

Hard wired CO₂/RH/T monitor w/dry contact

This is an accurate and easy-to-use indoor air quality (IAQ) monitor. It records levels of carbon dioxide (CO₂) and indicates if action is needed to improve air quality. In addition, it also measures the temperature and relative humidity.



⚠ Safety Instructions

- ! Always switch off the electrical supply before commencing installation.
- ! This product must be connected to an accessible switched connection unit fitted with a 5A fuse.
- ! This product must be installed in a 35mm 1g back box manufactured to EN 60670-1.
- ! All products must be installed by a competent/qualified person in accordance with all relevant regulations and legislation, including the wiring regulations.
- ! If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.

FEATURE

- Designed to meet LVD and Scottish Technical Handbook Domestic Environment 3.14.2
- Same size as a standard plate switch and fits within a 35mm deep flush back box. Two-part easy assembly
- Color display with real time CO₂, humidity and temperature value
- Touch keypad to review the logged 8-hour average, 24-hour average and 24-hour peak value.
- NDIR (non-dispersive infrared) waveguide CO₂ technology
- Programmable traffic light to indicate status of indoor air quality.
- 3-level LCD brightness to select
- Buzzer function could be activated while required. Mute function is available while buzzer function is on.
- CO₂ manual calibration feature is included.

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⑥ While utility power is not available, this monitor can be power up by 5VDC through USB type C cable

⑦ Screw the mounting plate into position, onto the back box.

⑧ Offer the monitor up to the mounting plate top first and clip into place.

⑨ This monitor should be protected from dust ingress during all building works.

ADJUSTMENTS

The device allows adjustments to customize it suitable for all requirement. The adjustable parameters are yellow LED threshold, red LED threshold, temperature unit, buzzer on or off and manual CO₂ calibration.

Please **only do adjustment while power is OFF**.

These settings are detailed on the PCB:

- > Green LED turns to yellow is 600 to 900ppm selectable. This is also the threshold for dry contact to revert to open loop.
- > yellow LED turns to Red is 200 to 500ppm above yellow threshold. This is also the threshold for dry contact to turn to close loop.

Green to Yellow	DIP 1	DIP 2	Yellow to red (dry contact)	DIP 3	DIP 4
600ppm	<input type="checkbox"/>	<input type="checkbox"/>	+200ppm	<input type="checkbox"/>	<input type="checkbox"/>
700ppm	<input type="checkbox"/>	<input type="checkbox"/>	+300ppm	<input type="checkbox"/>	<input type="checkbox"/>
800ppm	<input type="checkbox"/>	<input type="checkbox"/>	+400ppm	<input type="checkbox"/>	<input type="checkbox"/>
900ppm	<input type="checkbox"/>	<input type="checkbox"/>	+500ppm	<input type="checkbox"/>	<input type="checkbox"/>

Default

Temp Unit	DIP 5	Buzzer	DIP 6	CO ₂ cal.	DIP 7
F	<input type="checkbox"/>	ON	<input type="checkbox"/>	ON	<input type="checkbox"/>
C	<input type="checkbox"/>	OFF	<input type="checkbox"/>	OFF	<input type="checkbox"/>

(DIP 8 is blank)

Default

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INSTALLATION SPOT

This IAQ device can be installed in rooms that are continuously occupied and are enclosed spaces, such as bedrooms, classrooms...etc.

1. Mounting height is 1.4 to 1.6m.
2. Mounting position must be easily visible and easily accessible.
3. This device can't be positioned in 'dead air space', such as within 150mm of the ceiling or an adjacent wall, or where it can be obstructed by furniture or furnishings. It should not be positioned next to a door, window, air vent or within 1m of a potential headboard location.
4. This monitor is designed for indoor use under standard atmospheric conditions.

INSTALLATION

① Using a flat screwdriver, press in the two securing clips at the bottom of the monitoring housing, whilst easing it away from the mounting plate from the bottom, whilst protecting the monitor housing from damage.



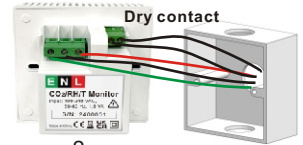
② This device must be connected to switched connection unit fitted with a 5A fuse that is accessible by the user.

③ Adjust the setting if required (see **Adjustments** section)

④ The cable used for installation should be solid core with a cross sectional area greater than 1mm².

⑤ Terminate the mains supply cables into the terminals in the mounting plate:

L permanent live
N neutral
E earth
Dry contact



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SPECIFICATION

Model

<u>Measuring range</u>	
CO ₂	200~9999 ppm,
Temperature	0~50°C (32~122°F)
Humidity	5~95% RH
Resolution	1ppm, 1°C/°F, 1%RH
<u>Accuracy</u>	
CO ₂	+40ppm+3% of reading(400~2000ppm) Other range is 10% of reading
Temperature	+1°C/+1°F
Humidity	+5%RH (at 25°C, 10~90%RH); +7%RH (at 25°C, other range)
Warm-up time	10 seconds
<u>Response time</u>	
CO ₂	<5 mins (90% step change)
Tair	<2 mins (90% step change)
Humidity	<20 minutes (90% step change)
Operating condition	0~50°C, 0~95% RH (avoid condensation)
Storage condition	-20~ 50°C, 0~95%RH (avoid condensation)
Power supply	100~240VAC, 50~60Hz, 1.5VA or 5VDC (Not to use at the same time)
Power consumption	<2W
Dry contact	Normal open, loading:5A@120VAC; 5A@250VAC;5A@28VDC
Buzzer	~70dB at 10cm distance
Meter/LCD size	86x86x51 mm / 77 x 46 mm
IP	IP30
Housing Material	ABS
Mounting height	1.4~1.6 M
Weight	150g
Standard package	Meter, manual, paper box

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OPERATION

The Carbon Dioxide (CO₂) Monitor displays the current Carbon Dioxide level in parts per million (ppm) and gives clear indication if increased ventilation is needed to improve air quality.

Poor air quality, particularly in continuously occupied and enclosed spaces, e.g. Bedrooms, classrooms can lead to complaints of drowsiness and headaches.

- Short press to check IAQ trend
- Short press to mute while buzzer beeps
- Press long to adjust LCD brightness

Indoor Air Quality Trend

By pressing the button once, the display will cycle to show the 8 hour average, 24 hour average, 24 hour highest and back to the default current level.

It is advisable to initially check the data daily and take whatever action is necessary to improve the indoor air quality. Once the air quality has reached an acceptable level, the frequency of checks can be reduced, it should be remembered that the air quality levels can vary due to many factors, so regular readings should be taken to make sure it is still satisfactory. The table in below section provides guidance on what action should be considered for various concentration levels of CO₂.

It is recommended that the CO₂ level is checked each morning.

CO₂ Hazard Light Bar

The color of light bar around the display will change depending upon the settings (see Adjustments)

If light bar color is yellow or Red, ventilation should be increased to improve air quality.



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CALIBRATION

The monitor is calibrated at standard 400ppm CO₂ concentration in factory. Besides, an auto background calibration feature is built into the device to offer good accuracy to this device. Nevertheless, user still can do manual calibration regularly to maintain best accuracy.

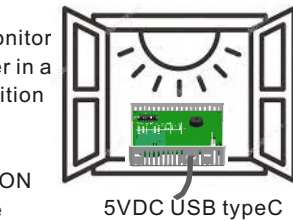
First of all, remove the monitor from wall. Leave the meter in a known 400ppm CO₂ condition for some minutes.

Push the #7 dip switch to ON position and power up the monitor through USB type C cable with 5VDC power input. After a period of 300 seconds count down, the display show "SA" on display to indicate the calibration is done. Check if the displayed CO₂ value is between 370~430ppm.

Remove the USB power supply and push the #7 dip switch to OFF position.

Once completed, install the monitor to wall plate again.

CAUTION: Do not calibrate the meter in the air with unknown CO₂ level. Otherwise, it will be taken as 400 ppm and leads to inaccurate measurement. The manual calibration is suggested to be done outdoor with good ventilation, fresh air and sunny day where CO₂ level is around 400ppm. Do not calibrate in rainy day because high humidity will affect the CO₂ level in air. Do not calibrate in places crowded with people or close to where exist high CO₂ such as ventilating outlets or fireplaces.



5VDC USB typeC

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LCD Brightness Adjustment

If user feels the LCD brightness is too strong or weak, to adjust the brightness is possible. By pressing the button longer to enter the brightness adjustment. There are three grades to choose. Then, short press to change one grade. Default is middle. Long pressing button again to escape and save the brightness adjustment.

Buzzer ON & Mute

The buzzer is default as OFF but can be turned to ON if audible alarm is required. See adjustments section for details and turned to ON while installing the monitor

While the buzzer function is activated, the buzzer beeps while measured real time CO₂ is over the red light bar threshold.

To mute it, simply press button once. While measured CO₂ return to yellow light, the buzzer beep stops as well. While CO₂ returns to green range, the buzzer function is again standby and can be triggered once CO₂ is over the red light threshold.

HOW TO IMPROVE INDOOR AIR QUALITY

If you don't have ERV installed, openable windows and trickle ventilators allow you to adjust the fresh air of the entering room. Trickle ventilators are adjustable and positioned to encourage ventilation through each room. To allow a flow of air through your room, at least two trickle vents should be opened by similar amounts, particularly if they are in the same room.

CO ₂	Action
Green	Normal concentration level, no action required; check monitor is working correctly
Yellow	Ventilation required, partially or fully open trickle ventilators or leave room door partially open
Red	Significant ventilation required, open window and leave door fully open

DRYCONTACT PORT

The dry contact relay port offers an easy way for HVAC technician who need an external sensor to give ON or OFF signal to ERV system (energy recovery ventilation). When LED turns to red, ERV will be turned ON and then be OFF while LED revert to green.



Please find detail information from the manual of your ERV device in "external sensing device connection" section.

ERROR CODE

CODE	PROBLEM/SOLUTION
E1	CO ₂ sensor is damaged -Send back to repair
E2	Measured reading is under the lower limit -For CO ₂ E2: Re-calibrate. For other E2: leave the meter in room condition for 30 mins. If it not works, send back to repair
E3	Measured reading is above the upper limit -For CO ₂ E3: put the meter in fresh air for 5 mins. For other E03: leave the meter in room condition for 30 mins. If it not works, send back to repair
Fail	To indicate the calibration is fail -Put meter in fresh and stable Co2 condition for calibration

WARRANTY

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation and does not cover misuse, abuse, alteration, neglect, or improper maintenance. Proof of purchase is required for warranty repairs.

Authorization must be obtained from the supplier before returning items for any reason. The meter should be returned along with good packing to prevent damage.

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