



CDR 24HTL

### Technical data

#### Carbone Dioxide (CO<sub>2</sub>)

<b>Sensing element</b>	Non-Dispersive Infrared Detector (NDIR)
<b>Measurement range</b>	0-2.000 ppm
<b>Accuracy</b>	+/-30 ppm + 3% of reading
<b>Display resolution</b>	1 ppm
<b>Stability</b>	< 2% of FS over life of sensor (15 years typical)
<b>Calibration</b>	Self calibration
<b>Response time</b>	< 2 minutes for 90% step change
<b>Signal update</b>	Every 2 seconds

#### Humidity

<b>Measuring range</b>	0-100% RH
<b>Accuracy</b>	+/- 3% RH (40 to 60% RH)
<b>Display resolution</b>	0.1% RH
<b>Stability</b>	+/-1% RH per year
<b>Sensor</b>	HS series capacitive sensor

#### Temperature

<b>Measuring range</b>	0 to + 50 °C
<b>Accuracy</b>	+/-0.5 °C at 25 °C
<b>Display resolution</b>	0.1 °C
<b>Stability</b>	+/-0.1 °C
<b>Calibration</b>	Self compensation
<b>Sensor</b>	NTC 5K thermistor

See general technical data on next page

### Features

- 3 outputs in one unit for CO<sub>2</sub> + Humidity + Temperature selectable outputs via jumpers  
0-10 Vdc, 2-10 Vdc, 0-20 mA or 4-20 mA
- Modbus RS485
- 3-color backlit LCD display
- Self-calibration (no re-calibration required)
- 15 years life time on CO<sub>2</sub> sensor
- Measures 0-2.000 ppm (on request 0.5.000 ppm and 0-20.000 ppm)
- Accuracy +/-30 ppm +3% of reading
- Power supply 24 Vac/dc

### Applications

- Office premises
- Airports
- Hotels
- Conference rooms
- Resturants
- Apartments
- Hospitals
- Schools
- Meeting rooms

### Ordering

Type no.	Description
CDR 24HTL	Carbon Dioxide (CO <sub>2</sub> ), Humidity (RH), Temperature (T), Room Transmitter 3 x analog outputs with Modbus and LCD Display

## Technical data

### General

<b>Warm up time</b>	48 hours first time or using again after power off for longer time. 5 minutes (operation)
<b>Power supply</b>	24 Vac/dc
<b>Consumption</b>	1.8 W max. ; 1.2 W avg.
<b>Analog outputs</b>	0-10 Vdc, 2-10 Vdc, 0-20 mA or 4-20 mA selectable outputs via jumper
<b>LCD</b>	3 color backlit LCD CO <sub>2</sub> , Humidity, Temperature Green = 1000 ppm Yellow 1000 ppm < CO <sub>2</sub> = 1400 ppm Red > 1400 ppm
<b>RS485 interface</b>	RS-485 with Modbus protocol 19200bps, 15KV antistatic protection, independent base address
<b>Operating conditions</b>	0 to +50 °C 0 to 95% RH, non condensing
<b>Storage conditions</b>	-40 to +70 °C
<b>Protection</b>	IP 30
<b>Weight</b>	240 g
<b>Dimensions</b>	130 x 85 x 37 mm
<b>Installation</b>	Wall mounting with 65x65 mm or 2"x4" wire box
<b>Housing</b>	PC/ABS fireproof plastic material

## Important Safety Information

Always cut off power before mounting,  
removing, and cleaning the alarm.

Notice the supply power voltage of the transmitter: 24 Vac/ Vdc.

**Mounting and Wire Connection**

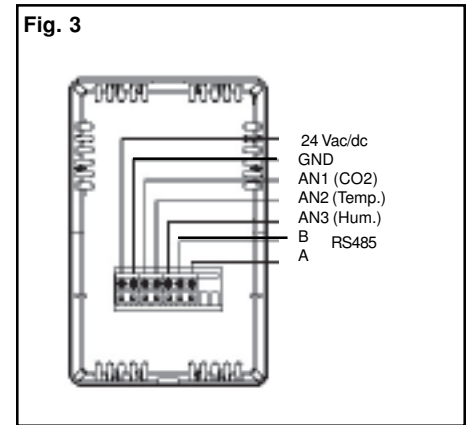
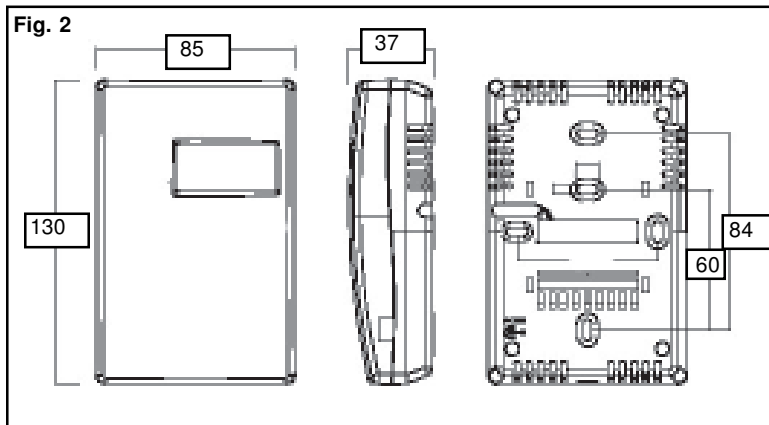
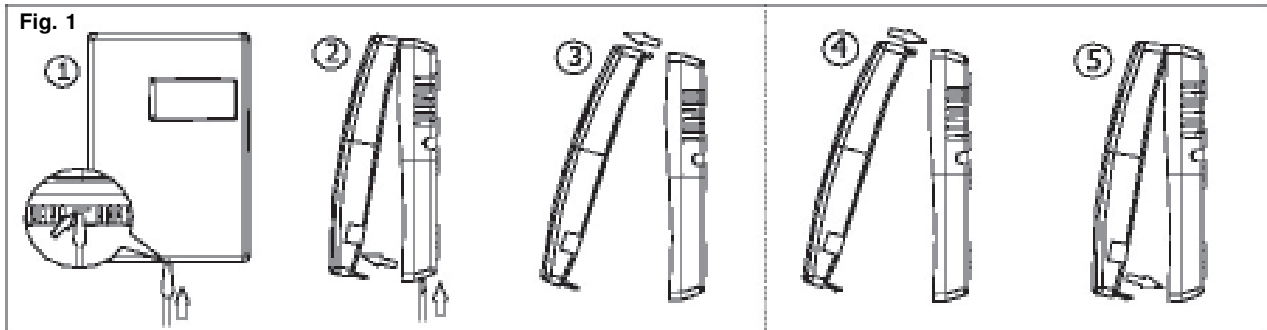
Install the transmitter in the position of 1.2-1.3 m high from the ground or the position where you need to collect the measurement data. Do not mount it behind the door, in the corner or near heat source, diffuser or any steam source, in direct sunlight; also do not mount it near the garbage bin, gas oven to prevent the evaluation error of the alarm.

See the dimension in figure 2.

Follow the step 1-3 in figure 1, power off and put the screwdriver into the groove at the bottom of the transmitter press the lock lightly, separate the face cover from the back cover.

Fix the mounting board on the wall with the bolt. Connect the electricity wire to the terminal (see figure 2 and table 1).

Make sure the connection is correct. Follow the step 4 and 5 in figure 1 to close the cover



Connection Terminal	Function	Electrical Data
1 G+	Power (+)	24Vac / 24Vdc +
2 G0	Power ground (-)	24Vac / 24Vdc
3 OUT3 (CO2)	Analog output (+)	0-10 Vdc correspond to 0~2000ppm default/ 4~20mA correspond to 0~2000ppm
4 OUT2 (Temp)	Analog output (+)	0-10 Vdc correspond to 0~100%RH(default)/ 4~20mA correspond to 0~100%RH
5 OUT1 (Hum)	Analog output (+)	0-10 Vdc correspond to -20 to +60°C (default)/ 4~20mA correspond to -20 to +60°C
6 - (B) (R)	Modbus RS485 interface	
7 + (A) (R)		

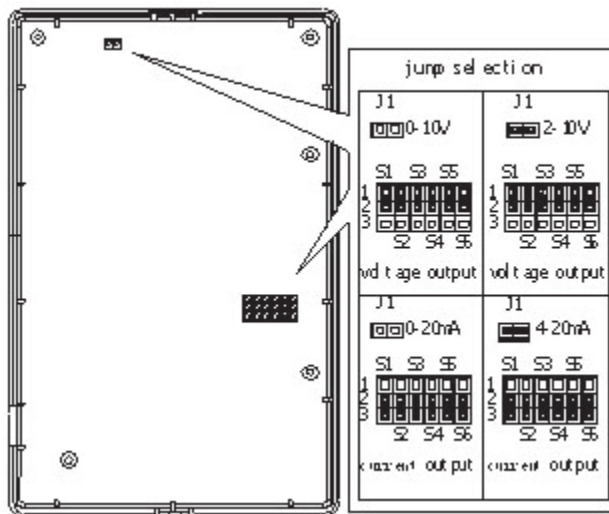
## Analog output selection

The analog outputs are 0-10 Vdc (default).  
If you want to change it to the current outputs, please follow the below steps.

Power off and remove the face cover,  
you can see a set of short-circuit block jumper S1-S6 in the middle of the right PCB board.  
When you block the up two pin of the S1-S6, the analog output is voltage output;  
when you block the down two pin of S1-S6, the analog output is current output.

There is a set of short-circuit block jumper J1-J4 in the top of the PCB board.  
As you put the J1 connection, the analog output is 2-10 Vdc  
or 4-20 mA, as the J1 is disconnected, the analog output is 0-10 Vdc or 0-20mA .

The J2, J3 and J4 are just for manufacture test, the default is disconnection. Don't change it!



## Operation and notice

When power on, there is a red light on through the middle of the end of the face cover,  
that means the transmitter is working on.  
Then the measured temperature and humidity are appeared on the upper line.  
The 10 sec. is started to count down until 0 and back to display CO<sub>2</sub> measurement.

After the count down, the analog output activated.

In case of initial power on or used again after power off for long time (like one month),  
the CO<sub>2</sub> measurement will be stable after 24 hours at least.

Don't shake or hit the transmitter fiercely to prevent damaging the CO<sub>2</sub> sensor when transport or mount the transmitter

When checking the analog output, don not breath to the transmitter directly.  
The breath will affect the CO<sub>2</sub> measurement.  
The correct manner is connect a extended data cable to the transmitter,  
when the measurement become stable after 10 min from the moment of power on,  
then check the analog output by extended cable.

**Advanced setup by RS485 communication interface**

Menu Display	Parameter	Range of setup	Default
-1	RS485 communication address	1-255	1
-2	RS485 Communication rate	1-4800bps, 2-9600bps, 3-14400bps, 4-19200bps, 5-38400bps	5
-3	RS485 check-bit / stop-bit	0- no check, one stop bit; 1- no check, two stop bits; 2- odd check, one stop bit; 3- even check, two stop bits	1
-4	CO <sub>2</sub> calibration set point	0-2000 ppm	0
-5	Temperature calibration set point	-40.0 to +100.0°C / -40.0 to +212.0	50
-6	Humidity calibration set point	0.0-100.0% RH	50.0
-7	CO2 analog output 0V/4mA correspond to CO2 level	0-2000 ppm	0
-8	CO2 analog output 10V/20mA correspond to CO2 level	0-2000 ppm	2000
-9	Temp analog output 0V/4mA correspond to temp. level	-20 to +100°C	-20
-10	Temp analog output 10V/20mA correspond to temp. level	-20 to+100°C	60
-11	Humidity analog output 0V/4mA correspond to humidity level	0-100% RH	0
-12	Humidity analog output 10V/20mA correspond to humidity level	0-100% RH	100
-13	Boundary of green and yellow backlight	0-2000 ppm	1000
-14	Boundary of yellow and red backlight	0-2000 ppm	1400
-15	Celsius and Fahrenheit selection	0-celsius, 1-fahrenheit	0
-16	Warming time	1-600	120
-17	The maximum limit of CO2 measurement set point	1-9900	2000
-18	CO2 zero point calibration allowed	0-1	0
-19	CO2 signal point calibration allowed	0-1	0
-20	CO2 signal point calibration object	1-2000	400
-21	CO2 ASL calibration	0-5000 feet	0
-22	CO2 calibration	±200 ppm	0
-23	Temperature calibration	-3 to +3°C, -6°F to +6°F	0
-24	Manual humidity calibration	-9 to 9% RH	0

We reserve the right to make changes in our products without any notice which may effect the accuracy of the information contained in this leaflet.

On request,  
types and options at minimum 10 pcs per each product

Type no.	Description
<b>CDR 24</b>	Carbon Dioxide (CO <sub>2</sub> ), room transmitter 1 x analog output with Modbus
<b>CDR 24T</b>	Carbon Dioxide (CO <sub>2</sub> ) and Temperature (T), room transmitter 2 x analog outputs with Modbus
<b>CDR 24TL</b>	Carbon Dioxide (CO <sub>2</sub> ) and Temperature (T), room transmitter 2 x analog outputs and LCD
<b>CDR 24HT</b>	Carbon Dioxide (CO <sub>2</sub> ), Humidity (RH) and Temperature (T), room transmitter 3 x analog outputs with Modbus
<b>05</b>	Carbon Dioxide (CO <sub>2</sub> ) ppm range 0-5.000 ppm
<b>20</b>	Carbon Dioxide (CO <sub>2</sub> ) ppm range 0-20.000 ppm
<b>DPA CDR 24</b>	Desk Plate Adaptor for CDR 24-series (To mount the CDR 24-series on a desk)