

# Merlin RS AVG



Safety & Health Monitoring Room Sensors - RSV C02TH3-AVG



## INSTALLATION & OPERATION

Please read these instructions carefully before use and retain for future reference.

These instructions can also be downloaded in electronic form on the product website.



[snsnorthern.com](https://www.snsnorthern.com)

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# IMPORTANT INFORMATION

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Take extra care where this symbol is used to understand the nature of any potential hazards and how to avoid them.

-  Before any installation, use or maintenance, read this manual carefully.
-  This product is for Dry Environment Use only.
-  Avoid prolonged use in dusty environments.
-  The information contained within this manual should be referred to for typical installation and operation only.
-  For site specific requirements that may deviate from the information in this manual – contact your supplier.
-  If the equipment is used in a manner not specified by the manufacturer, the safety and protection provided by the equipment may be impaired.
-  Installation must be in accordance with recognised standards in the country concerned.
-  The PCB contains circuitry that can be damaged by static discharge.
-  When metal conduit is used provision shall be provided by the installer for bonding in accordance with the NFPA70.
-  Cables must be protected against mechanical damage.
-  This product is not designed to detect smoke, fire or other gases and should NOT be used as such.
-  This device requires a continual supply of electrical power – it will not work without power.
-  A switch or circuit breaker must be fitted, it must be accessible and marked as the disconnecting device.
-  This product should not be used to substitute appropriate ventilation and exhaust systems.
-  This product may not safeguard individuals with specific medical conditions. If in doubt, consult a doctor / physician.
-  Your product should reach you in perfect condition, if you suspect it is damaged, contact your supplier.

## Manufacturer's Warranty

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The manufacturer warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of 3 Years from the date of purchase.

The manufacturer's liability hereunder is limited to replacement of the product with repaired product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only. Any implied warranties arising out of this sale, including but not limited to the implied warranties of description, merchantability and intended operational purpose, are limited in duration to the above warranty period. In no event shall the manufacturer be liable for loss of use of this product or for any indirect, special, incidental, or consequential damages, or costs, or expenses incurred by the consumer or any other user of this product, whether due to a breach of contract, negligence, strict liability in tort or otherwise. The manufacturer shall have no liability for any personal injury, property damage or any special, incidental, contingent, or consequential damage of any kind resulting from gas leakage, fire, or explosion. This warranty does not affect your statutory rights. During the above warranty period, your product will be replaced with a comparable product if the defective product is returned together with proof of purchase date. The replacement product will be in warranty for the remainder of the original warranty period or for six months – whichever is the greatest.

## Disposing of Electrical & Electronic Equipment (WEEE)

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When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Please contact your supplier or local authority for details of recycling schemes in your area.

# INSTALLATION

## General Information

**⚠ Failure to observe the following may cause injury to persons and/or property.**

The RS detector series is to be installed in non-classified, non-hazardous, permanent locations and is intended to continuously monitor the ambient air for carbon dioxide (CO<sub>2</sub>) levels, temperature (°C) and relative humidity (rH%) providing a or digital representation of the levels.

The device will measure and display the CO<sub>2</sub> value in ppm (parts-per-million) with digital display indications.

Your device will also monitor, record and display the average concentration of carbon dioxide over an 8 and 24 hour period also giving you the maximum concentration recorded over 24 hours.

Installation must be carried out by a licenced and insured contractor, installed, and located in positions determined by those who have knowledge of CO<sub>2</sub> dispersion, process plant systems and any equipment involved. Seek advice where necessary, in consultation with both safety and electrical engineering personnel.

Consider airflow patterns within the area, RS detectors must be installed in the correct orientation as per the manufacturer's specification, and ease of access should be accounted for to allow for any forms of maintenance throughout its operational life. For installations in North America, the National Electrical Code (NEC) should be strictly observed, and all appropriate local and national regulations should be observed.

## Typical Positioning

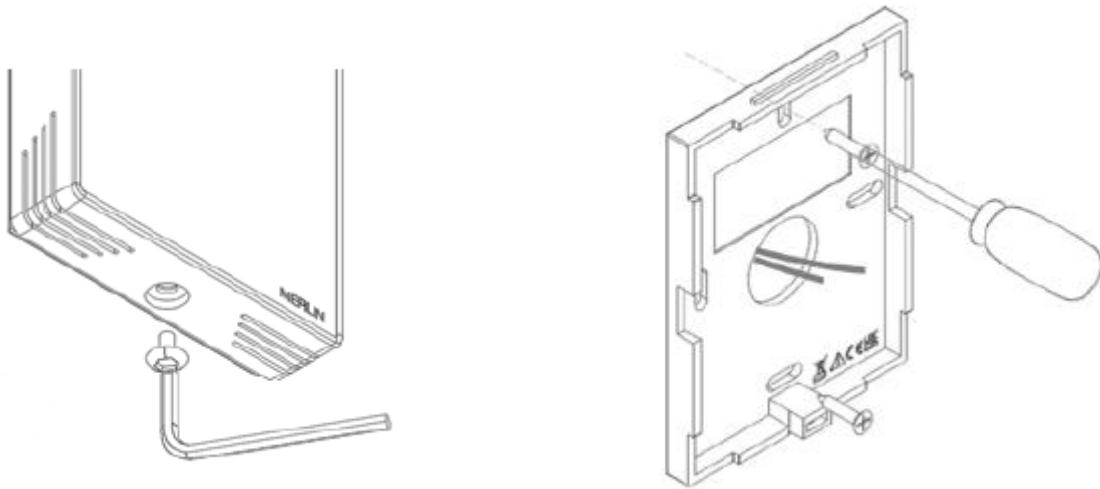
A carbon dioxide monitor requires a free flow of air to operate correctly; it should therefore not be located in a space that is likely to restrict the free movement of air.



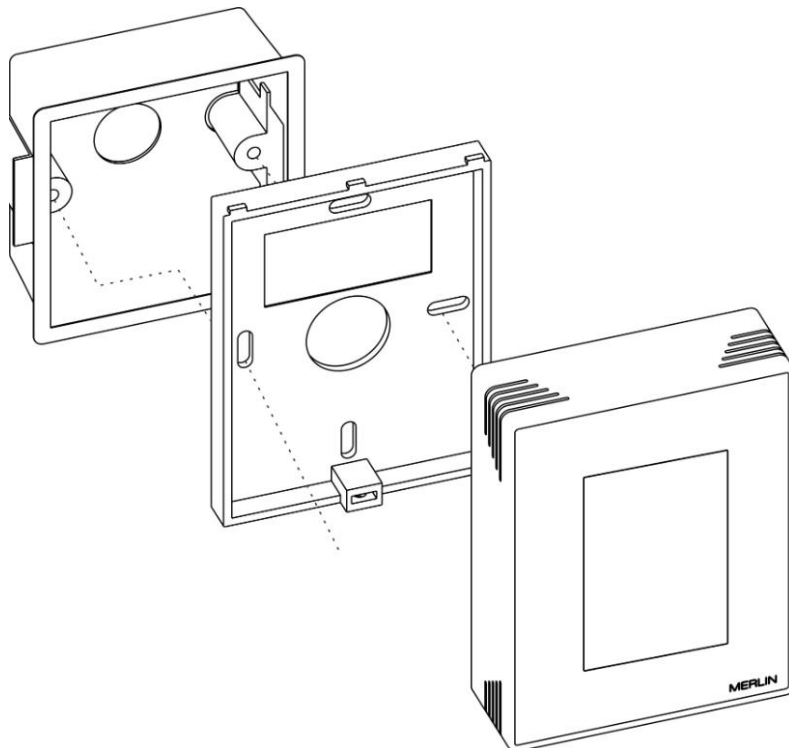
- Avoid positioning near draft areas i.e. doorways, windows and ventilation openings as this may give the occupant false CO<sub>2</sub> readings.
- Avoid obstructions such as furniture, blinds and curtains etc.
- Mount between 1.4 – 1.8m above floor level. A carbon dioxide detector head (or monitor if integrated) should not be sited within 1m of the expected location of a bed-head.

If you are in doubt or require further information, contact us.

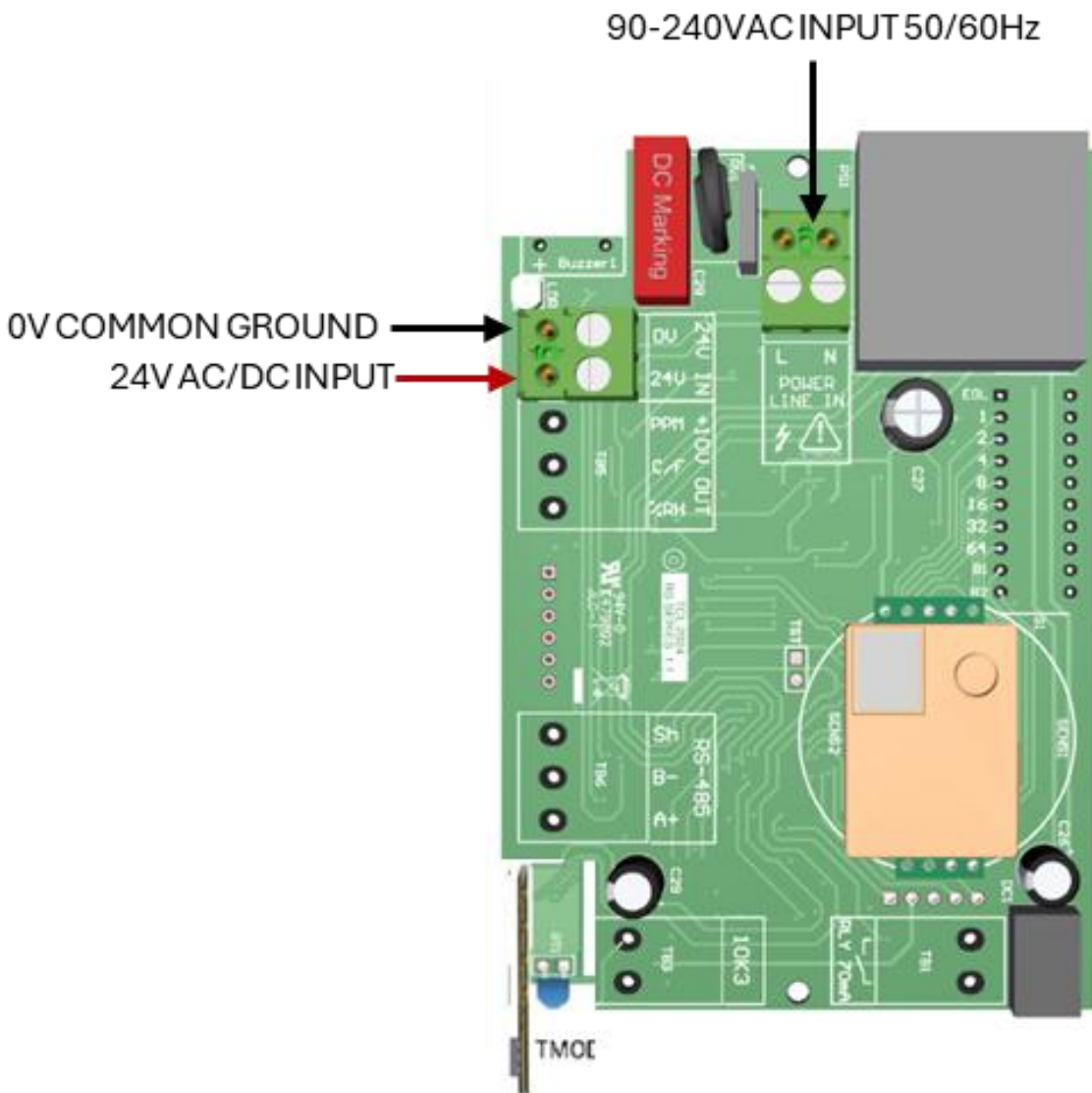
## Mounting Instructions



1. **Remove the front cover:** by removing the screw underneath the housing using Allen key provided
2. **Mark mounting holes for wall mounting:** ensuring surface is flat to avoid distortion. Using the backplate, mark points and drill 0.2" (5mm) hole, insert plugs and use screws provided.
3. **Mount to an electrical back box:** The monitor can be mounted to an electrical back box as shown below.
4. **Cable entry** is provided via the rear cable entry hole or side plastic breakouts.
5. **Secure the front cover** by aligning the top and then securing the M4 screw in place.



## PCB Overview



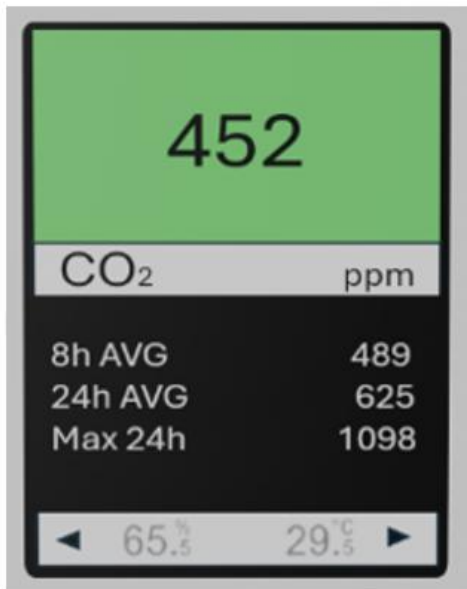
## Power Wiring

Wire the 24V AC/DC or the 90~240VAC main power supply to the terminal marked Power Line In as shown above.

On initial power up the monitor will require 48 hours to reach full accuracy and display the CO<sub>2</sub> average correctly.

# OPERATION

## CO<sub>2</sub> Warning Levels



Current CO<sub>2</sub> Level

**8h AVG:** CO<sub>2</sub> level over 8 hours

**24h AVG:** CO<sub>2</sub> level over 24 hours

**Max 24h:** Maximum concentration recorded over a 24-hours

Temperature & Relative Humidity

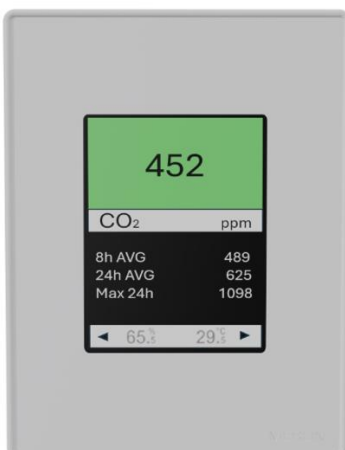
Poor air quality can lead to feelings of drowsiness and headaches.

## Screen

- **GREEN** = CO<sub>2</sub> Level OK / Power Supplied
- **YELLOW** = CO<sub>2</sub> Level Warning (LOW)
- **RED** = CO<sub>2</sub> Level Warning (HIGH)

Green	Yellow	Red
<999	>1000	>1400

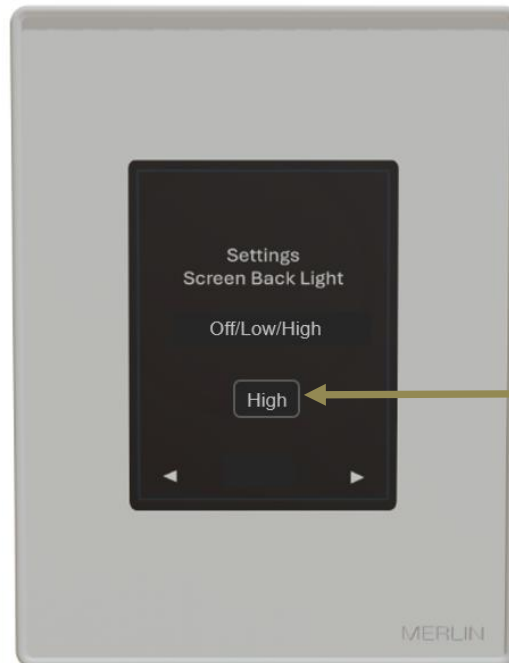
When the alarm indicates poor air quality open windows, doors and vents to allow fresh air to enter the room.



## Display Settings

Press the arrows on the screen to change to the settings page.

Press as shown below to set the display.



### Settings:

**Off:** Screen will turn off until pressed or the CO2 levels reaches a low or high alarm level

**Low:** Screen brightness is low

**High:** Screen brightness high

**Current setting:** Press to change

## Maintenance

Keep your detector in good working order follow these basic principles.

DO carefully remove any accumulated dust from the outer enclosure once a month.

NEVER use detergents or solvents to clean your device – this may permanently or temporarily damage the gas-sensing elements.

NEVER spray air fresheners, hair spray, paint or other aerosols near the device.

NEVER paint the device. Paint will seal vents and interfere with the device.



High concentrations of alcohol found in many products may damage, deteriorate or affect the gas sensing elements – such as; wine; deodorants; stain removers; thinners etc.

Our CO2 monitors are designed to automatically recalibrate using background CO2 levels.

For maintenance purposes, our monitors should be exposed to fresh air frequently to aid with this recalibration procedure.

# TECHNICAL SPECIFICATION

<b>Mechanical</b>	Mounting	Wall Mounted
	Entry	1" / 25.4mm DIA Rear Entry
	Size (W x H x D)	86 x 114 x 35mm
	Weight (Max)	0.164Kg max
	Enclosure	ABS UL Flame retardant – IP40
	230VAC Power Rating	Nominal 230VAC, (90-250V AC), 50-60Hz
	24V AC/DC Power Rating	12-24VDC (11-32 VDC) / 24VAC, (20-27 VAC) 50-60Hz
	Internal Fuse	Resettable PPTC 240VAC, 400mA
Power Consumption Max	2.5W Max	
<b>Environmental</b>	Operating Temperature	-10 to 50°C
	Storage	10-30°C / 0 to 95% RH
	Humidity	0 to 95% RH (continuous) non-condensing.
	Atmospheric Pressure	80 to 110Pa
	Altitude	<2000m
Installation Cat (230V Voltage)	II (Class 2) Pollution Degree 2	
<b>User Interface</b>	Language	English
	Display	2.8" TFT
		Green: OK Yellow: Warning (Pre-Alarm) Red: Danger (Alarm)
<b>Conformance</b>	Safety	BS 61010-1 (CE / UKCA)
	Electromagnetic Compatibility	BS 50270 (CE / UKCA)
	Other (Applied or Considered)	IGEM/UP/11 BS 50543
<b>Sensing</b>		
<b>CO2 (ppm)</b>	<b>Temperature (°C)</b>	<b>Humidity (%RH)</b>
Sampling: Diffusion Type NDIR	Fully Calibrated	Fully Calibrated
Indication Range: 400 – 5000ppm	Normal Indication Range: 0-50°C	Indication Range: 0-100% RH
Response: t90 <120s	Response: t63% @ 25°C ~20s Typical	Quick Response: t63% @ 25°C ~8s
Calibration: ABC Logic Self Calibration -	Excellent long term stability	Excellent long term stability
Warm Up Time: ~1 Minute	Strong anti-interference	Strong anti-interference
Accuracy: 5% FS @ 25°C	Warm Up Time: ~1 minute	Warm Up Time: ~1 minute
Lifespan: >10 Years	Accuracy: ±0.5° @ 10-45°C	Accuracy: ±2% @ 15-30°C (20-90%RH)
Resolution: 1ppm	Resolution: 0.1°	Resolution: 0.1%

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**Please pass this manual to the system owner / user.**

Date of Installation:	
Installation Location:	
Organisation:	
Stamp/Signature of the installer:	

We recommend all S&S equipment be commissioned by competent/trained engineers to ensure correct installation and operation. We strongly recommend the response and alarm signals are tested and validated once installed. This will ensure the equipment performs as intended and is free from any unforeseen damage caused by transit/installation.

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