

# RD ADA1

## CARBON DIOXIDE CONTROLLER (CO<sub>2</sub>)

- Information, on the LCD display, of the level of CO<sub>2</sub> measured by the internal sensor
- Equipped with a voltage-free contact output
- Test function to ensure correct operation of the controller
- Option to change the alarm thresholds



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### STARTING UP

Immediately after powering, the controller starts the sensor heating phase; the display shows the message "HEAT" with the icon "▲" flashing.

Later, during normal operation, the display will show the CO<sub>2</sub> level detected.

The "LEVEL" icon is always on.

### ON/OFF

By pressing the key "⏻", if enabled, it is possible to switch the controller on and off (see step 8 in the "Installation" paragraph).

### BACKLIGHT

Pressing any keys activates the backlight of the display which will switch off automatically after approximately 30 seconds.

### TEST FUNCTION

To verify correct operation of the controller, press and hold the "TEST" key for more than 20 seconds; the "OUT 1" output key will be activated and the display will light up the "TEST" icon for approximately 30 seconds and the message in motion "... ." will be shown to indicate that the test is in progress. Press the key "⏻" to exit the "TEST" function at any time.

### ALARM THRESHOLD DISPLAY

During normal operation, by pressing the "▲" or "▼" keys, will show on the display (for approximately 6 seconds) the CO<sub>2</sub> threshold set.

### RESET

To reset the controller remove voltage from the device for a few seconds and then switch it back on again.

Note: the data set will not be reset; the device will just be activated again.

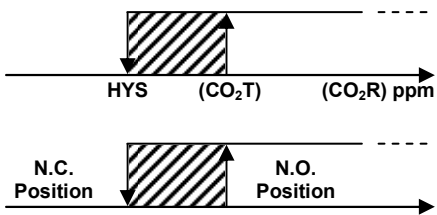
### OPERATION

In normal operation, the LCD displays the "LEVEL" icon and the concentration of CO<sub>2</sub> (in ppm) measured in the environment in which it is installed.

If the device detects a concentration of CO<sub>2</sub> that is greater than the value set in the user parameter "CO<sub>2</sub>t", the output OUT1 will be activated. Activation of the output will be indicated on the display by the icon "OUT 1".

The output will be disabled if the concentration of CO<sub>2</sub> falls below the value set in the user parameter "CO<sub>2</sub>t" minus the hysteresis value of the device.

### OUT 1 OUTPUT ACTIVATION GRAPH



#### Legend:

- HYS: hysteresis value (fixed and immutable)  
CO<sub>2</sub>T: alarm threshold set  
CO<sub>2</sub>R: CO<sub>2</sub> detected

### FAULT CONDITION

The controller constantly performs a diagnosis of the internal circuit to verify its correct operation.

Where a fault condition is detected, the display will show the "FAULT" icon and an indication of the type of fault detected while the OUT1 output will be activated.

### CALIBRATION:

The controller continuously performs a sensor auto-calibration, based on the measurements of the last 14 days, without requiring the intervention of the operator.

### ERROR MANAGEMENT

#### Sensor Fault

If the device detects an anomaly on the internal sensor, the display will show the message:

"SnEH" or "SnI2"

#### "SnEH": Fault upper limit on the CO<sub>2</sub> Sensor.

This fault may be linked to environmental conditions: change the air in the environment and wait a few hours.

If the fault persists, replace the device.

#### "SnI2": Fault communication with the CO<sub>2</sub> sensor.

This fault can be resolved by resetting the device.

If the problem persists, replace the device.

These reports will be present until the fault is removed.

#### Internal memory fault

In the event that the device detects a data storage fault, the display will show the message "SnE2" with the "▲" icon flashing.

This type of problem can be solved by restoring the device default data, by accessing the user parameter 4 "dEFt" and selecting "dFon".

If the problem is resolved, it is possible to manually reset all the data to the value before reset.

Conversely, if the fault persists, replace the device.

### USER PARAMETER SETTING

To adjust the user parameters of the device, proceed as follows:

1. Press and hold for more than 20 seconds the key "⏻"; the display will show the "PARAMETER" icon and the first user parameter "CO<sub>2</sub>t".
2. Repeatedly press the key "⏻" to cyclically scroll through the user parameters:  
"CO<sub>2</sub>T" : alarm threshold  
"T\_LO" : lower limit threshold  
"T\_UP" : upper limit threshold  
"dEFt" : DEFAULT DATA Management
3. Press the "▲" or "▼" key to modify the parameter selected; the "SET" icon will flash
4. Press the "▲" or "▼" key again to change the value; each modification is stored automatically.
5. To set the user parameter press the key "⏻" again
6. To exit the selected user parameter modification mode, press the key "⏻".
7. To exit programming of the user parameters, press the key "⏻" again or wait 30 seconds without pressing any key.

#### PARAMETER 1: CO<sub>2</sub>t

Setting this parameter enables definition of the value of CO<sub>2</sub> beyond which the device enters the alarm phase and activating the OUT1 output.

Data	Regulation range	Default
CO <sub>2</sub> t	T_LO .. T_UP	900ppm

#### ATTENTION

The adjustment range is linked to the values set in the T-LO and T-UP user parameters.

#### PARAMETER 2: T\_LO

This parameter sets the value of the lower bound for the alarm threshold adjustment, which can be set in the user parameter "CO<sub>2</sub>t".

Data	Regulation range	Default
T_LO	500 .. 2000 ppm	900ppm

#### PARAMETER 3: T\_UP

This parameter sets the value of the upper bound for the alarm threshold adjustment, which can be set in the user parameter "CO<sub>2</sub>t".

Data	Regulation range	Default
T_UP	500 .. 2000 ppm	1200ppm

#### PARAMETER 4: dEFt

Using this parameter, by selecting the "dFon" data, it is possible to restore, in the device, the default values set in the factory.

Conversely, by setting "no" the stored data is maintained.

Data	Regulation range	Default
dEFt	NO / dFon	NO

Note: resetting the DEFAULT data, new heating of the sensor is activated.

### TECHNICAL SPECIFICATIONS

Power:	85-264V ~ 47-440Hz
Absorption:	2.0 VA max.
Screen resolution	1ppm.
Hysteresis (HYS):	75ppm - non-modifiable
Timeout parameters:	20 sec. Approximately from last pressing
Sensor type	NDIR
Detection range:	0 .. 2000 ppm
Precision:	± 30ppm ± 3% of reading
Rated current:	5(1)A 250V ~ SPDT (Voltage-free)
Backlight Off :	20 sec. Approximately from last pressing
Action type:	1
Overvoltage category:	II
Pollution degree	2
Tracking Index (PTI):	175
Class of protection against electric shock :	II <input type="checkbox"/>
Impulse voltage rated:	2500V
Number of manual cycles:	50000
Number of automatic cycles:	100000
Software class:	A
EMC testing voltage:	230V ~ 50Hz
EMC testing current:	34mA
Exclusion distance tolerance	
Short circuit fault mode	± 0.15mm
Temperature	
ball pressure test:	75°C
Degree of protection:	IP30
Operating temp:	0°C. 40°C.
Storage temp:	- 10°C. + 50°C.
Humidity limits:	20%. 80% RH non-condensing
Dimensions:	132 x 87 x 23.6 (LxAxP)
Container:	Material: ABS VO self-extinguishing.
Colour:	Signal white (RAL 9003)
Mounting:	Wall or on recessed box 503.

### WARRANTY

In the view of a constant development of their products, the manufacturer reserves the right for changing technical data and features without prior notice. The consumer is guaranteed against any lack of conformity according to the European Directive 1999/44/EC as well as to the manufacturer's document about the warranty policy. The full text of warranty is available on request from the seller.

## INSTALLATION



### WARNING

- For correct measurement of carbon dioxide (CO<sub>2</sub>) in the room, it is advisable to install the device approximately 1.5 m from the floor and away from sources of heat and draughts.
- The controller must be wired to the electric mains through a switch capable of disconnecting all poles in compliance with the current safety standards and with a contact separation of at least 3 mm in all poles.
- Installation and electrical wirings of this controller must be made by qualified technicians and in compliance with the current standards.
- Before wiring the controller be sure to turn the mains power off.

Installation of the device is intended for installation in flush-mounted (or wall) standard junction boxes with two or three modules or directly on the wall using the plugs supplied.

To install the device proceed as follows:

- 1 Release the plate attached to the controller base by pushing it to the left. This releases the teeth shown in Fig. 1.

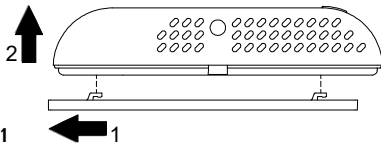


Fig. 1

- 2 Push the plastic tab in the lower slot using a screwdriver, slightly lifting the cover (Fig. 2).

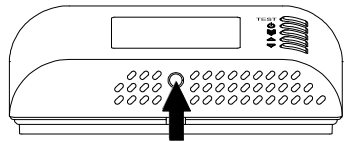


Fig. 2

- 3 Turn the cover, while pressing it slightly, until it is extracted (Fig. 3).

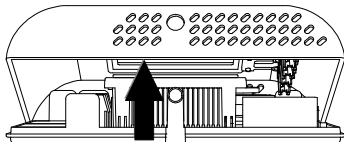


Fig. 3

- 4 Identify the correct positioning of the device (Fig. 4).

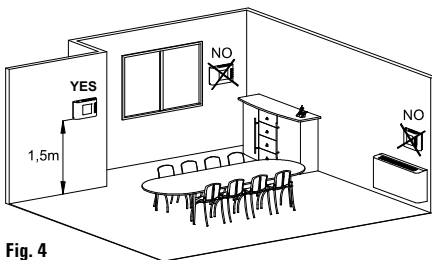


Fig. 4

- 5 Fix the plate to the wall, using the two screw seats with centre distances of 60 mm or 85 mm (use the supplied wall plugs and/or screws). Pass the wires through the rectangular openings (Fig. 5).

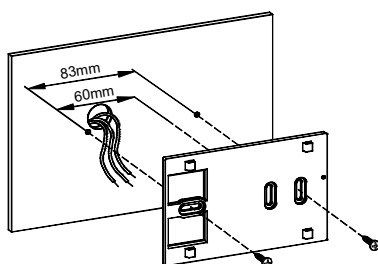


Fig. 5

- 6 - Connect the controller base to the wall plate (pass the wires through the rectangular openings). Align the base holes with the special wall plate teeth, then press the base to the left until the plate's plastic teeth click (Fig. 6).
- Fix the controller base to the wall with the supplied screw.

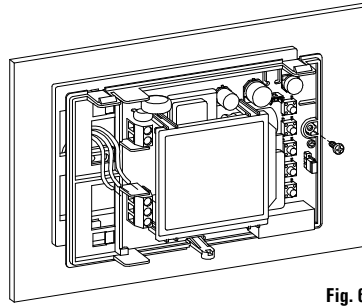


Fig. 6

- 7 Make the electrical connections by passing the wires through the rectangular opening of the wall plate (Fig. 6) according to the connection diagram of Fig. 7.

----: Reinforced insulation

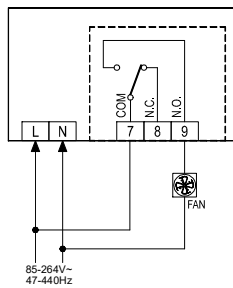


Fig. 7

- 8 Jumper set-up:

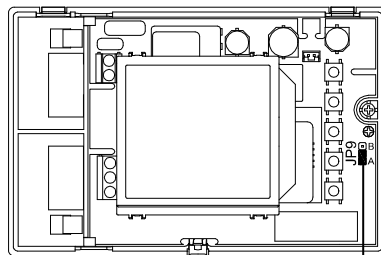


Fig. 8

ON/OFF BUTTON 'ON/OFF' ENABLE.

- B Enables turn on and turn off with button 'ON/OFF'.
- A Disables turn on and turn off with button 'ON/OFF'.

- 6 Perform the following operations to close back the controller:

- Position the two teeth on the upper part of the cover in the special notches.
- Turn the cover and push the plastic tab inwardly on the lower part of the base (see the arrow in Fig. 9). Press it so that the plastic fixing tab inside the special hole clicks.

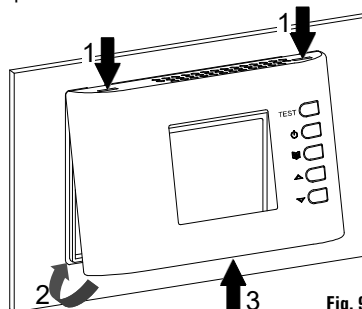
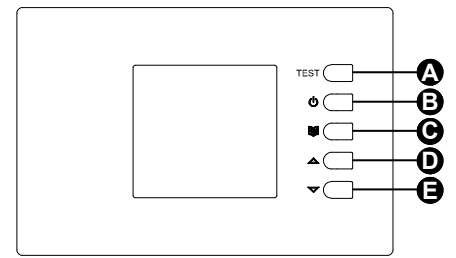


Fig. 9

## DESCRIPTION OF CONTROLS



- A Start the TEST function of the controller.
- B Dual function key:
  - In normal operation, if enabled, switch the controller on or off.
  - In "user parameter setting" exit programming.
- C Access the user parameter list.
- D Dual function key:
  - In normal operation, the alarm threshold set is displayed.
  - In "user parameters setting" change the parameter selected (increasing the value).
- E Dual function key:
  - In normal operation the alarm threshold set is displayed
  - In "user parameters setting" change the selected parameter (decreasing the value).

## DISPLAY VIEW

The symbols that can be shown on the display are described in the following table:

<b>LEVEL</b>	The figure shown is the value of CO <sub>2</sub> detected in the environment.
<b>PARAMETER</b>	It indicates that a user parameter is being displayed.
<b>SET</b>	Selected user parameter modification mode has been entered.
<b>OUT 1</b>	The output is enabled.
<b>TEST</b>	The Test function has been started.
<b>FAULT</b>	The controller has identified a fault condition.
	The controller has detected a data storage fault.