



# PASSIVE 4÷20MA HUMIDITY AND TEMPERATURE TRANSMITTERS WITH CONFIGURABLE TEMPERATURE WORKING RANGE

## DESCRIPTION

HD 2007T... and HD 2008T... are microprocessor configurable humidity and humidity-temperature 4÷20 mA transmitters. The temperature range is configurable. They convert humidity and temperature values into two linear current signals (2 wires) in the field 4÷20 mA. In the humidity-temperature combined version, the two circuits and the related outputs are completely independent one from the other. The linearization based on digital technique grants best accuracy and stability. Programming is carried out very easily by pressing a button. No operation by means of jumpers, potentiometers, etc. is requested. The humidity input can be recalibrated using two saturated solutions: **the first one** at 75%, **the second one** at 33%; the 0% R.H...100% R.H. relative humidity range is fixed and 4 mA correspond to 0% R.H., while 20 mA to 100% R.H. In HD 2008 model, the operator can configure 4÷20 mA (or 20÷4 mA) temperature output in any range going from -50°C up to +200°C with 25°C minimum amplitude. A LED indicates the alarm states (temperature exceeding set-point, sensor failure or short-circuit) and helps the operator when programming. Important remark: the relative humidity sensor may work in a -40...+150°C temperature range. Beyond this range till +180°C it can work for brief periods.

## TECHNICAL DATA (@ 20°C e 24 Vdc)

		HD 2007	HD 2008
Relative humidity input	Model	MK 33	
	Capacity	300pF nom.	
	Accuracy at 20°C	±2% (5±90%) ±2.5% (in the remaining range)	
	Relative humidity operating range	5...98% R.H.	
	Temperature operating range of relative humidity sensor	-40...+150°C - compensated	
	Wire length	TC version = 1.5 m, 5 m and 10 m	
	Working static pressure of sensor	20 bar	
<b>When using the transmitter, check sensor compatibility with the atmosphere where it is installed</b>			
Temperature input	Sensor	----	Pt100, 100 Ω at 0°C (α=0.00385)
	Connection	----	3 (or 2) wires
	Transducer energized	----	<1 mA
	Measuring range	----	-50...+200°C
	Accuracy 20°C	----	±0.1°C ±0.1% of reading
Output	4...20 mA R.H.	0...100% R.H.	0...100% R.H.
	4...20 mA Temperature	----	Configurable in the range -50...200°C (min. amplitude: 25°C)
	22 mA	In case of faulty programming, of disconnected probe or of temperature exceeding selected range. The alarm red LED is lighted. (**)	
	Linearization	Digital	
Power supply for every input		7...30 Vdc	
Maximum load (see fig. 3)		$R_{Lmax} = 770 \Omega$ a 24 Vdc $R_{Lmax} = \frac{(Vdc-7)}{22 \text{ mA}}$	
Response time (s)	No filter	6 seconds	
	With filter	3 minutes	
Working temperature electronics		-10...+70°C	
Electronics protection class		IP 67	

(\*) Time necessary to reach 63% of total variation

(\*\*) In the event that measured temperature "T" exceeds T1...T2 (T1<T2) selected range, temperature transmitter holds 4 mA for T<T1 and 20 mA for T>T2 for a 10°C dead band before going on error at 22 mA.

## INSTALLATION AND CONNECTION

Figure 11 shows the mechanical dimensions of the transmitters and the holes to fix the case. Figures 1 and 2 show current loop connection diagram. The RL (load) symbol identifies any device part of the current loop, that is: either a panel meter, a controller, a data logger or a recorder. Measure accuracy is not affected by the position of the transmitter. However, it is suggested to install the transmitter with the sensor oriented downwards to minimize dust settling on sensor protection filter. The transmitter shall not be mounted neither near a heating source - as heating air causes a decrease in relative humidity (by the same quantity of water vapour) - nor near doors, in presence of rushes of air; but movements of air mustn't miss.

When using the transmitter, check sensor compatibility with the atmosphere where it is installed.

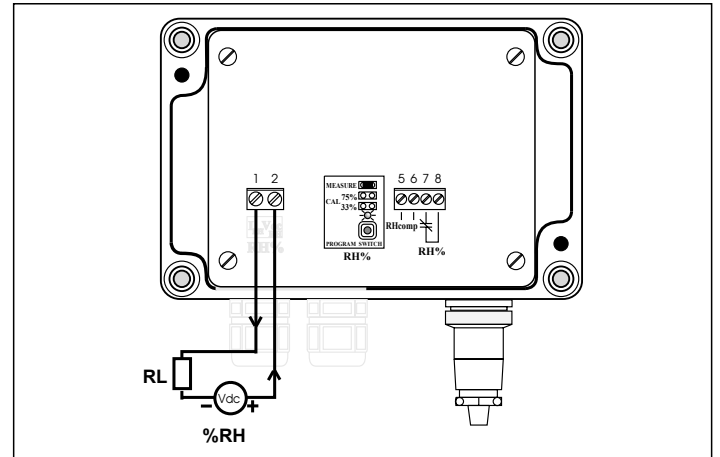


Fig. 1 Connection diagram of relative humidity single transmitter

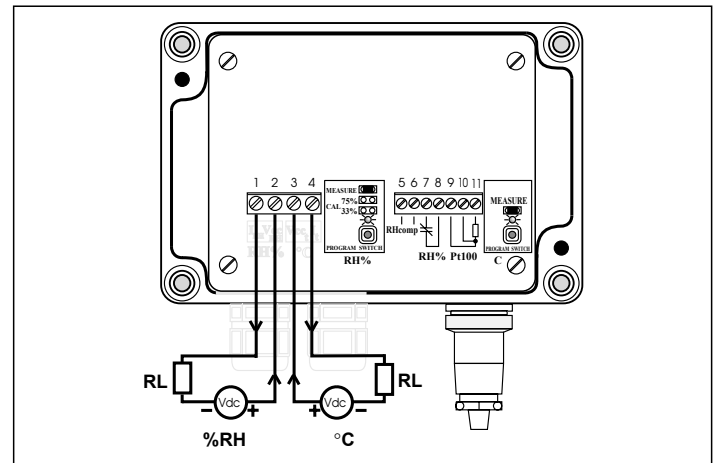


Fig. 2 Connection diagram of relative humidity and temperature combined transmitter

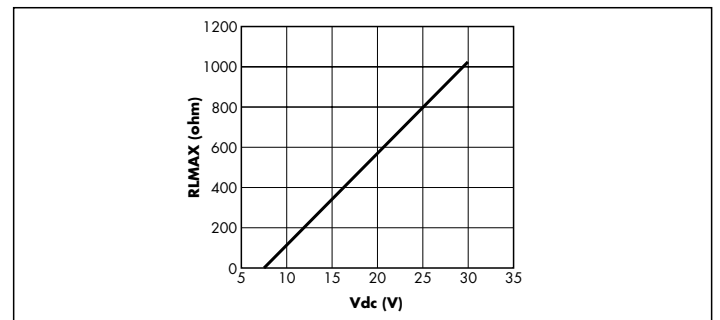


Fig. 3 Load resistance as a function of power supply

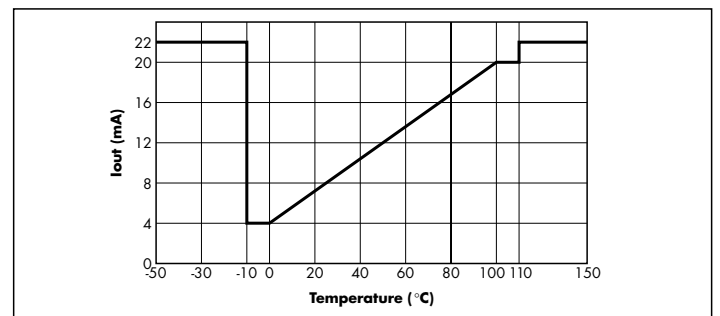
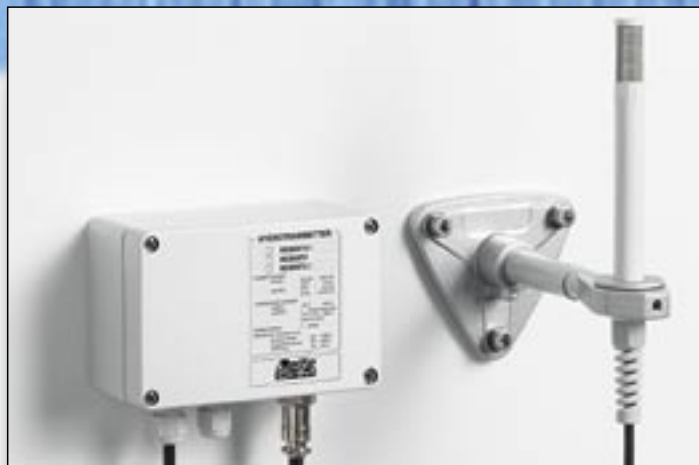
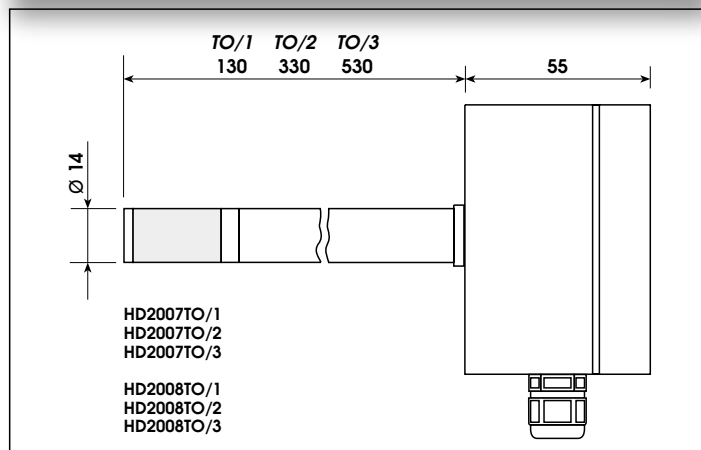


Fig. 4 Range 0...100°C, 4÷20 mA temperature output.

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HD 9008.31 flange with sensor block.



**ORDER CODES**

- HD 2007TO/1:** relative humidity 2-wire passive transmitter, 4±20 mA output. Duct horizontal fixed sensor L=130 mm.
- HD 2007TV:** relative humidity 2-wire passive transmitter, 4±20 mA output. Wall-mounting vertical fixed sensor.
- HD 2007TC/1:** relative humidity 2-wire passive transmitter, 4±20 mA output. Sensor L=130 mm connected directly to the instrument by means of a 1.5 m long wire.
- HD 2007TC/2-5:** relative humidity 2-wire passive transmitter, 4±20 mA output. Sensor L=330 mm connected directly to the instrument by means of a 5 m long wire.
- HD 2007TC/2-10:** relative humidity 2-wire passive transmitter, 4±20 mA output. Sensor L=330 mm connected directly to the instrument by means of a 10 m long wire.
- HD 2008TO/1:** relative humidity and temperature duct configurable 2-wire passive combined transmitter, 4±20 mA double output. Duct fixed horizontal sensor L=130 mm.
- HD 2008TV:** relative humidity and temperature duct configurable 2-wire passive combined transmitter, 4±20 mA double output. Wall-mounting fixed vertical sensor.
- HD 2008TC/1:** relative humidity and temperature duct configurable 2-wire passive combined transmitter, 4±20 mA double output. Sensor L=130 mm connected directly to the instrument by means of a 1.5 m long wire.
- HD 2008TC/2-5:** relative humidity and temperature duct configurable 2-wire passive combined transmitter, 4±20 mA double output. Sensor L=330 mm connected directly to the instrument by means of a 5 m long wire.
- HD 2008TC/2-10:** relative humidity and temperature duct configurable 2-wire passive combined transmitter, 4±20 mA double output. Sensor L=330 mm connected directly to the instrument by means of a 10 m long wire.
- HD75:** saturated salt solution 75% R.H. with adapter M 12x1
- HD33:** saturated salt solution 33% R.H. with adapter M 12x1
- HD9008.21.1:** holder for vertical sensor, wall distance 250mm, hole Ø 26.  
Use with reduction HD9008.26.14
- HD9008.21.2:** holder for vertical sensor, wall distance 125mm, hole Ø 26.  
Use with reduction HD9008.26.14
- HD9008.26/14:** reduction for Ø 26 and Ø 14mm holes, for HD9008.21.1 and HD9008.21.2
- HD9008.31:** flange with sensor block Ø 14mm for duct sensors of the series TC and TO.

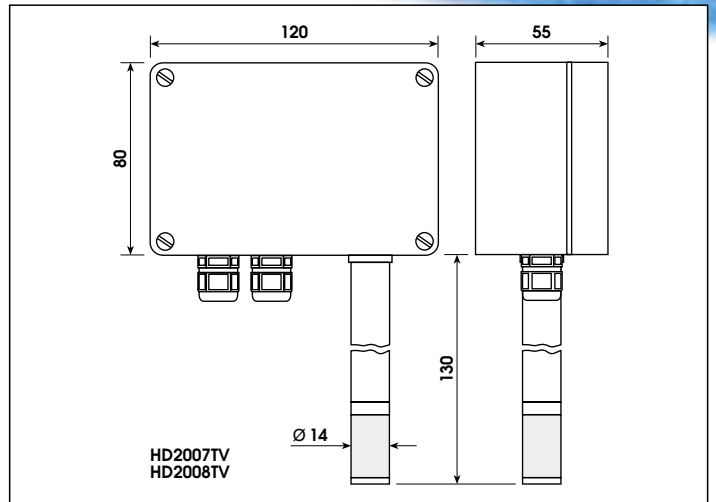


Fig. 9 Mechanical dimensions version TV.

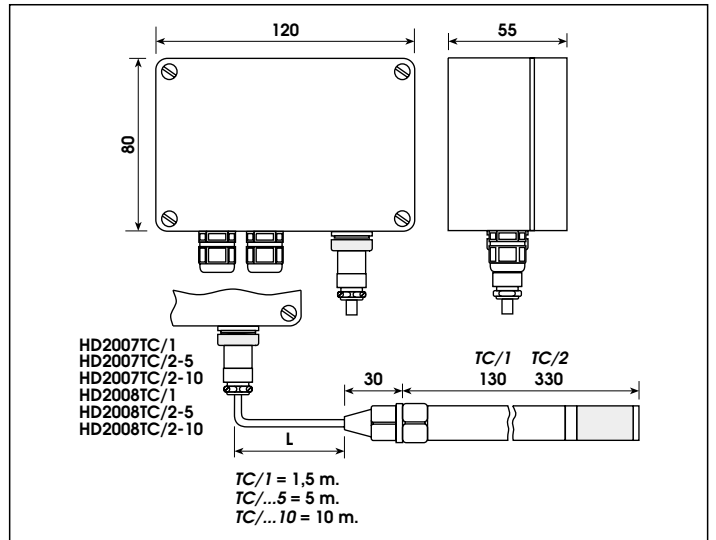
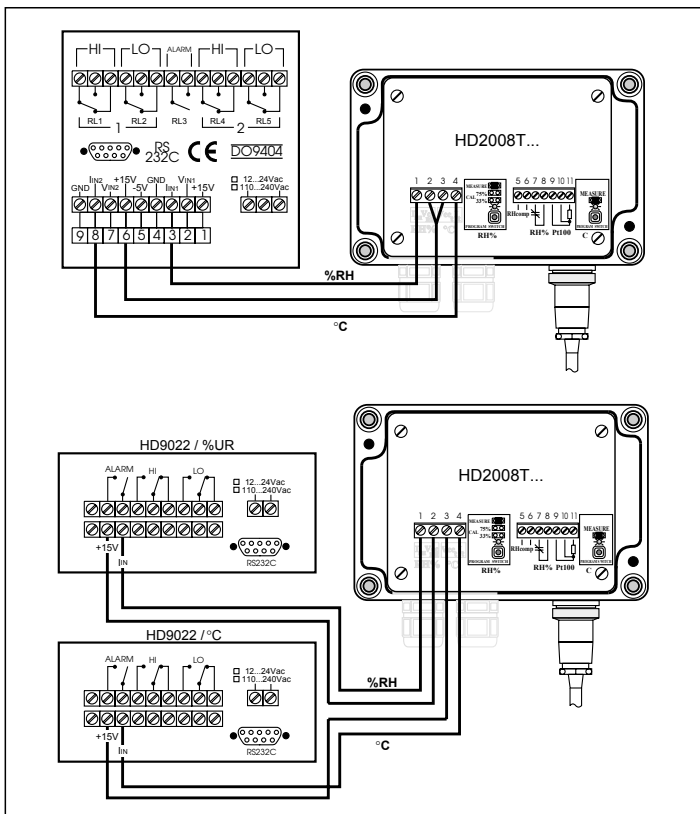
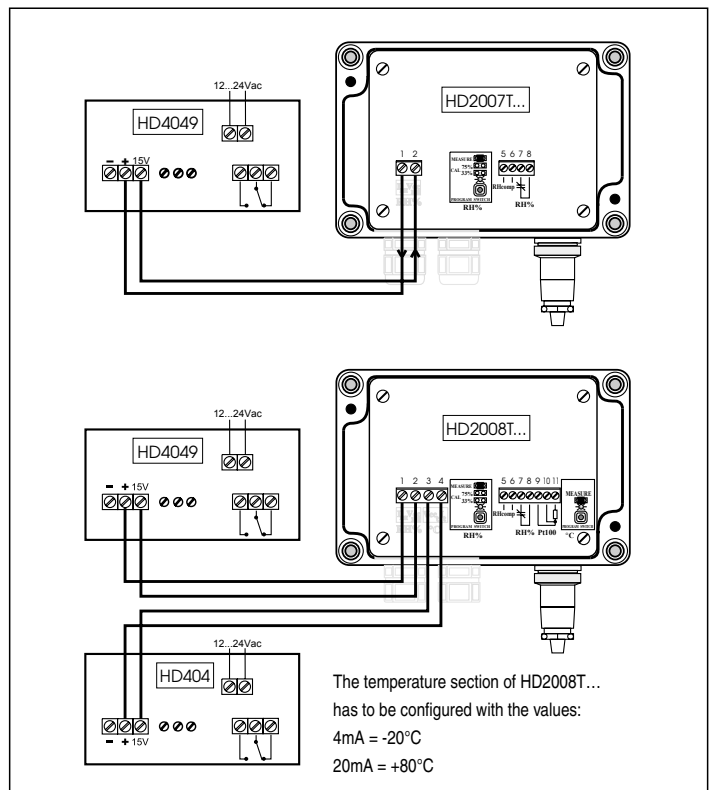


Fig. 10 Mechanical dimensions version TC.



Example of connection of transmitters HD2008T with the indicators HD9022 and DO9404.



Example of connection of transmitters HD2007T... and HD2008T with the indicators HD404 and HD4049.

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