

GAS MONITORING SENSORS FOR DOMESTIC PREMISES

SRS 158 - 258 - 358 Eng.



- For use in conjunction with RGS detectors
- With internal sensing element:
 - semiconductor type for detecting methane and LPG-propane
 - electrochemical cell type for detecting carbon monoxide (CO)
- LEDs for: power supply, fault and (only for CO) alarm
- Acoustic alarm (only for CO)
- Power supply: 230V~; Protection: IP42

1. APPLICATION

SRS sensors are designed to ensure the safe operation, in domestic premises, of gas appliances such as: ovens, hobs and calorifiers.

By means of the internal sensing element they can measure the concentration in the air of the common types of combustible gas (methane and LPG-propane) and of carbon monoxide (CO).

Connected to RGS detectors they permit creating one or two detection points additional to that inside the detector.

2. MODELS

Model	Gas	Power supply	Protection	Maximum length of connections	
				4x1mm ²	4x1.5mm ²
SRS 158	Methane	230 Volt~	IP 42	50 m	75 m
SRS 258	LPG-Propane	230 Volt~	IP 42	50 m	75 m
SRS 358	Carbon monoxide (CO)	230 Volt~	IP 42	50 m	75 m

3. TYPICAL INSTALLATION

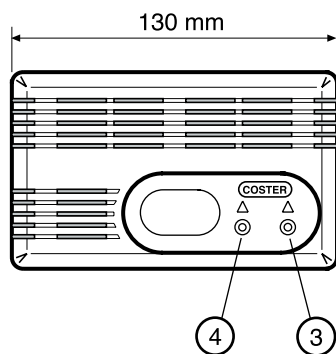


4. TECHNICAL DATA

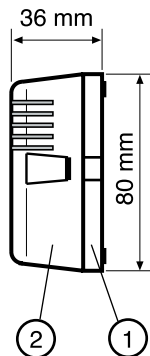
Power supply	230 V ~ ± 10%	Gas sensing element::	
Frequency	50...60 Hz	– Methane (SRS 158):	semiconductor type (Figaro TGS 2611-E00)
Consumption	2.5 VA	– LPG-Propane (SRS 258):	semiconductor type (Figaro TGS 2610-D00)
Protection	IP 42	– Carbon monoxide (CO) (SRS 358)	electrochemical cell type (Sixth-Sense ECO-Sure/2e)
Electromagnetic compatibility	EEC 93/68	Time for stabilisation of sensors	120 seconds
Ambient temperature:		Weight	250 g
– operating	0...40 °C		
– storage	– 20...60 °C		
Permitted ambient humidity	Class F DIN 40040		

5. OVERALL DIMENSIONS

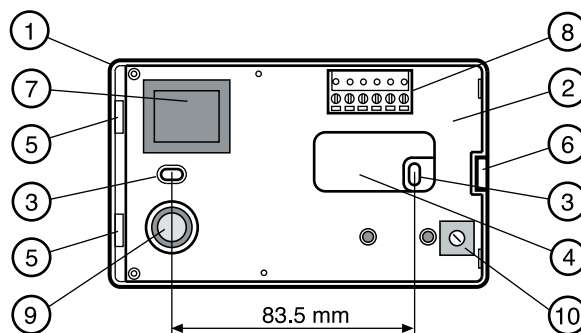
5.1 SRS 158 and SRS 258 sensors



- 1 – Base
- 2 – Cover
- 3 – LED for gas sensing element fault
- 4 – Power supply LED

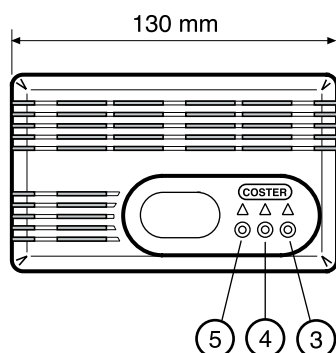


- 2 – Cover
- 1 – Base

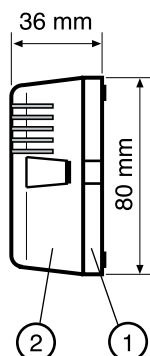


- 1 – Base
- 2 – Printed circuit
- 3 – Holes for fixing screws
- 4 – Knockout for electric connections
- 5 – Cover attachment couplings
- 6 – Cover securing element
- 7 – Transformer
- 8 – Terminal block
- 9 – Gas sensing element
- 10 – Settings trimmer

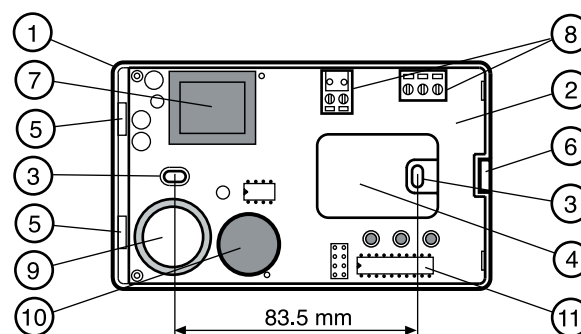
5.2 SRS 358 sensor



- 1 – Base
- 2 – Cover
- 3 – LED for gas sensing element fault
- 4 – Alarm LED
- 5 – Power supply LED



- 2 – Cover
- 1 – Base



- 1 – Base
- 2 – Printed circuit
- 3 – Holes for fixing screws
- 4 – Knockout for electric connections
- 5 – Cover attachment couplings
- 6 – Cover securing element
- 7 – Transformer
- 8 – Terminal block
- 9 – Acoustic alarm
- 10 – Gas sensing element
- 11 – Microprocessor

6. CONSTRUCTION

The sensor comprises: :

- base made of shock-proof plastic, with two holes a standard distance apart for mounting on a wall or in a standard pattress and with a knockout for the passage of the electrical connections.
- circuit board, manufactured according to CEI standards, to which are attached the terminal block for the electrical connections, the gas sensing element, the setting trimmer (for SRS 158 and SRS 258) and the microprocessor for processing the data (for SRS 358).
- protective cover, in shockproof plastic, which is secured by means of two couplings on the left side and by a securing element on the right side.

7. SITING & POSITIONING

The correct positioning of the components of the system for detecting gas in the air is essential for its correct functioning and, accordingly, for guaranteeing the safety of the spaces controlled and of the persons in them. For this reason, it is advisable to have the system installed by qualified personnel.

The position of the sensors depends on the type of the gas to be controlled, and in particular, of its density in respect of air.

- **Methane** (a gas that is lighter than air and so tends to rise). Position: at a distance of 10...50 centimetres from the ceiling and, in any event, above the door and the highest windows.
- **Propane-LPG** (a gas that is heavier than air and so tends to move downwards). Position: at a distance of 10...30 centimetres from the floor,
- **Carbon monoxide (CO)** (a gas with a density similar to that of air and so tends to spread uniformly). Position: at a height of 100...160 centimetres from the floor.

Furthermore, in order to ensure correct operation and to avoid false alarms due to the accidental and momentary presence of gas, the detector **must not** be positioned:

- at a distance less than 1...2 metres from gas water heaters,
- at a distance less than 2...3 metres from gas hobs or gas ovens (also to avoid contaminating the sensors with grease or kitchen vapours);
- in the open;
- in closed spaces (e.g. behind a curtain, in a corner or in a wardrobe);
- directly above or under a sink;
- near doors or windows;
- near air extractors;
- in places where temperature and humidity could be outside the limits given under 4. Technical Data;
- in places where dust or dirt could block the sensor and so render it ineffective;
- in places where the air movement could be impeded by furniture;
- in places subject to sprays or drips of water, in particular for detectors sited near the floor;
- in places difficult to access for the periodical checks of the detector.

8. ELECTRICAL CONNECTIONS

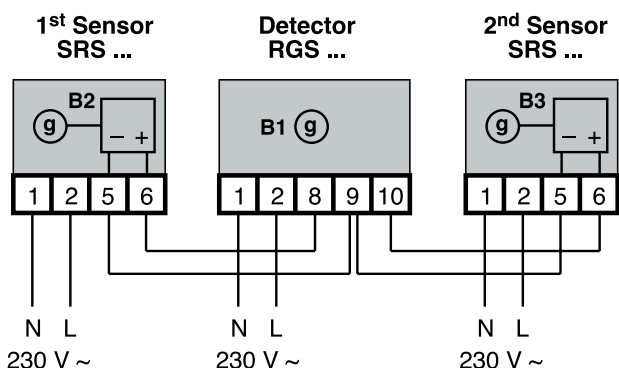
The power line for the remote sensors can be the same as that for the detector or derived separately from another point in the distribution network.

IMPORTANT : the detection system must always be in operation, so the electric power supply for the detector and the remote sensors must come directly from the mains supply without intervening switches or other devices that could inadvertently render it inactive.

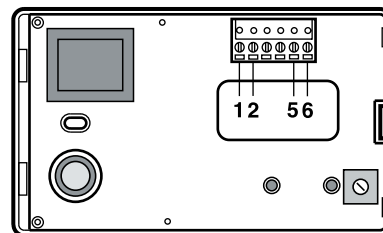
For the electrical connections the following cables should be used:

- 1.5 mm² for power.
- for the remote sensors:
 - 1mm² for distances up to 50 meters
 - 1.5 mm² for distances up to 75 meters

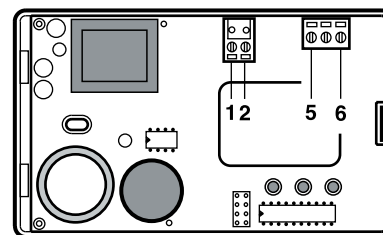
9. WIRING DIAGRAM



SRS 158 - SRS 258



SRS 358



10. OPERATION

10.1 Monitoring sensors for combustible gases

SRS 158 (methane) and SRS 258 (LPG-propane) sensors provide an analogue output signal the value of which depends on the concentration of gas in the air. This signal is sent to the RGS... detector which, after having processed it, provides for interventions, if required. The two sensors, by means of a LED, can give warning of a fault in the sensing element (the yellow LED lights).

10.2 Monitoring sensor for carbon monoxide (CO)

SRS 358 sensor sends to the RGS... detector a signal already processed by a microprocessor. This signal, according to its analogue level, indicates the following operating conditions: normal, pre-alarm, alarm and sensing element fault.

This permits the SRS 358 sensor to signal, locally if required, the conditions of "Pre-alarm" (red LED lights intermittently), "Alarm" (red LED lights and remains lit and an acoustic alarm sounds) and "Fault in sensing element" (yellow LED lights).

Carbon monoxide (CO) is extremely dangerous for humans. The gas is colourless and odourless. Moreover, its danger does not depend only on the concentration of gas in the air but also on the length of time a person is exposed to an atmosphere with CO present.

Allowing for a large safety margin for humans, the following levels can be established:

- Concentration < 0.05% (50 ppm): the safety of the persons present is assured for an indeterminate time and so the detector does not intervene,
- Concentration 0.05... 0.1% (50...100 ppm): within this concentration range, for 60 minutes the sensor signals a "Pre-alarm" state; then, after this period, passes to the "Alarm" state,
- Concentration 0.1...0.3% (100...300 ppm): within this concentration range, for 10 minutes the sensor signals a "Pre-alarm" state; then, after this period, passes to the "Alarm" state,
- Concentration > 0.3% (300 ppm): the safety of the persons present is not guaranteed. The sensor immediately signals the "Alarm" state

The action of the sensor is of the "dynamic" type: if the concentration passes from one range to another, the time count increases or diminishes as a consequence, thereby modifying the response of the detector. In particular, if the concentration of CO should fall below 0.05% (50 ppm) for more than one minute, the sensor returns to the "Normal" condition (the alarm LED and the acoustic alarm are switched off).

11. PERIODIC MAINTENANCE

To ensure that the detector continues to operate correctly, it is necessary to check its operation, according to the instructions given below, at least once every three or four months. At least once a year it is advisable to have the system checked by a specialised technician.

11.1 Check detector

Check the presence of power (the green LED should be lit), and the operation of the sensing element (the yellow LED should be out).

Warning: if the "Sensor fault" LED lights (yellow LED of sensor) it is necessary to request technical assistance

11.2 Length of life of sensing element

On the cover of the sensor can be seen a plate showing the overhull date of the sensor. After this date the life cycle of the sensing element is finished and so it must be replaced by a new one. It is necessary to calibrate the new sensing element and to make a complete overhaul of the sensor. These operations must be carried out in the workshops of the manufacturers.

12. WARNING: IN THE EVENT OF ALARM

Combustible gases (methane, LPG-propane)

First of all, remember that most people are able to note the presence of combustible gas (methane and LPG-propane) in the air, even at concentrations below the alarm level established for the detector. So, if the smell of gas is noted, this certainly does not indicate that the detector is faulty and does not necessarily indicate a danger situation.

Carbon monoxide (CO)

Carbon monoxide (CO) is produced by the incomplete combustion of any device that has to use, for this combustion, the oxygen present in the air of the space where it is installed. **It is absolutely without odour and colour, and therefore it is impossible to notice its presence: this makes it extremely dangerous.** Only a suitable gas detector can detect the presence of carbon monoxide (CO) in the air.

For the above reasons, and since it is not possible to know instinctively which type of gas has created a dangerous situation, if the gas detector enters the alarm state, do as follows:

- turn off all open flames, and put out cigarettes, cigars, pipes, etc.
- turn off all gas appliances.
- do not operate electric switches since these could cause sparks.
- do not use the telephone in the spaces where gas is present.
- for methane, close the central gas supply valve; whilst for LPG-propane close the cylinder or the storage tank.
- **open the windows and doors to ventilate the spaces.**

If the cause of the alarm is discovered and securely eliminated, the sensors and detector can be re-started and the supply of gas turned on again.

For combustible gases, if the reason for the gas escape is not clear, immediately inform the emergency service of the gas supply company.

Amendments to data sheets

From version	to version	Page	Section	Description amendments
16.02.05 MZ	08.02.07 MZ	2	7. Siting & Positioning	Update height position of Carbon Monoxide sensor



Head Office & Sales
Via San G.B. De La Salle, 4/a
20132 - Milano
Tel. +39 022722121
Fax +39 022593645
Orders
Reg. Off. Central & Southern
Via S. Longanesi, 14
00146 - Roma
Tel. +39 065573330
Fax +39 065566517
Shipping
Via Gen. Treboldi, 190/192
25048 - Edolo (BS)
Tel. +39 0364773200
Tel. +39 0364773202
E-mail: info@coster.eu
Web: www.coster.eu



D 33273