T / RH / DP / CO_2 Transmitters / Regulators

HD46… series

Member of GHM GROUP

THE RIGHT MODEL FOR ANY INDOOR LOCATION

Multiple measurement combination - Models with display - Wide choice of outputs

GREAT FLEXIBILITY

4…20 mA, 0…10 Vdc, RS485 MODBUS-RTU and/or relay ouputs for **easy integration** in any installation

QUICK & INTUITIVE CONFIGURATION

Set up through connection to a **PC**, via **RS485 serial port** with MODBUS-RTU protocol or directly through the **keyboard**, depending on the models

IMMEDIATE & DIRECT READING

Models with display option for **direct reading** of all detected measures

READY TO USE & QUICK TO INSTALL

Supplied **already configured and factory calibrated**
No further adjustment is required

Main Applications

Ambient air monitoring

Air quality analysis in buildings such as schools, hospitals, auditoria, work sites, malls, office buildings, canteens etc.

Where people meet or work, keep a good air quality and save energy!

The instruments of the HD46… series are **transmitters, indicators and regulators** designed for wall mounting and suitable for measuring and monitoring environmental parameters such as Relative Humidity (RH); Ambient Temperature (T); Carbon Dioxide (CO_2) and Dewpoint Temperature (DP, computed value).

These instruments are designed for ambient air monitoring especially in crowded buildings. This analysis allows to adjust air conditioning systems (temperature and humidity) and ventilation (air changing/hour) in order to achieve a double target: **obtain a good air quality in compliance with the ASHRAE and IMC directives in force and save energy**.

The **relative humidity** measurement is obtained by means of a capacitive sensor. The sensor is temperature compensated to assure accurate and reliable measurements with the time. Relative humidity and temperature sensors with their calibration data are contained in an easy-to-replace module. The **temperature** is measured by means of a high-accuracy NTC sensor. The CO_2 measurement is obtained by use of a special infrared sensor (NDIR technology: Non-Dispersive Infrared Technology) that ensures long-lasting, accurate and stable measures, thanks to the use of a double filter and a special measurement technique. The presence of a protection membrane, through which sampled air flows, protects the sensor from dust and atmospheric agents.

0…10 V voltage or **4…20 mA current** analog output versions are available, as well as models with **RS485 MODBUS-RTU** output, that allows connection of multiple transmitters in a network.

Relay-equipped versions allow direct control of measured ambient parameters when user-custom thresholds are exceeded. Control activation is shown by LED indicators. The relays operation is very versatile: single or double threshold operation is possible when lower and/or upper limits are exceeded. Thresholds are user-configurable over the whole range.

All models perform **continuous measure storing** and data can be downloaded on a PC by using the DeltaLog14 software, downloadable from Delta OHM website.

Technical Specifications of the sensors

Relative humidity RH	
Sensor	Capacitive
Measuring range	0…100 %RH -40…+85 °C Dew point Td
Working range	-40…+80 °C
Accuracy	±2.5% (0…85 %RH) / ±3.5% (85…100 %RH) @ T=15…35 °C and air speed < 0.25 m/s **(*)** (2.5 + 1.5% reading)% @ T= remaining range See table for Dewpoint
Resolution	0.1%
Temperature influence	2% on the whole temperature range
Hysteresis and repeatability	1 %RH
Response time (T_{90})	<20 sec. (air speed = 2 m/sec and stable temperature)
Long-term stability	1%/year

(*) The instruments are preset to operate in still air. To operate in circulating air (e.g. in a climatic room), the operating mode of the instruments must be changed.

Temperature T	
Sensor	NTC 10kΩ
Measuring range	-30…+85 °C (-22…+185 °F)
Accuracy (except models with current output)	±0.2 °C ±0.15% of reading within 0…70 °C ±0.3 °C ±0.15% of reading within -30…0 °C, 70…85 °C
Accuracy (for models with current output)	±0.5°C ±0.15% of reading within -30…+85 °C
Resolution	0.1°C
Response time (T_{90})	<30 sec. (air speed = 2 m/sec)
Long-term stability	0.1°C/year
Carbon dioxide CO_2 (for models HD4617B…)	
Sensor	Dual wavelength NDIR
Measuring range	0…5000 ppm
Working range	-5…50 °C
Accuracy	±(50 ppm+3% of reading) @ 20 °C and 1013 hPa
Resolution	1 ppm
Temperature influence	0.1 %f.s./°C
Response time (T_{90})	<120 sec. (air speed = 2 m/sec and constant temperature)
Long-term stability	5% of the measure / 5 years

Dewpoint Td accuracy (°C)

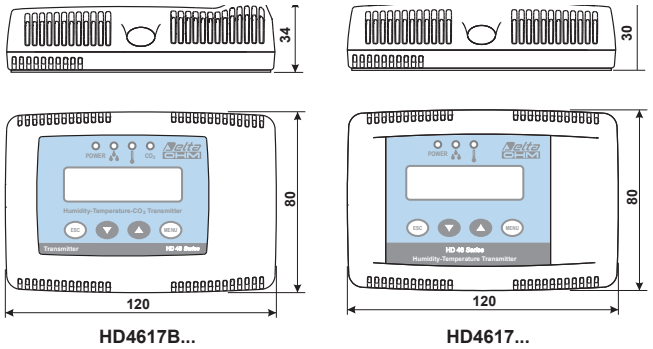
The dewpoint is a computed quantity that depends on relative humidity and temperature calibration accuracy. The values supplied below refer to ±2.5 %RH, ±0.25 °C, 1013.25 mbar accuracies.

	Relative humidity (%)						
Temperature (°C)		10	30	50	70	90	100
	-20	2.50	1.00	0.71	0.58	--	--
	0	2.84	1.11	0.78	0.64	0.56	0.50
	20	3.34	1.32	0.92	0.75	0.64	0.62
	50	4.16	1.64	1.12	0.90	0.77	0.74
	100	5.28	2.07	1.42	1.13	0.97	0.91

Technical Specifications of the instrument

Measuring frequency	1 sample every 3 seconds
Memory size	-40…+80 °C
Logging interval	Selectable within 30 s, 1 m and 5 m The stored values represent the average values of samples collected every 3 seconds in selected storage interval.
Safety of stored data	Unlimited
Serial outputs	mini-USB (mini-USB / USB cable RS45 or RS45I) RS485 MODBUS-RTU (only HD46…**S**…)
Analogue output	0…10 Vdc (R_L > 10kΩ) (only HD46…**V**) 11 Vdc out of range 4…20mA ($R_{L\ MAX}$ = 400Ω) (only HD46…**A**) 22 mA outside the measuring range Active sourcing current output
Relay outputs	Bistable relay (only HD46…**R**) Contact: max 1A @ 30 Vdc resistive load
Power supply	24 Vac ± 10% (50…60 Hz) or 15…35 Vdc
Power consumption	100 mW (except models with current output) 400 mW (for models with current output)
Stabilizing time	15 min (to ensure declared accuracy)
Operating conditions	0 °C…50 °C 0 %RH…90 %RH non-condensing
Housing	ABS
Weight	50 g
Protection degree	IP30

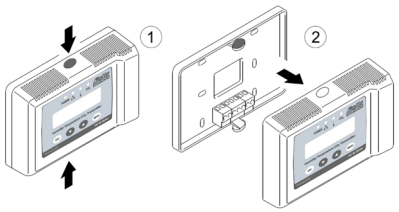
Dimensions



HD4617B... **HD4617...**

Installation

To install the instrument, open the housing by pushing down the upper and lower tabs, then pull to remove the front panel.



Configuration

All transmitters have a mini-USB connector for the connection to a PC for configuration and data download. Connection is made by means of the special RS45 (not isolated) or RS45I (isolated) cable. With the RS45 cable, the instrument is powered directly by the USB port of a PC, allowing in this way on-site instrument configuration by means of a portable PC.
In HD46…**S**… models, the instrument setup can be performed through a RS485 connection.
HD46…**DT**… models can be configured by means of the front keyboard, with no need of PC connection.

Model	RH	T	CO_2	Analog output	RS485 output	Relay output	LCD	Keys	LED
HD4617V	✓	✓		✓ (2)					Power
HD4617A	✓	✓		✓ (2)					Power
HD4617S	✓	✓			✓				Power
HD4617R	✓	✓				✓ (2)			Power / RH,T
HD4617SR	✓	✓			✓	✓ (2)			Power / RH,T
HD4617DV	✓	✓		✓ (2)			✓		Power
HD4617DA	✓	✓		✓ (2)			✓		Power
HD4617DS	✓	✓			✓		✓		Power
HD4617DTR	✓	✓				✓ (2)	✓	✓	Power / RH,T
HD4617DTSR	✓	✓			✓	✓ (2)	✓	✓	Power / RH,T
HD4617BV	✓	✓	✓	✓ (3)					Power
HD4617BA	✓	✓	✓	✓ (3)					Power
HD4617BS	✓	✓	✓		✓				Power
HD4617BR	✓	✓	✓			✓ (3)			Power / RH,T, CO_2
HD4617BSR	✓	✓	✓		✓	✓ (3)	✓		Power / RH,T, CO_2
HD4617BDV	✓	✓	✓	✓ (3)			✓		Power
HD4617BDA	✓	✓	✓	✓ (3)			✓		Power
HD4617BDS	✓	✓	✓		✓		✓		Power
HD4617BDTR	✓	✓	✓			✓ (3)	✓	✓	Power / RH,T, CO_2
HD4617BDTSR	✓	✓	✓		✓	✓ (3)	✓	✓	Power / RH,T, CO_2

Ordering Codes

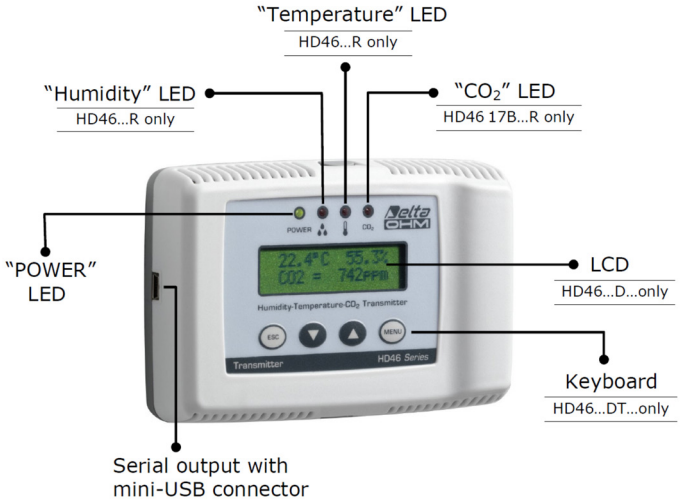
HD4617

V = 0…10 Vdc analog output
A = 4…20 mA analog output
S = RS485 MODBUS-RTU output
R = Relay output
SR = RS485 MODBUS-RTU and relay output

- With the V and A options there is an analog output for each measured quantity.
- With the R and SR options there is a relay output for each measured quantity.

D = With display (for the A, V and S options)
DT = With display and keyboard (for the R and SR options)
Blank = Without display

Sensors
Blank = Humidity and Temperature
B = Humidity, Temperature and CO_2



Accessories

RS45	Serial connection cable, **not isolated**, with built-in USB adapter. USB connector for the PC and mini-USB connector for the instrument serial port. The instrument is powered directly by the USB port of the PC.
RS45I	Serial connection cable, **galvanically isolated**, with built-in USB adapter. USB connector for the PC and mini-USB connector for the instrument serial port. The instrument is not powered by the USB port of the PC.
HDM46	Calibrated relative humidity and temperature module (spare part).

Member of GHM GROUP

In order to ensure the quality of our instruments, we are constantly re-evaluating our products. Improvements can imply changes in specification; we advise you to always check our website for the newest version of our documentation.

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