

# HLX850

## CO<sub>2</sub>, Humidity and Temperature Duct Sensor

The HLX850 combines CO<sub>2</sub> relative humidity (RH) and temperature (T) measurement in an innovative enclosure. It is ideal for demand controlled ventilation and building automation. Due to the CO<sub>2</sub> measuring range up to 10000 ppm and T working range -20...60 °C (-4...140 °F), the HLX850 can be employed also in demanding climate and process control.

### Long Term Stability

The HLX850 incorporates the dual wavelength NDIR CO<sub>2</sub> sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability. The RH sensing element is protected against dust, dirt and corrosion by the HLX proprietary coating.

### High Measurement Accuracy

A multiple point CO<sub>2</sub> and T factory adjustment procedure leads to excellent CO<sub>2</sub> measurement accuracy over the entire T working range.

### Functional Design

Installed into a duct, a small amount of air flows through the divided probe to the CO<sub>2</sub> sensing cell located inside the transmitter enclosure and back into the duct. The RH and T sensing elements are placed inside the probe. The functional enclosure facilitates easy and fast mounting of the transmitter with closed cover.

### Analogue, Digital and Passive T Outputs

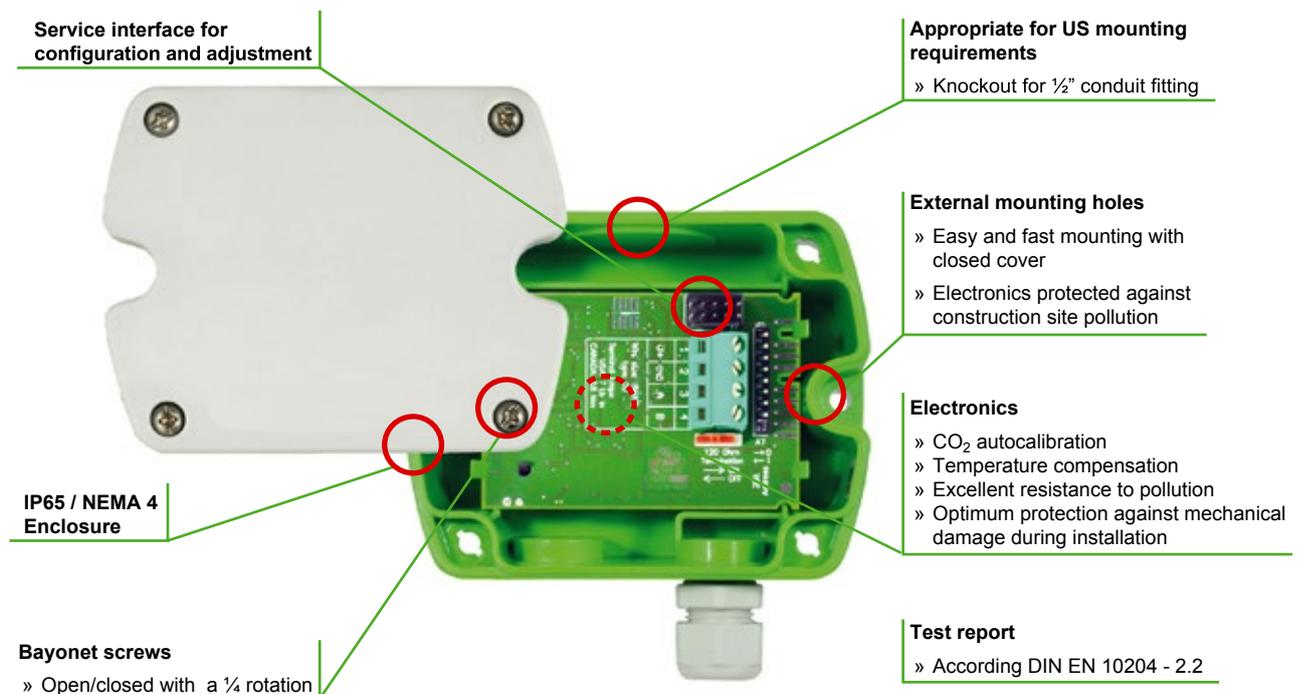
The CO<sub>2</sub>, RH and T measured data as well as the calculated dew point temperature (Td) are available on various analogue outputs. Additionally, the RS485 interface with Modbus RTU or BACnet MS/TP protocol supplies also other parameters such as absolute humidity (dv), mixing ratio (r), water vapor partial pressure (e) or enthalpy (h).

### Easy configuration and Adjustment

An optional adapter and the free configuration software facilitate the configuration and adjustment



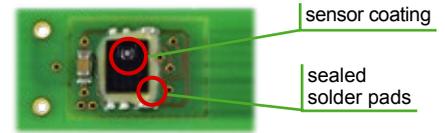
## Features



## Protective Sensor Coating

The HLX proprietary sensor coating is a hygroscopic layer applied to the active surface of the RH sensing element. The coating extends substantially the life-time and the performance of the HLX sensor in corrosive environment.

Additionally, it improves the long term stability in dusty and dirty applications by preventing stray impedances caused by deposits on the active sensor surface.



HLXH210 RH and T digital sensor, located inside the sensing probe.

## Technical Data

### Measurands

#### CO<sub>2</sub>

Measurement principle	dual wavelength non-dispersive infrared technology (NDIR)
Measuring range	0...2000 / 5000 / 10000 ppm
Accuracy at 25 °C (77 °F) and 1013 mbar (14.7 psi)	0...2000 ppm: < ± (50 ppm +2% of measured value) 0...5000 ppm: < ± (50 ppm +3% of measured value) 0...10000 ppm: < ± (100 ppm +5% of measured value)
Response time t <sub>63</sub>	< 100 seconds at 3 m/s (590 ft/min) air speed in the duct
Temperature dependency, typ.	± (1 + CO <sub>2</sub> concentration [ppm] / 1000) ppm/°C, for -20...45 °C (-4...113 °F)
Calibration interval <sup>1)</sup>	> 5 years
Measuring interval	approx. 15 seconds

#### Temperature

Working range	-20...60 °C (-4...140 °F)
Accuracy at 20 °C (68 °F)	±0.3 °C (±0.54 °F)
Response time t <sub>63</sub>	< 50 seconds

#### Relative Humidity

Working range	0...95 % RH
Accuracy at 20 °C (68 °F)	± 3 % RH (20...80 % RH)
Response time t <sub>63</sub>	< 10 seconds

### Outputs

#### Analogue

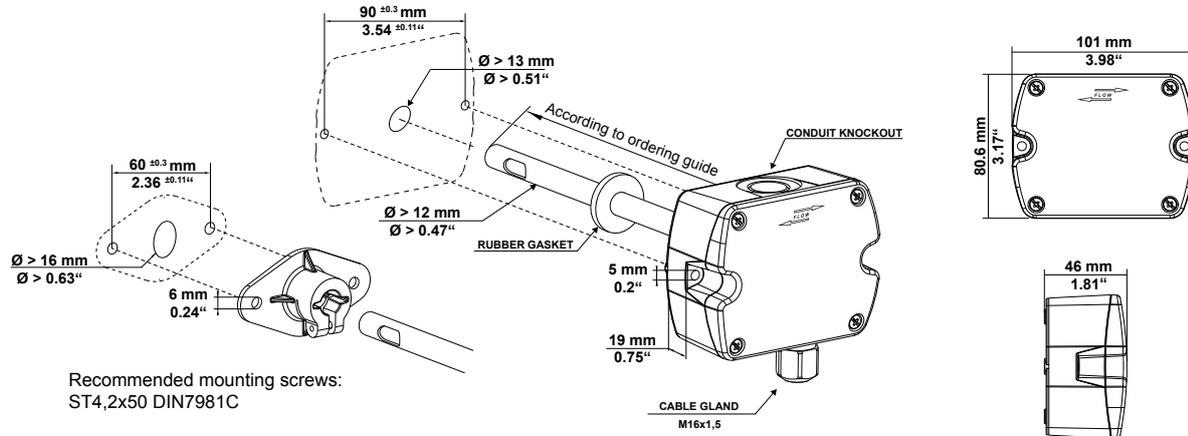
CO <sub>2</sub> : 0...2000 / 5000 / 10000 ppm	0-5 V / 0-10 V 4-20 mA	-1 mA < I <sub>L</sub> < 1 mA R <sub>L</sub> < 500 Ohm
T scale: according ordering guide RH scale: 0...100 % RH	0 - 5 V / 0 - 10 V	-1 mA < I <sub>L</sub> < 1 mA
Digital Interface Protocol	RS485 Modbus RTU or BACnet MS/TP	HLX850 = 1/10 unit load
Passive temperature, 2-wire Wire resistance (terminal - sensor), typ.	T sensor type according ordering guide 0.4 Ohm	

### General

Power supply class III 	24 V AC ± 20 %    15-35 V DC
Current consumption, typ.	typ. 15 mA + output current
Current peak, max.	350 mA for 0.3 seconds (analogue output) 150 mA for 0.3 seconds (RS485 interface)
Minimum air speed in the duct	1 m/s (196 ft/min)
Enclosure material	polycarbonate, UL94V-0 approved
Protection class	enclosure: IP65 / NEMA 4 probe: IP20
Cable gland	M16 x 1.5
Electrical connection	screw terminals max. 2.5 mm <sup>2</sup> (AWG 14)
Electromagnetic compatibility	EN61326-1    EN61326-2-3    Industrial Environment FCC Part 15    ICES-003 ClassB
Working and storage conditions	-20...60 °C (-4...140 °F)    0...95 % RH (non-condensing)

<sup>1)</sup> under normal operating conditions

## Dimensions (mm/inch)



## Ordering Guide

		HLX850		
		M10	M11	M12
Hardware configuration	Model	CO <sub>2</sub> CO <sub>2</sub> + T CO <sub>2</sub> + T + RH		
	CO <sub>2</sub> range	0...2000 ppm 0...5000 ppm 0...10000 ppm		
	Output	0-5 V 0-10 V 4-20 mA RS 485	A2 A3 A6 J3	A2 A3 J3
	T sensor passive <sup>1)</sup>	none Pt1000A NTC10k Ni1000, TK6180	no code TP3 TP5 TP9	
	Probe length	50 mm 200 mm	L50 no code	no code no code
Setup analogue outputs <sup>1)</sup>	Temperature	T [°C] T [°F]	no code MB2	no code MB2
	Scale T low	0 value - within the range -20...60 °C (-4...140 °F)	no code SBL value	no code SBL value
	Scale T high	50 value - within the range -20...60 °C (-4...140 °F)	no code SBH value	no code SBH value
	Relative humidity / dew point	RH [%] Td [°C] Td [°F]		no code MC52 MC53
	Scale RH/Td low	0 value - for Td: within the range -20...60 °C (-4...140 °F)		no code SCL value
	Scale RH/Td high	100 value - for Td: within the range -20...60 °C (-4...140 °F)		no code SCH value
Setup RS485 <sup>5)</sup>	Protocol	Modbus RTU <sup>2)</sup> BACnet MS/TP <sup>3)</sup>	P1 P3	
	Baud rate	9600	BD5	
		19200	BD6	
		38400	BD7	
		57600 <sup>4)</sup> 76800 <sup>4)</sup>	BD8 BD9	

1) Not with RS485 output (J3) / T-Sensor details see [www.epluse.com/R-T\\_Characteristics](http://www.epluse.com/R-T_Characteristics).

2) Factory setting: Even Parity, Stopbits 1; Modbus Map and communication setting: See User Guide and Modbus Application

3) Factory setting: No Parity, Stopbits 1; Product Implementation Conformance Statement (PICS)

4) Only for BACnet MS/TP.

5) Not with analogue output A2, A3 and A6.



## Ordering Examples

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### HLX850-M12HV2A3MB2SBL32SBH140

Model: CO<sub>2</sub> + T + RH  
CO<sub>2</sub> range: 0...5000 ppm  
Output: 0-10 V  
Probe length: 200 mm  
Temperature: T [°F]  
Scale T low: 32 °F  
Scale T high: 140 °F  
RH/Td: RH [%]  
Scale RH low: 0 %  
Scale RH high: 100 %

### HLX850-M10HV1A6L50

Model: CO<sub>2</sub>  
CO<sub>2</sub> range: 0...2000 ppm  
Output: 4-20 mA  
Probe length: 50 mm

### HLX850-M12HV3J3P1BD6

Model: CO<sub>2</sub> + T + RH  
CO<sub>2</sub> range: 0...10000 ppm  
Output: RS485  
Probe length: 200 mm  
Protocol: Modbus RTU  
Baud rate: 19200  
Unit: metric-SI

## Accessories (see data sheet „Accessories“)

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Configuration adapter cable	HA011066
Product configuration software	HLX-PCS
Power supply adapter	V03