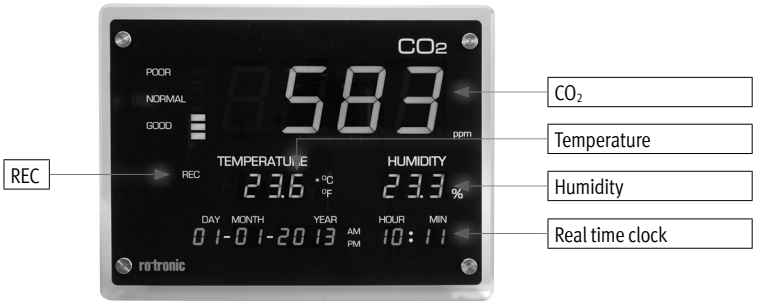
CO_2-Display
Short Instruction Manual

1 GENERAL DESCRIPTION
This CO_2 panel is an accurate wall mount and desktop data logger that displays and records relative humidity, temperature and CO_2. Date and time is additionally displayed.

2 PROGRAMMING
Most of the settings, such as memory clear, CO_2 status indicator, units (°C/°F), sampling rate, pressure compensation and real time clock can all be changed using the function keys.

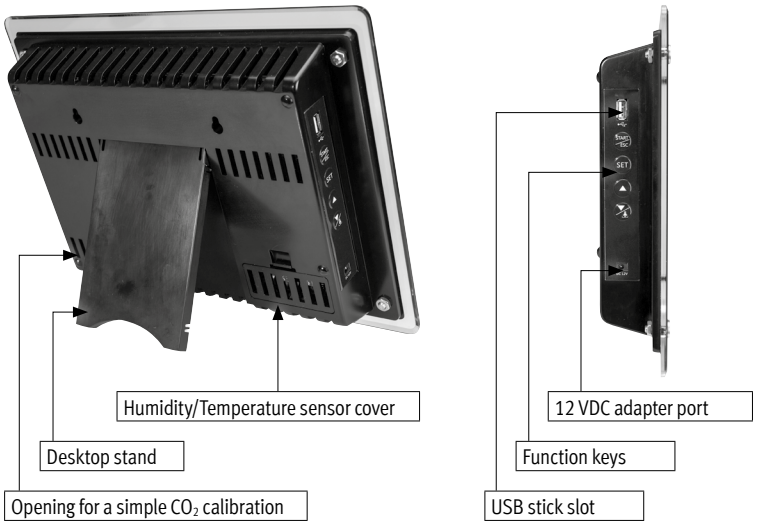
3 POWER SUPPLY
The CO_2 panel uses 12 VDC power adapter, which is included in the package.

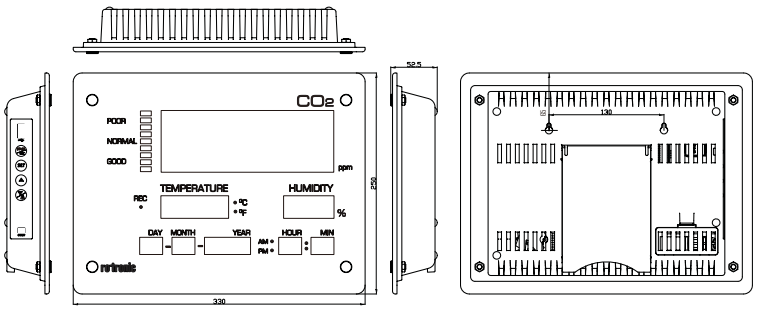
4 DISPLAY



GOOD	CO_2 value is in "GOOD" range
NORMAL	CO_2 value is in "NORMAL" range
POOR	CO_2 value is in "POOR" range
%	Unit of relative humidity
°C/°F	Unit of temperature (Celsius/Fahrenheit)
REC	Blinking in automatic logging mode

5 USB STICK CONNECTION
Recorded data can be easily downloaded to USB stick and save as *.XLS file. Easily analyze the recorded data through the free software HW4 or through Excel.





6 FUNCTIONS KEYS

START/ESC (START/ESC)	• "START", Press longer to start automatic logging mode (REC is blinking) • "ESC", Press longer to stop logging mode • "ESC", Exits setup and calibration mode
SET (SET)	In normal mode, press longer to enter setup mode
UP (▲)	Press to select unit or increases value in setup mode
DOWN / DONWLOAD (▼)	• Press to select unit or decreases value in setup • Press longer to download data to USB stick

7 OPERATION

7.1 POWER ON/OFF
Once the 12VDC power adaptor is connected, the device will be automatically powered on. At power on, it performs 30 seconds countdown for device warm up, then enters normal mode with real time clock displayed. To power off, unplug the power adaptor.

7.2 DATE/TIME SETUP
When device is powered on, hold down "SET" key for 2 seconds until entering device setup mode. Press "UP" or "DOWN" key to select the program (P 50, displayed in right-middle panel) and press "SET" key to enter.

First, choose the time format as 24 hour or 12 hour by press "UP" or "DOWN" key and then press "SET" key to confirm. Now, start to input the real time clock value from year, month, day, hour to minute. Press "UP" or "DOWN" key to adjust and the press "SET" key to confirm.

After the date and time are set, a clearance of the memory must be performed. Press "UP" or "Down" key to select P 10 and press "SET" key to enter P11. Press "UP" or "Down" key to choose "YES" to clear previous memories and press "SET" to confirm. Then, press "ESC" key twice to return to normal mode.

7.3 UNIT SETUP
Hold down "SET" key for 2 seconds until entering meter setup mode. Press "UP" or "DOWN" key to select the program P 30 and press "SET" key to enter. Press "UP" or "DOWN" key to select °F or °C and the press "SET" key to confirm. Press "ESC" key to return to normal mode.

7.4 TAKING MEASUREMENT
The device starts measurement when power on and update readings every second.

7.5 CO_2 CONDITION INDICATOR
The meter features light bar indicator to have user easily recognize the indoor air quality. (See "Meter Setup" section for setting Normal & Poor threshold).

7.6 DATA LOGGING
The meter can automatically record readings of CO2/TEMP./RH for long time environment monitoring. The memory capacity is 6000 points for each parameter. Users can set up sampling rate from 1 minute to 12 hours and 59 minutes. The factory default rate is 1 minute.

First, setup the data record mode you need. Hold down "SET" key for 2 seconds until entering meter setup mode. Press "UP" or "DOWN" key to select the program P 10 and press "SET" key twice to enter P12. In P12, select the data record mode as "STOP" or "LOOP". Press "UP" or "DOWN" key to select and then press "SET" to confirm.

"STOP": The device stops logging while the memory space is full.
"LOOP": After the memory is full, it starts to overwrite the oldest data.

Second, setup the sampling rate. Once finishing the P12 and press "SET" key, it enters P13. Press "UP" or "DOWN" key to adjust the sample rate from hour to minute and press "SET" key to confirm. Press "ESC" key to return to normal mode. After sampling rate setting and data record mode are completed, press " START" key for 2 seconds under normal mode to start logging. The "REC" LED turn into green and flash on panel to indicate the logging is in process.

To terminate data logging, press " ESC" key for 2 seconds and green LED light vanish. Repeat above to start another run of logging. If the data record mode is programmed as "STOP", "REC" LED turn into red color and flash while the logging memory space is full.

7.7 MEMORY DOWNLOAD
The meter features logged memory download function by using a USB stick instead of connecting it with a computer. Before download, press "ESC" key for 2 seconds to stop the logging. Plug USB stick (max. 8GB memory) to USB slot on device left side, hold down "DOWN" for more than 2 seconds until

is in process. It will take minutes to fully download the memory. The data downloading time depends on memory size and USB stick.

The download data is saved as *.XLS file in USB stick. Using free Rotronic software HW4 or Excel to analyze the data. Suggest formatting your USB stick as FAT32 before using. If error code E60 ~ E65 appears on panel, suggest trying another model of USB memory stick.

Attention: In some cases when the size of the logged memory is large, it can happen that the display shows an error code (E60 - E65). Check the USB memory stick, the data transfer usually works. If not, repeat the process.

8 METER SETUP

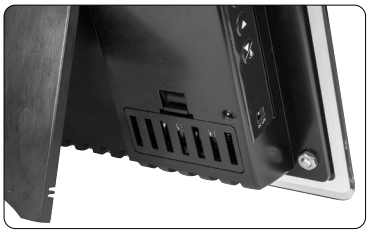
Hold down " SET" key for more than 2 seconds until entering setup mode. To exit setup, press "ESC" to return to normal mode. The available meter setup program are shown in below. Press "UP" or "DOWN" key to select the program (P10, P20, P30, P40 or P50) in main menu and press "SET" key to enter sub menu. Press "SET" key to select different sub menu (P11, P12, P13 or P14), programmable setting then flashes on panel. Press "UP" or "DOWN" key to adjust and press "SET" to confirm. To leave without saving, press "ESC" key to return.

P 10 (Lo9) Logging related setup	Note: • DONE: displayed while memory is c leared • STOP: Stop while memory is full • LOOP: Overrides oldest values when memory is full Note: • Factory preset at 1 minute • The format is Hour: Min
P 11 (CLr), Clear logging memory Choose YES/NO	
P12 (End), Data record mode Choose STOP/LOOP	
P13 & P14 (rATE), Logging sampling rate Choose from 00:01 to 12:59	
P 20 (CO_2) CO_2 related setup	Note: • Adjustable level is 400 to 1700 ppm preset at 1000 ppm • Adjustable level is 1000 to 2000 ppm preset at 1700 ppm • ABC preset as ON
P 21 (Nor) lower limit of "NORMAL" icon	
P 22 (Poor) lower limit of "POOR" icon	
P 23 (AbC) ABC function on/off	
P 30 (uniT) Temperature unit setup	Note: • Factory preset °C
P 31, choose °C/°F	
P 40 (PrES) Pressure compensation	Note: • Factory preset at 1013 hpa • The adjustable scale is every 1 hpa
P41 (hPA) Choose from 700 to 1990 hpa	
P 50 (rTC) Real Time Clock setup	Note: • Factory preset at 12 H • Factory preset at 2013.01.01, 12:00
P 51 choose 12 or 24 hour format	
P 52~54 Input Year/Month/Day	
P 55~56 Input Hour/Minute	

9 HUMIDITY CALIBRATION

This meter can be calibrated either via 35 % rH & via 80 % rH humidity standards. The ambient condition is recommended as stable 25 °C.

Caution: Do not calibrate the humidity without the default humidity standards. Otherwise, it will cause permanent damage. Contact Rotronic for humidity standards or services. Single point calibration will cause error code E11 or non accurate reading. Always do dual point calibration to complete a process. Suggest starting calibration from low humidity.



Pull out the humidity probe from panel
Before calibration, pull out the humidity probe from cover in panel rear side.

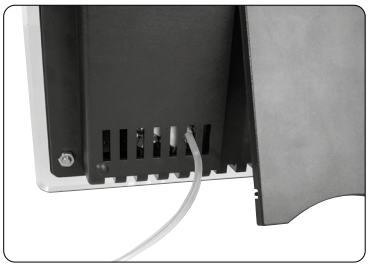
9.1 CALIBRATION VIA HUMIDITY STANDARDS

Power on the device, plug the sensor probe into 35% humidity standard. Press "SET" +"START"+"DOWN" keys simultaneously for 3 seconds to enter calibration mode. Press "UP" or "DOWN" key to select 350 (35.0% calibration) and press "SET" to start. "Calibrating value" (35.2% if at 25°C) is blinking on the LCD.

Waiting for 60 minutes to complete the 35% calibration. To quickly save, press "SET" key any time. 800 (80.0% calibration) comes right after 35% calibration is done. Within 20 minutes, press "SET" key to start 80.0% calibration. "calibrating value" are blinking on the LCD. Waiting for 60 minutes

10 CO_2 CALIBRATION

Caution: Do not calibrate the meter in the air with unknown CO_2 concentration. Otherwise, it will be wrongly calibrated and leads to inaccurate measurements.



The meter can be calibrated in fresh outdoor air (on sunny day) at 400 ppm CO_2. Besides the 400 ppm, the meter can also be calibrated at 0 ppm or any value under 990 ppm. The latest calibration point is treated as final and meter will ignore the previous calibration data.

Press "SET" +"START"+"DOWN" keys simultaneously for 3 seconds to enter calibration mode. Press "UP" or "DOWN" key to select 400 (400 ppm) or 0 (0 ppm) CO_2 calibration. 0 ppm function is only for 0ppm CO_2 calibration. For other CO_2 value, please choose 400 ppm and press "SET" to enter. Once choosing the calibration value, press SET to start and see "CAL" and CO_2 value blink on LCD.

Wait about 10 minutes until the blinking stops to indicate the calibration is completed.

To abort calibration without saving, press "ESC" at any time.

11 TROUBLE SHOOTING

Error	Messages	Solution
E01	CO_2 sensor is out of order	Turn off meter and re-start again
E33	CO_2 sensor is out of order	Retry CO_2 calibration
E02	Measured value is under range	Put meter in normal condition
E03	Measured value is over range	Put meter in normal condition
E11	RH calibration error	Retry humidity calibration
E31	Temp. sensor or AD damaged	Return for repair
E32	Memory IC damaged	Return for repair
E33	RH sensor or circuit damaged	Return for repair
E60~E65	USB download error	Suggest to format USB stick or try a new type of memory stick.

12 TECHNICAL DATA

Humidity/accuracy	0.1~99.9 %/±3 %(10~95 %@25 °C). ±5 %(others)
Temperature/accuracy	0...50 °C/±0.3 °C@5~40 °C
CO_2 /accuracy	0...9999 ppm/±(30 ppm+5% of reading)@0~5000 ppm
Storage and transit	-20...60 °C/10...90 %rh, non condensing
Operating limit at electronics	0...50 °C
Memory	6000 records auto logging for each parameter
Dimension, mm	330(L) x 250(W) x 50(H)
Weight	1400 g
Power consumption	Max. 0.7 A
DC power type	12 V DC
PC connection	USB stick