of the network, line termination have to be used. To polarize the line during periods of non transmission, resistors connected between the signal line and power line are used. If you need to connect over 32 instruments, insert a signal repeater between a group and the next one. At the beginning and at the end of each segment you should apply the line terminator. The data line should be kept separate from any power line in order to avoid interferences on the transmitted signal. The cable shield should be connected at both ends of the line. The cable should have the following characteristics:

- Impedance 120 Ohm
- Capacity <50pF/m
- Resistance <100 Ohm/km
- Section > 0.22mm<sup>2</sup>, (AVG24)

The maximum cable length depends on the data transmission velocity and on the characteristics of the cable. Typically, the maximum length is 1200m. The data line should be kept separate from any power line in order to avoid interferences on the transmitted signal.



**Terminal board**



**Wall fastening plate**

**Technical specifications (@ 24Vac and 20°C)**

Inputs		
Temperature	Sensor	Pt100 classe 1/3 DIN
	Working range of the sensor	-50 ... +200°C (-58 ... +392°F)
Humidity	Relative humidity %RH	0 ... 100%RH
	Working range of the sensor in temperature	-50 ... +150°C
		(Special configurations up to 180°C available on request)
	Dew point TD	-50 ... +100°C
	Absolute humidity	0 ... 600g/m <sup>3</sup>
	Mixing ratio	0 ... 2000g/kg of dry air
Wet bulb temperature	-50...+100°C	
Accuracy of the measured physical quantity	Temperature Pt100	±0.25°C
	Relative humidity %RH	±1.5%RH (0...90%RH) ±2.0%RH (elsewhere) for T=15...35°C ±(1.5+1.5% of the measured value)%RH in the remaining temperature range
Accuracy of the calculated physical quantity	See table in the following chapter	Accuracy of the Dew point @ T = 20°C ± 2°C DP (-40...-20°C DP) ± 1,5°C DP (-20...0°C DP) ± 1°C DP (0...+20°C DP)
Response time		3min with grid protection (at 20°C and 0.5m/s)

Outputs		
Communications	Type	RS232C and RS485 Multidrop
	Baud Rate	9600 baud 57600 baud non-permanent
Physical quantities	Measured	Temperature, relative humidity
	Calculated	Dew point, absolute humidity, mixing ratio, wet bulb temperature
Analog outputs	Number	3
	Output types	4...20mA; 0...20mA 0...10Vdc; 2...10Vdc
	Load resistance	Current output: 500Ω max Voltage output: 100kΩ min
	Resolution	16bit
	Accuracy analog outputs	±0.05% f.s. @20°C
	In case of measuring error (exceeding of the operating limits, faulty or not connected probe,...)	I <sub>dc</sub> = 22mA V <sub>dc</sub> = 11V
	Relay	Control relay
	Alarm relay	1 x 3A/250Vac Load resistance, 1 with normally-open contact

Instrument		
Power supply	Versions	24Vdc / 24Vac 50...60Hz, ±10%
	Average consumption	90 ... 240Vac 50...60Hz 3W
Data logger	Storage capacity	9000 samples in max. 256 sessions
	Storage type	Circular memory
	Stored parameters	Dew point, temperature, relative humidity, absolute humidity, mixing ratio, wet bulb temperature, analog outputs 1, 2 and 3, relay status 1, 2, 3.
Real time clock	Storage interval	1, 2, 5, 10, 20, 60 seconds, 2 and 4 minutes
	Type	Real time with Lithium buffer battery
Software	Accuracy	±1min/month
		DeltaLog12 for Windows® operating systems, from Windows 98
Display	Graphic backlit LCD	128x64 pixel
Ambient working conditions of the electronics	Operating temperature	-20...+60°C
	Relative humidity	0...90%RH - No condensate
	Static working pressure of the sensors	12 bar max.
	Storage temperature	-30...+80°C
Housing	L x H x W	143x154x61
	Weight	600g
	Material	ABS
	Degree of protection	Electronics IP65

Same specifications reported above apply for S.TC2.480.2 probe (for measuring humidity of the air in pipes), with the following exceptions:

<b>S.TC2.480.2</b>		
Temperature	Measuring range	-40...+60°C
Humidity	Dew point	-40...+60°C DP
Environmental Conditions	Working temperature	-40...+60°C
	Working pressure	16bar max

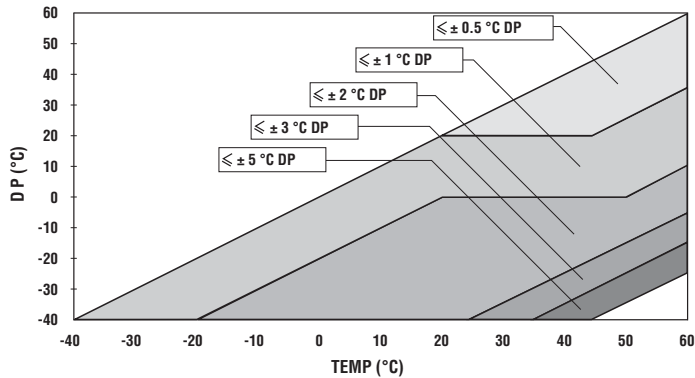
### Accuracy of the calculated physical quantities

The accuracy of the calculated physical quantities depends on the accuracy of the relative humidity and temperature calibration.

### Accuracy of the dew point measurement (DP) as a function of %RH

		Relative Humidity (%)					
		10	30	50	70	90	100
Temperature (°C)	-20	0.92	0.49	0.30	0.22	--	--
	0	1.05	0.56	0.35	0.25	0.20	0.18
	20	1.18	0.75	0.45	0.34	0.27	0.23
	50	1.27	0.88	0.56	0.42	0.33	0.30
	100	1.30	1.17	0.76	0.58	0.47	0.42

### Accuracy of the Dew Point Td (°C)



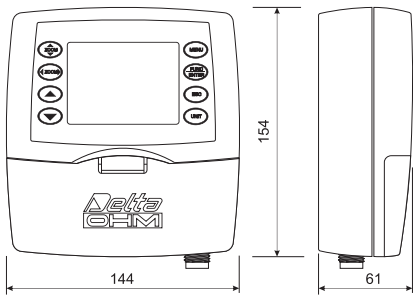
### Accuracy of the absolute humidity (g/m³)

		Relative Humidity (%)					
		10	30	50	70	90	100
Temperature (°C)	-20	0.015	0.020	0.025	0.030	---	---
	0	0.08	0.10	0.11	0.13	0.14	0.15
	20	0.28	0.33	0.40	0.44	0.50	0.55
	50	1.36	1.56	1.74	1.92	2.13	2.19
	100	9.37	10.2	11.3	12.3	13.2	13.5

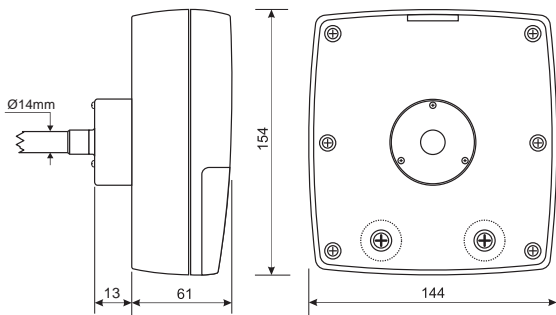
### Accuracy of the mixing ratio (g/kg)

		Relative Humidity (%)					
		10	30	50	70	90	100
Temperature (°C)	-20	0.014	0.017	0.020	0.024	---	---
	0	0.06	0.08	0.09	0.10	0.12	0.13
	20	0.24	0.29	0.34	0.39	0.44	0.45
	50	1.28	1.54	1.85	2.20	2.53	2.66
	100	12.5	23.2	46.2	136.0	---	---

### Dimensions



### Versions HD2817Tx.Dx for vertical probes TV or with cable TC



### Version HD2817T0.Dx for horizontal probes

### Ordering codes

**HD2817T...**: Transmitter, indicator, and ON/OFF regulator for temperature and humidity, with data logging functions. Fitted with 3 analogue current outputs (0...20mA and 4...20mA) or voltage outputs (0...10Vdc and 2...10Vdc). RS232/RS485 serial ports for connection to PC. **Uses interchangeable SICRAM2 probes with a microprocessor** for the storage of the probe's calibration data. **Visualizes the data on a large graphic backlit LCD.** Power supply 24Vac/dc or universal 90...240Vac. Includes software DeltaLog12, instructions manual. **Power supply, type of probe and accessories have to be specified at the moment of placing the order.**

### Models with vertical probe (S.TV) or separated probe with cable (S.TC)

**HD2817T.DO**: Model without relay.

**HD2817T.DR**: Model with configurable control relays (2) and alarm relay (1).

### Models for horizontal duct probe (S.TO)

**HD2817T0.DO**: Model without relay.

**HD2817T0.DR**: Model with configurable control relays (2) and alarm relay (1).

### Interchangeable temperature and humidity probes with SICRAM2 module, vertical S.TV or with cable S.TC

**S.TV**: Vertical probe. Length of stem 130mm. In AISI 304.

The material of the S.TC...probes can be chosen between stainless steel AISI304 or POCAN plastic material.

**S.TC1.2**: Probe with cable. Length of stem 135mm, length of the cable 2m. AISI304.

**S.TC1.2P**: Probe with cable. Length of stem 135mm, length of the cable 2m. Made of POCAN.

**S.TC1.5**: Probe with cable. Length of stem 135mm, length of the cable 5m. AISI304.

**S.TC1.5P**: Probe with cable. Length of stem 135mm, length of the cable 5m. Made of POCAN.

**S.TC1.10**: Probe with cable. Length of stem 135mm, length of the cable 10m. AISI304.

**S.TC1.10P**: Probe with cable. Length of stem 135mm, length of the cable 10m. Made of POCAN.

**S.TC2.2**: Probe with cable. Length of stem 335mm, length of the cable 2m. AISI304.

**S.TC2.2P**: Probe with cable. Length of stem 335mm, length of the cable 2m. Made of POCAN.

**S.TC2.5**: Probe with cable. Length of stem 335mm, length of the cable 5m. AISI304.

**S.TC2.5P**: Probe with cable. Length of stem 335mm, length of the cable 5m. Made of POCAN.

**S.TC2.10**: Probe with cable. Length of stem 335mm, length of the cable 10m. AISI304.

**S.TC2.10P**: Probe with cable. Length of stem 335mm, length of the cable 10m. Made of POCAN.

**S.TC2.480.2**: Probe with cable for the measurement of the dew point in compressed air system. Length of cable 2m. 1/4" italian quick standard coupling. Measuring chamber in AISI304.

### Interchangeable temperature and humidity probe with SICRAM2 module, horizontal S.TO

**S.TO1**: Horizontal probe for instrument HD2817T0.xx. Length of stem 135mm. AISI304.

**S.TO2**: Horizontal probe for instrument HD2817T0.xx. Length of stem 335mm. AISI304.

### Accessories

**RS27**: RS232 null-modem serial connection cable with 9 poles sub-D female connector and 3 pole connector for COM AUX port. (Included in the supply of the instruments without display).

**CP27**: USB to COM AUX serial converter.

**DeltaLog12**: Further unit of software for PC connection, data download, instrument setup, and management of an instrument network. For Windows® operative systems

**HD75**: 75%RH saturated solution for checking the relative humidity sensor, complete with thread for probes with  $\varnothing$  14mm and  $\varnothing$  26mm.

**HD33**: 33%RH saturated solution for checking the relative humidity sensor, complete with thread for probes with  $\varnothing$  14mm and  $\varnothing$  26mm.

**HD9008.21.1**: Flange with support,  $\varnothing$  26mm hole for the installation of S.TC probes in vertical position, 250mm distance from the wall. The probes of the series S.TC require the adapter HD9008.26/14 from  $\varnothing$  26mm to  $\varnothing$  14mm.

**HD9008.21.2**: Flange with support,  $\varnothing$  26mm hole for the installation of S.TC in vertical position, 125mm distance from the wall. The probes of the series S.TC require the adapter HD9008.26/14 from  $\varnothing$  26mm to  $\varnothing$  14mm.

**HD9008.26/14**: Adapter from  $\varnothing$  26mm to  $\varnothing$  14mm for the supports HD9008.21.1 and HD9008.21.2, for probes of the series S.TC.

**HD9008.31**: Wall flange with cable outlet to fix probes with  $\varnothing$  14mm.

**PG16**: Stainless steel gland (AISI304) for probes with  $\varnothing$  14mm.

**P6**: 10 $\mu$ m sintered stainless steel protection for probes  $\varnothing$  14mm.

**P7**: 20 $\mu$ m PTFE protection for probes  $\varnothing$  14mm.

**P8**: Stainless steel 20 $\mu$ m grid and POCAN protection for probes  $\varnothing$  14mm.

HD2817 Tx . D x

**Relay**  
**0** = without relay  
**R** = with relay

**Probe type**  
**T** = Model for vertical probe or with cable (S.TV, S.TC)  
**TO** = Model for horizontal probe (S.TO)