

HE-DELP-xxxxx CO₂ ROOM SENSOR SERIES

VERSIONS WITH OPTIONAL TEMPERATURE/HUMIDITY MEASUREMENT, RELAY & LCD

Modbus RTU or 4...20mA with LCD display



Features

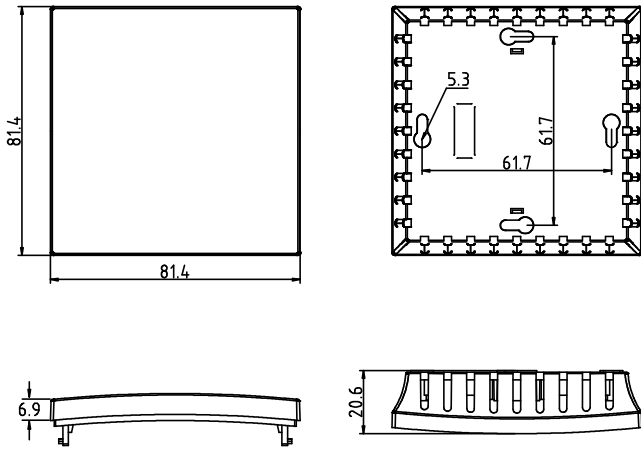
- LCD display with capacitive buttons
- Display with ppm, RH% and °C
- Field adjustable for common setting
- ABC algorithm on/off
- Elegant design with stable quality
- Low maintenance, easy calibration

Output and measurement

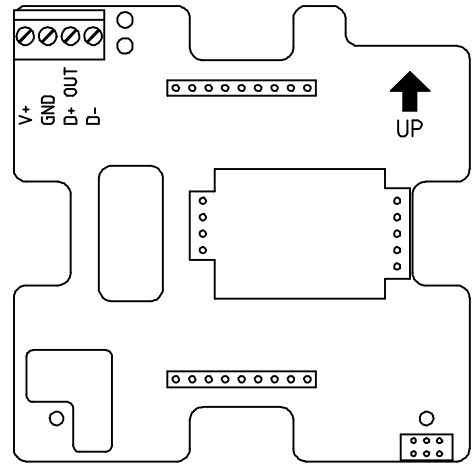
- Support RS485 Modbus RTU
- One channel 4 ... 20mA or 0 ... 10V
- Option relative humidity and temperature
- CO₂ range maximum 20000 ppm
- Temperature range 0 ... 50°C
- Relative humidity range 0 ... 100%RH

Technical Drawing

Dimensions (mm)



PCB board



Connection

Output	HE-DELP-10/11/12/20	HE-DELP-13/23
4...20mA		
0...10V		
RS485		

Technical Data

CO2

Measuring range 1	standard 400 ... 2000 ppm
Accuracy 1	±40ppm ±3% of reading
Measuring range 2	extend 0 ... 10000 ppm
Accuracy 2	> ±40ppm ±3% of reading
Measuring range 3	400 ... 20000 ppm
Accuracy 3	±200ppm ±3% of reading
Pressure dependence	+ 1.6 % reading per kPa deviation from normal pressure
Operating Principle, Non-dispersive infrared (NDIR)	
Measurement interval	4 seconds
Response time	2 minutes by 90%
Life expectancy	15+ years
ABC period	8 days

Relative Humidity

Measuring range	0 ... 100 %RH
Accuracy	±3%RH@25°C (20 ... 80%RH)
Long term drift ¹	< 0.25%RH/year
Response time T63 ²	8 seconds

Temperature

Measuring range	0 ... 50°C
Accuracy	±0.5°C
Long term drift ³	< 0.02°C /year
Response time T63 ⁴	5 ... 30 seconds

RS485 Modbus RTU output

ID	1...247
Baud rate	9600/19200/38400/57600/115200
Data format	N81/N82/E81/E82/O81/O82

Analog output (one channel)

Current version	3-wire, 4 ... 20 mA
Voltage version	0 ... 10 V
Accuracy of analog outputs@25°C	±0.1% full scale
Temperature dependence	±0.005%/°C full scale
External loads	current output RL < 400 ohm voltage output outputs RL > 10k ohm

Display with touch button (Option)

LCD	128x64 dots without backlight
Buttons	capacitive x3
ABC algorithm	on/off
CO ₂ offset range	-1000 ... +1000
Humidity offset range	-100.0 ... +100.0
Temperature offset range	-100.0 ... +100.0

Power supply

RS485 output	12 ... 24 VDC
Analog output	15 ... 24 VDC

Power consume

RS485 output	max. 310mA typ. 20mA
Analog output	max. 320mA typ. 30mA

Mechanics

Housing material	ABS
Dimension	81.4 x 81.4 x 27.5 mm
Housing classification	IP20

Environment

Operating temperature	0 ... 50°C
Operating humidity	0 ... 85%RH non condensed
Storage temperature	-40 ... 70°C

Electrical protection

Over voltage, Inverse and short

Electromagnetic compatibility

Emission	EN 61326-1:2013 CISPR11:2009+A1:2010 Group1 Class B
Immunity	EN 61326-1:2013 IEC 61000-4-2:2008 IEC 61000-4-3:2006+A1:2007+A2:2010 IEC 61000-4-8:2009

¹ Typical value for operation in normal RH/T operating range. Max. value is < 0.5%RH/year. Value may be higher in environments with vaporized solvents, outgassing tapes, adhesives, packaging materials, etc.

² Time for achieving 63% of a step function, valid at 25°C and 1m/s airflow.

³ Max. value is < 0.04°C/year.

⁴ Response time depends on heat conductivity of sensor substrate.

Modbus register

Device information

No.	Register Address	Starting Address	Content	R/W	Data Bytes	Data Type	Value
1	40033	0x20	Model Name	R	16 bytes	ASCII	
2	40049	0x30	Serial Number	R	16 bytes	ASCII	
3	40065	0x40	Firmware version	R	16 bytes	ASCII	

RS485 parameters

No.	Register Address	Starting Address	Content	R/W	Data Bytes	Data Type	Value
1	40081	0x50	Slave ID	R/W	1 byte	unsigned integer	1 ... 247
2	40083	0x52	Baud rate	R/W	1 byte	unsigned integer	0: 9600 1: 19200 2: 38400 3: 57600 4: 115200
3	40085	0x54	Data type	R/W	1 byte	unsigned integer	0: N81 1: N82 2: E81 3: E82 4: O81 5: O82
4	40087	0x56	Unit	R/W	1 byte	unsigned integer	0: Metric 1: Imperial

Output (IEEE 754 Floating Pt)

No.	Register Address	Starting Address	Content	R/W	Data Bytes	Data Type	Unit
1	41025	0x400	Temperature	R	4 bytes	Floating Pt.	°C, °F
2	41029	0x404	Relative Humidity	R	4 bytes	Floating Pt.	%RH
3	41081	0x438	CO ₂	R	4 bytes	Floating Pt.	ppm

Output (32-bit integer)

No.	Register Address	Starting Address	Content	R/W	Data Bytes	Signed unsigned	Scaling	Unit
1	41089	0x440	Temperature	R	4 bytes	signed integer	1:100	°C, °F
2	41093	0x444	Relative Humidity	R	4 bytes	signed integer	1:100	%RH
3	41141	0x474	CO ₂	R	4 bytes	unsigned integer	1:1	ppm

