RYM01M

4 ZONES GAS DETECTION CENTRAL UNIT

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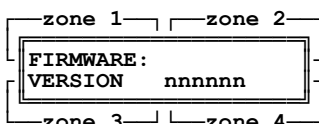
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[a] OVERVIEW

- 230V~ power supply
- Controls up to 4 zone
- Manages CO, L.P.G., Methane (CH4) and petrol vapours (n-octane) transmitters.
- Wide parameters configuration freedom
- Last alarm conditions data retention
- LCD backlight 2 x 16 characters display
- 9 modules DIN rail mount
- Compliant with EN60079-29-1 performance standard
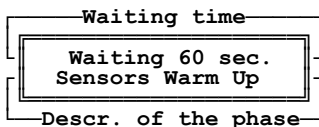
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[b] OPERATION, INSTALLATION AND MAINTENANCE

Operation

Microcontroller central unit capable of monitoring the gas concentration in up to 4 different zones: for each of these a 4 .. 20 mA transmitter can be wired for measurement and detection of either L.P.G., Methane, petrol vapours or Carbon Monoxide (CO).
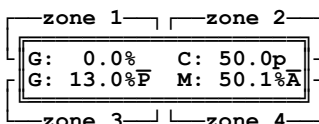
When the unit is powered on, it shows the following information:

```
 ┌─zone 1─┐ ┌─zone 2─┐
┌─────────────────────┐
│FIRMWARE:            │
│VERSION   nnnnnn     │
└─────────────────────┘
 └─zone 3─┘ └─zone 4─┘
```

These information remains visible for about 2 seconds.
After this time the warm up screen will apear. The unit begins the warm up phase of the sensors, which lasts 60 seconds.

```
 ┌──────Waiting time──────┐
┌─────────────────────┐
│   Waiting 60 sec.   │
│   Sensors Warm Up   │
└─────────────────────┘
 └─Descr. of the phase─┘
```

After this time, this main screen appears (example):

```
 ┌──zone 1──┐ ┌──zone 2──┐
┌─────────────────────┐
│G:  0.0%   C: 50.0p │
│G: 13.0%P̄  M: 50.1%Ā │
└─────────────────────┘
 └──zone 3──┘ └──zone 4──┘
```

Each zone provides the following information:
The first letter from left explains the transmitter type wired to the central unit.
The transmitters which can be wired to the central unit can be different for each zone; the detectable gases are the following:

L.P.G. (C_4H_{10}):	display shows letter **'G'**
Methane (CH_4):	display shows letter **'M'**
Petrol vapours (n-octane):	display shows letter **'V'**
Carbon monoxyde (CO):	display shows letter **'C'**.

Values displayed on the right, in % L.E.L. (in case L.P.G., methane or petrol vapours transmitters are connected) or ppm (in case of Carbon Monoxide) are the actual gas concentration values measured by the transmitters.
The last letter shown on the display for each zone indicates the actual state of the relevant transmitter as explained below:

'_': Active state (measuring, normal operation).
'F': **'F'**ault (malfunction) on the **'G'**as transmitter (Iout=2 mA). The activation of the pre-alarm state triggers the buzzer and the yellow blinking led.
'L': **'L'**oop (either short or open circuit between the sensor wires: (Iout=0 mA).
'P': **'P'**realarm state.

This state is triggered if a transmitter sends a gas concentration level higher than the set pre-alarm threshold. The activation of the pre-alarm state triggers the pre-alarm relay, the buzzer, the yellow blinking led.

'A': **'A'**larm 1 state.
This state is triggered if a transmitter sends a gas concentration level higher than the set Alarm 1 threshold. The activation of the Alarm 1 state triggers the Alarm 1 relay, the buzzer, the red led fixed lit.

'H': **'A'**larm 2 state.
This state is triggered if a transmitter sends a gas concentration level higher than the set Alarm 2 threshold. The activation of the Alarm 2 state triggers the Alarm 1 relay, the buzzer, the red led fixed lit.

Overrange
When '**OVR**' is shown in place of the concentration value, this means that the upper limit of the measuring range has been exceeded. The '**OVR**' state corresponds to an input current value above 22mA.
If an Overrange condition happens, the unit can also activate the auxiliary relays 'AUX1' and/or 'AUX2' if enabled through the installer parameter 'Mode aux1' and/or 'Mode aux2'.
Each time an Overrange ('OVR') condition happens and it is subsequently resolved, the relays are kept active along with the internal buzzer until the user intentionally pushes for 3 seconds the '**reset**' button.

Pre-alarm relay
The central unit can manage the pre-alarm events through an output relay, "PREALARM", with exchange contacts (SPDT).
In case the prealarm threshold is reached, the central unit enables the the related output relay, the buzzer, the yellow led and the blinking red led, memorizing the event.
The date and time of the last event will be maintained in the unit memory. In case the gas concentration returns below the pre-alarm threshold, the relevant relay will return to its normal operation state or not, according to how the prealarm relay operating mode was set in the configuration through the installer parameter 'Relay latch'.

Alarm 1 and Alarm 2 realys
The unit manages the alarm events through two different relays, "ALARM1" and "ALARM2", with exchange contacts (SPDT).
In case the alarm 1 and/or alarm 2 threshold state is reached, the unit will also enable the alarm 1 and/or alarm 2 relay, the buzzer, the yellow led and the red led fixed lit.
At the same time the central unit has stored, in sequence, the events of alarm 1 and alarm 2: the date and hour when the last event has happened will be retained in the central unit memory.

WARNING!
For compatibility with the current performace standards the alarm 1 and alarm 2 relays always have 'latched' operation mode, and this mode can not be modified by the user.
Whenever an Alarm ('A' and/or 'H') occurs, the relays are kept active until the user intentionally pushes for 3 seconds the 'reset' button.

Auxiliary relays
The control unit has 2 auxiliary relays with exchange contacts (SPDTs) that can be activated according to the events and operating modes set by the installer through the related menu.
If the conditions that caused the activation of one or both of the relays have ceased, they could return to their normal operating state, depending on how the installer parameter 'Relay latch aux1' and 'Relay latch aux2' had been set.

Display of the last alarm state
The central unit can retain the date and hour of the last alarm event happened in each zone.
This information can be read by the user at any time by pressing the '**reset**' button starting from the main screen, then pressing '<' or '>' keys to display the different areas.

Alarm reset

If the conditions that triggered the acoustic and visual signals and the relay activation stop, the unit will return to normal operation after human intervention: the user must intentionally push for 3 seconds the ' **reset** ' button.

Electrical wirings

The central unit is normally powered with 230V~ mains voltage.

At terminals 6 and 7 the user can wire a battery backup system whose purpose is to grant full functionality to the central unit even in case of power failure (see section [p] for details).

The unit is featured with five relays with tension free exchange contacts (SPDT): two auxiliary relays (AUX1 and AUX2), a pre-alarm relay (PREALARM), an alarm 1 relay (ALARM1) and an alarm 2 realy (ALARM2).

The outputs AUX1 and AUX2 can be used either for driving 'general purpose' loads as a siren or an flashing light or, with proper configuration of the relevant parameters, to drive a gas shut -off electrovalve.

Generally, the pre-alarm output is used to connect an air extractor, while the alarm outputs are used to connect acoustic signallers.

4 is the number of transmitters which can be wired to the central unit, each compliant with the 4..20 mA current loop system.

In order to make electrical wirings please refer to the suggested wiring diagrams. Please also note that all the relay outputs of the central unit do not feed power to the loads.

In other words all outputs are 'voltage free', giving the user more freedom to use loads with several operating voltages.

⚠️ **WARNING**

- *This Central Unit is NOT approved for installation in ATEX classified zones.*
- *All wirings with remote sensors must be made using wires with 1,5 mm² minimum cross section and no longer than 25 m. Do not use same duct for signal wires and mains.*
- *In case of installation where strong EMC disturbances are present, it is highly suggested the use of shielded cables. The shield must be connected to the 'Gnd' terminal of the relevant zone on the Central Unit side only.*
- *The appliance 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 appliance must be made by qualified technicians and in compliance with the current technical and safety standards.*
- *Before wiring the appliance be sure to turn the mains power off.*
- *It is up to the installer (whose responsibility is to set-up a detection system in compliance with the existing standards, both European and National) to choose the proper type of loads to connect to the central unit as well as the correct configuration of the system parameters. In case of doubts please contact the distributor.*

[c] INSTALLER PARAMETERS SETTINGS

On the main screen, which shows the current status of all active zones, the user can access all submenus that allow you to change the available parameter settings for the correct operation of the detection system. In order to access the parameter configuration, a password is required, which factory value is set to '**3553**'. Its modification is mandatory to prevent unauthorized personnel intervention, as required by current standards.

⚠️ **WARNING**

The modification of the installer parameters must be done by qualified personnel.

<u>**Enter password**</u>

```
        TURNING ON
            ⇩
```

```
G:  0%_   C:  0p_     Main screen (example)
G:  0%_   M:  0%_
```

```
            ⇩
      Press 'enter'
            ⇩
```

```
Enter pwd:  0000
rst  <>   +-   ent
```

```
            ⇩
```

Enter the password '**3553**'
By pressing '<' or '>' it is possible to select the single digits.
By pressing '+' or '-' it is possible to set the value for each single digits.

```
            ⇩
      Press 'enter'
            ⇩
```

Note:
In the following screens, push '<' or '>' to cycle through the sub menus while press '**enter**' to enter the selected sub menu.

```
            ⇩
```

```
Zone activation       Areas activation/Deactivation
rst  <>       ent
```

```
            ⇩
```

```
Zone gas type         Select the gas detected by the
rst  <>       ent     transmitters
```

```
            ⇩
```

```
Zone full scale       Full-scale setting of the
rst  <>       ent     connected transmitters
```

```
            ⇩
```

```
Zone prealarm         Pre-alarm threshold setting
rst  <>       ent
```

```
            ⇩
```

```
Zone alarm 1          Alarm 1 threshold setting
rst  <>       ent
```

```
            ⇩
```

```
Zone alarm 2          Alarm 2 threshold setting
rst  <>       ent
```

```
            ⇩
```

```
Mode aux 1            Aux. Relay 1 activation
rst  <>       ent     setting
```

```
            ⇩
```

```
Mode aux 2            Aux. Relay 2 activation
rst  <>       ent     setting
```

```
            ⇩
```

```
Relay latch           Aux. relay reset mode setting
rst  <>       ent
```

⇩

```
Relay start
rst  <>      ent
```
Activation/Deactivation of the auxiliary relay

⇩

```
Relay logic
rst  <>      ent
```
Setting of the relay logic

⇩

```
Change Time/Date
rst  <>      ent
```
Date/time setting

⇩

```
Restore Default
rst  <>      ent
```
Restore default data

⇩

```
Buzzer setup
rst  <>      ent
```
Setting of the internal buzzer

Change password
On this screen it is possible to modify the password by which you can access the installer parameters menus.
This password must be made by 4 numbers (not letters), each from 0 to 9.
This menu can be reached from the main screen:

```
G:  0%_   C:  0p
G:  0%_   M:  0%_
```
Main screen (example)

⇩
press **'enter'**
⇩

```
Enter pwd:  0000
rst  <>  +-  ent
```

⇩
press **'reset'**
⇩

```
Old pwd:    0000
rst  <>  +-  ent
```

⇩

Insert the old password currently in use.
Insert it as described before.

⇩
press **'enter'**
⇩

```
New pwd:     0000
rst  <>  +-  ent
```

⇩

Insert the new password.
Insert it as described before.

⇩
press **'enter'**
⇩

```
Confirm:     0000
rst  <>  +-  ent
```

⇩

It is asked for a password confirmation.
Insert it again as described before.

⇩
press **'enter'**
⇩

If the new password has been successfully entered, you will access directly to the installer parameter management menus.

⇩

```
Zone activation
rst  <>      ent
```

⚠ WARNING
When configuring the installer parameters, keep in mind the following:
- **Pushing the 'enter' button you'll enter in setting mode of the selected parameter and subsequently the variations made are memorized.**
- **When in setting mode the data to be modified blinks.**
- **Pushing the 'reset' button the setting will be quit without memorizing the changes made or it'll go back to the previous parameter.**
- **Pushing the keys '<' or '>' it is possible to cycle through the parameters.**
- **Pushing the keys '+' or '-' it is possible to set the value of the selected parameter.**
- **In any phase of the configuration, the unit will automatically switch back to the main menu if it doesn't detect any activity on the buttons for more than 20 seconds.**
- **All the following examples are referred to the zone 1.**

Zone activation: Zone Activation/Deactivation
Through this menu it is possible to activate or deactivate each of the four areas (that are the connected transmitters) managed by the unit.

```
Zone activation
rst  <>      ent
```

⇩
press **'enter'**
⇩

```
Zone 1 active: Y
rst  <>  +-  ent
```

⇩
press **'enter'**
⇩

```
Zone 1 active: Y
rst  <>  +-  ent
```

⇩

Pressing '+' or '-' it is possible to select **'Y'** and **'N'**
Y: The zone is active
N: The zone is NOT active.

⇩

```
Zone 1 active: N
rst  <>  +-  ent
```

⇩

Press **'enter'** to confirm the setting.

Note: If a transmitter has not been activated, it is displayed '----' in place of the indication of the transmitter.

Zone gas type: Detected gas type setting
In this menu is possible to set the kind of gas detected by the transmitter cabled in the selected Zone.

```
Zone gas type
rst  <>      ent
```

⇩
press **'enter'**
⇩

```
Zone 1 TYPE: MET
rst  <>  +-  ent
```

⇩
press **'enter'**
⇩

```
Zone 1 TYPE: MET
rst  <>  +-  ent
```

⇩

Pressing '+' or '-' it is possible to scroll through the gases:
- **LPG:** The selected gas is LPG.

- **CO:** The selected gas is Carbon Monoxide.
- **MET:** The Selected gas is Methane.
- **VAP:** The Selected gas is Petrol vapour.

⇩

```
Zone 1 TYPE: LPG
rst  <>  +-  ent
```

⇩

Press '**enter**' to confirm the settings.

Full-scale zones: Transmitter full-scale setting

It sets the full-scale for the connected transmitter in the selected zone. The value to be entered is the full-scale value (in % LIE for combustible gases or ppm for toxic gases) that the transmitter 4 .. 20mA measures when it is compelling its current maximum value, i.e. 20mA. This allows to have the correct indication on the control panel display. The control unit will convert all values between 4 and 20 mA in the correct value from 0% (or 0 ppm) to the full-scale.

```
Zone full scale
rst  <>      ent
```

⇩

press '**enter**'

⇩

```
Zone1   fs: 100%
rst  <>  +-  ent
```

⇩

press '**enter**'

⇩

Pressing '+' or '-' it is possible to set the full-scale related to the transmitter cabled in zona 1:
from 1% to 100% (for LPG,MET,VAP)
from 1ppm to 999ppm (for CO)

⇩

```
Zone1   fs:  50%
rst  <>  +-  ent
```

⇩

press '**enter**'

⚠ **WARNING**
- *The value to set for this parameter is strictly dependant on the gas transmitter features, i.e. which value has been set as full scale (20 mA) in the transmitter at design time.*
- *When for a zone a CO (carbon monoxide) transmitter is selected, in order to compensate for small drifts in the zero level, the central unit will not show values within the 2.5% of the set full scale range.*

Zone prealarm: Setting of the pre-alarm threshold

Set the pre-alarm threshold for the selected zone, in% LIE for combustible gases or in ppm for toxic gases. This is the concentration of gas that needs to be given a first level of attention, because the environment is starting to become dangerous.

```
Zone prealarm
rst  <>      ent
```

⇩

press '**enter**'

⇩

```
Zone 1 pre: 100%
rst  <>      ent
```

⇩

press '**enter**'

⇩

Pressing '+' or '-' it is possible to set the pre-alarm threshold related to the transmitter cabled in the zone zona 1:
1% .. 100% L.I.E. (for LPG,MET,VAP)
1ppm .. 999ppm (for CO)

⇩

```
Zone 1 pre: 100%
rst  <>  +-  ent
```

⇩

Press '**enter**' to confirm the setting.

⚠ **WARNING**
- *The maximum pre-alarm threshold setting corresponds with the alarm 1 set threshold.*

Zone alarm 1: Seting of the alarm 1 threshold

Sets the alarm 1 threshold for the selected zone, in% LIE for combustible gases or in ppm for toxic gases.

```
Zone alarm 1
rst  <>      ent
```

⇩

press '**enter**'

⇩

```
Zone 1 al1:  20%
rst  <>      ent
```

⇩

press '**enter**'

⇩

Pressing '+' or '-' it is possible to set the alarm threshold related to the transmitter cabled in zone 1:
OFF / 1% .. 100% L.I.E. (for LPG,MET,VAP)
OFF / 1ppm .. 999ppm (for CO)

⇩

```
Zone 1 al1:  15%
rst  <>  +-  ent
```

⇩

Press '**enter**' to confirm the setting.

⚠ **WARNING**
- *The minimum alarm 1 threshold that can be set, corresponds to the set pre-alarm threshold.*
- *The maximum alarm 1 threshold that can be set, corresponds to the set alarm 2 threshold.*

Zone alarm 2: Alarm 2 threshold setting

Sets the alarm 2 threshold for the selected zone, in% LIE for combustible gases or in ppm for toxic gases.

```
Zone alarm 2
rst  <>      ent
```

⇩

press '**enter**'

⇩

```
Zone 1 al2:  20%
rst  <>      ent
```

⇩

press '**enter**'

⇩

Pressing '+' or '-' it is possible to set the alarm threshold related to the transmitter cabled in zone 1:
OFF / 1% .. 100% L.I.E. (for LPG,MET,VAP)
OFF / 1ppm .. 999ppm (for CO)

⇩

```
Zone 1 al2:  22%
rst  <>  +-  ent
```

⇩

Press '**enter**' to confirm the setting.

⚠ **WARNING**
- **The minimum alarm 2 threshold that can be set, corresponds to the set alarm 1 threshold.**

Mode aux 1: AUX1 auxiliary relay activation settings

This parameter is used to configure the operation of the auxiliary relay 1 (AUX1) in the event of abnormal conditions: Preallarme (pre) - Allarme 1 (al1) - Allarme 2 (al2) - Fault (flt) - Loop (opn) - Overrange (ovr).

```
Mode aux 1
rst  <>        ent
```
⇩
Press **'enter'**
⇩
Pressing **'<'** or **'>'** it is possible to cycle through the sub-menus.
⇩
```
Aux 1 pre:      N
rst  <>        ent
```
⇩
```
Aux 1 al1:      N
rst  <>        ent
```
⇩
```
Aux 1 al2:      N
rst  <>        ent
```
⇩
```
Aux 1 flt:      N
rst  <>        ent
```
⇩
```
Aux 1 opn:      N
rst  <>        ent
```
⇩
```
Aux 1 ovr:      N
rst  <>        ent
```
⇩
Press **'enter'** to enter the sub-menu
⇩
```
Aux 1 pre:      Y
rst  <>  +-  ent
```
⇩
Pressing **'+'** or **'-'** it is possible to activate / deactivate the relay in the selected alarm condition:
'Y': Activated
'N': Deactivated
⇩
```
Aux 1 pre:      N
rst  <>  +-  ent
```
⇩
Press **'enter'** to confirm the setting

Mode aux 2: AUX2 auxiliary relay activation settings

This parameter is used to configure the operation of the auxiliary relay 2 (AUX2) in the event of abnormal conditions:
Prealarm (pre) - Alarm 1 (al1) - Alarm 2 (al2) - Fault (flt) - Loop (opn) - Overrange (ovr).

```
Mode aux 2
rst  <>        ent
```
⇩
Press **'enter'**
⇩
Pressing **'<'** or **'>'** it is possible to cycle through the sub-menus.
⇩
```
Aux 2 pre:      N
rst  <>        ent
```
⇩

```
Aux 2 al1:      N
rst  <>        ent
```
⇩
```
Aux 2 al2:      N
rst  <>        ent
```
⇩
```
Aux 2 flt:      N
rst  <>        ent
```
⇩
```
Aux 2 opn:      N
rst  <>        ent
```
⇩
```
Aux 2 ovr:      N
rst  <>        ent
```
⇩
Press **'enter'** to enter the sub-menu
⇩
```
Aux 2 pre:      Y
rst  <>  +-  ent
```
⇩
Pressing **'+'** or **'-'** it is possible to activate / deactivate the relay in the selected alarm condition:
'Y': Activated
'N': Deactivated
⇩
```
Aux 2 pre:      N
rst  <>  +-  ent
```
⇩
Press **'enter'** to confirm the setting

Relay latch: Relay reset setting mode

This parameter allows you to set the relay reset mode if an alarm condition is detected.
- **'Y'**: if the relay is activated it remains active even if the triggering event had been removed, so the relay is 'latched'. In order to reset the relay, keep pressed the 'reset' button for 3 seconds.
- **'N'**: if the relay is activated and then the triggering event stops, the relay goes back to its previous state, meaning the event is not memorized.

```
Relay latch
rst  <>        ent
```
⇩
press **'enter'**
⇩
Pressing **'<'** or **'>'** it is possible to cycle through the sub-menus.
⇩
```
Latch aux1:      Y
rst  <>        ent
```
⇩
```
Latch aux2:      Y
rst  <>        ent
```
⇩
```
Latch pre:       Y
rst  <>        ent
```
⇩
```
Latch alr1:      Y
rst  <>        ent
```
⇩

```
Latch alr2:     Y
rst  <>       ent
```

⇩

Press '**enter**' to enter the sub-menu

⇩

```
Latch aux1:     Y
rst  <>       ent
```

⇩

By pressing '**+**' or '**-**' it is possible to set the reset mode of the selected relay: **'R' or 'N'**.

⇩

```
Latch aux1:     N
rst  <>       ent
```

⇩

press '**enter**'

⚠ **WARNING**

- **As requested by the current standards, the unit comes by factory default with the parameters 'Latch alr1' and 'Latch alr2' set on 'Y'; this setting is unchangeable.**
- **If the parameters 'Mode AUX1' and/or 'Mode AUX2' are set on ovr, al1 or al2, then also the related relays AUX1 and/or AUX2 will be automatically set on 'Y' and it won't be possible to modify this setting.**

Relay start: Resetting auxiliary relays after a lack of power
Sets the auxiliary relay start mode when power is first applied or after a power lack:
'Y': The operator must activate the system by intentionally resetting the system. In other words, the auxiliary relay is kept indefinitely inactive (depending on the other set modes) until the operator intentionally pushes the 'reset' key. Select this mode if human intervention is required to resume the normal functioning mode after a power lack.
'N': The relay 'is activated according to the events currently detected.

```
Relay start
rst  <>       ent
```

⇩

Press '**enter**'

⇩

Pressing '**<**' or '**>**' it is possible to cycle through the sub-menus.

⇩

```
Start aux1:     N
rst  <>  +-   ent
```

⇩

```
Start aux2:     Y
rst  <>  +-   ent
```

⇩

Press '**enter**' to enter the setting mode

⇩

```
Start aux1:     N
rst      +-   ent
```

⇩

Pressing '**+**' or '**-**' it is possible to set the auxiliary relay activation mode in case of lack of tension: **'Y' or 'N'**.

⇩

```
Start aux1:     Y
rst      +-   ent
```

⇩

press '**enter**'

Relay logic: Relay functioning logic
Trough this parameter it is possible to set the relays functioning logic:
N (normal): The relay is excited if an abnormal event happens.
R (reverse): The relay is normally excited. In case of an abnormal event the relay is de-powered. Use this mode when a 'positive' logic is required, so that even in case of power failure the relay will be de-powered in order to guarantee an higher level of safety.

```
Relay logic
rst  <>       ent
```

⇩

Press '**enter**'

⇩

Pressing '**<**' or '**>**' it is possible to scroll through the sub-menus.

⇩

```
Logic aux1:     R
rst  <>       ent
```

⇩

```
Logic aux2:     R
rst  <>       ent
```

⇩

```
Logic pral:     R
rst  <>       ent
```

⇩

```
Logic alr1:     R
rst  <>       ent
```

⇩

```
Logic alr2:     R
rst  <>       ent
```

⇩

Press '**enter**' to enter the setting mode

⇩

```
Logic aux1:     R
rst      +-   ent
```

⇩

Press '**+**' or '**-**' to set the functioning logic of the selected relay: **'R' or 'N'**.

⇩

```
Logic aux1:     N
rst      +-   ent
```

⇩

Press '**enter**' to confirm the modification

Change Time/Date: time/date and summer time setting
It allows to set the current date, time and the update mode between summer and wintertime or vice versa.

⚠ **WARNING**
The correct date and time setting is crucial for a correct recording of the last alarm event.
This setting must be done when first activating the control unit: from now on the control unit will keep the date and time even in case of power failure.

```
Change Time/Date
rst  <>       ent
```

⇩

press '**enter**'

⇩

```
dd/mm/yy    hh:mm
01/06/10    09:27
```

⇩

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Press '<' or '>' keys to scroll through:
dd/mm/yy   (day / month / year)
hh:mm   (hour / minutes)
Summer Time   (Summer time)

⇩

```
┌─────────────────────┐     ┌─────────────────────┐
│dd/mm/yy    hh:mm    │ ... │Summer Time:Manu     │
│23/06/17    10:50    │     │rst         +-  ent  │
└─────────────────────┘     └─────────────────────┘
```

⇩   ⇩

Press the '+' or '-' keys to set the desired
value.

Note:
In 'Summer Time' it is possible to set the modes:
Auto: Updating from Summer time to Winter time and
     vice versa will occur automatically.
Manu: Updating from Summer time to Winter time and
     vice versa will require the human action.

⇩

```
┌─────────────────────┐     ┌─────────────────────┐
│dd/mm/yy    hh:mm    │ ... │Summer Time:Auto     │
│27/06/17    12:05    │     │rst         +-  ent  │
└─────────────────────┘     └─────────────────────┘
```

⇩   ⇩

Press **'enter'** to confirm the update of the
selected data

Restore default: Restore factory default
This parameter can be used to reset the control unit to factory
settings.

```
┌─────────────────────┐
│Restore default      │
│rst  <>         ent  │
└─────────────────────┘
```

⇩

Press **'enter'**

⇩

```
┌─────────────────────┐
│ Set default?        │
│rst             ent  │
└─────────────────────┘
```

⇩

Press **'enter'** to reset, on the contrary press
'reset'

⇩

```
┌─────────────────────┐
│ Default Data        │
│  Restored           │
└─────────────────────┘
```

Following are the default parameters:

- Password:		3553
- Zone activation:	Zone 1 active:	Y
	Zone 2 active:	Y
	Zone 3 active:	N
	Zone 4 active:	N
- Zone gas type:	Zone 1 type:	MET (methane)
	Zone 2 type:	MET (methane)
	Zone 3 type:	MET (methane)
	Zone 4 type:	MET (methane)
- Zone full scale:	Zone 1 fs:	50% (L.E.L.)
	Zone 2 fs:	50% (L.E.L.)
	Zone 3 fs:	50% (L.E.L.)
	Zone 4 fs:	50% (L.E.L.)
- Zone prealarm:	Zone 1 pre:	10% (L.E.L.)
	Zone 2 pre:	10% (L.E.L.)
	Zone 3 pre:	10% (L.E.L.)
	Zone 4 pre:	10% (L.E.L.)
- Zone alarm 1:	Zone 1 al1:	20% (L.E.L.)
	Zone 2 al2:	20% (L.E.L.)
	Zone 3 al3:	20% (L.E.L.)
	Zone 4 al4:	20% (L.E.L.)
- Zone alarm 2:	Zone 1 al1:	30% (L.E.L.)
	Zone 2 al2:	30% (L.E.L.)
	Zone 3 al3:	30% (L.E.L.)
	Zone 4 al4:	30% (L.E.L.)
- Mode aux 1:	Aux 1 pre:	N
	Aux 1 al1:	Y
	Aux 1 al2:	Y
	Aux 1 flt:	Y
	Aux 1 opn:	N
	Aux 1 ovr:	N
- Mode aux 2:	Aux 2 pre:	N
	Aux 2 al1:	N

	Aux 2 al2:	N
	Aux 2 flt:	Y
	Aux 2 opn:	N
	Aux 2 ovr:	N
- Relay latch:	Latch aux1:	Y
	Latch aux2:	Y
	Latch pral:	N
	Latch alr1:	Y
	Latch alr2:	Y
- Relay start:	Start aux1:	N
	Start aux2:	N
- Relay logic:	Logic aux1:	R
	Logic aux2:	R
	Logic pral:	N
	Logic alr1:	N
	Logic alr2:	N
- Change Time/Date:	dd/mm/yy hh:mm	
	Summer Time:	Auto
- Buzzer setup:	Buzzer enable:	Y

Buzzer setup: Activating / deactivating Internal Buzzer

```
┌─────────────────────┐
│Buzzer setup         │
│rst  <>         ent  │
└─────────────────────┘
```

⇩

Press **'enter'**

⇩

```
┌─────────────────────┐
│Buzzer enable  Y     │
│rst             ent  │
└─────────────────────┘
```

⇩

Press **'enter'** to enter the setting mode.
By pressing '**+**' or '**-**' it is possible to scroll
through:
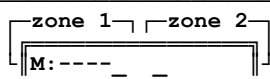**'Y'**: Buzzer activated
'N': Buzzer deactivated

⇩

```
┌─────────────────────┐
│Buzzer enable  N     │
│rst         +-  ent  │
└─────────────────────┘
```
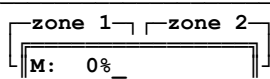
⇩

Press **'enter'** to confirm the modification

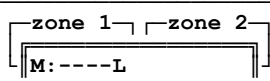
[d] MESSAGES DISPLAYED ON THE CENTRAL UNIT

Below are the messages highlighted on the control panel display in
different conditions. It is assumed that Zone 1 is set for Methane
and that the concentration is variable.

Message displayed:
```
┌─zone 1─┐ ┌─zone 2─┐
║M:----_   _        ║
```

Explanation: 'Disabled area'
The relevant zone has not been activated. Remember that once a
transmitter has been wired to an input the relevant zone must also
be activated in configuration.

Message displayed:
```
┌─zone 1─┐ ┌─zone 2─┐
║M:  0%_            ║
```

Explanation: 'Normal operation'
This is what display shows during normal operation.
Concentration detected in this example is 0% L.E.L.

Message displayed:
```
┌─zone 1─┐ ┌─zone 2─┐
║M:----L            ║
```

The yellow led is lit in correspondence with the symbol '⚠' and the
buzzer sends a continuous tone.

Explanation: 'Fault in the current loop line'
Cable connecting the transmitter to the central unit present either a
short or an open circuit failure between any of the sensor wires.
Check and repair the current loop line regarding the faulty zone.

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║M:----F         ║
```
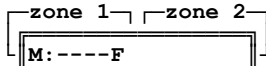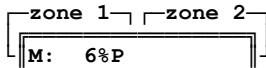
The yellow led flashes in correspondence with the symbol '⚠' and the buzzer sends a continuous tone.

Explanation: ' Fault on the gas sensor '.
The gas sensor is faulty, and so it is imposing 2mA on the current loop. Check the faulty transmitter and, if the case, change it with a new one.
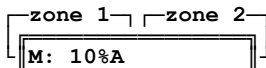

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║M:  6%P         ║
```

The red led flashes in correspondence with the symbol '⚠' and the buzzer sends an intermittent tone.

Explanation: 'Pre-alarm state'.
The prealarm concentration threshold in the zone under monitoring has been exceeded. In this example a prealarm threshold of 6% L.E.L. has been assumed (default factory value).

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║M: 10%A         ║
```
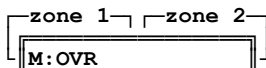
The red led lights up in correspondence with the symbol '⚠' and the buzzer emits a continuous tone.

Explanation: 'Alarm 1'.
The detected concentration exceeded the alarm threshold 1 in the controlled area. In this example, a threshold value of 10% L.E.L. (Factory value). The alarm relay, red led and buzzer are kept active until the reset key is pressed.

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║M: 13%H         ║
```
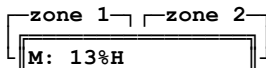
The red led lights up in correspondence with the symbol '⚠' and the buzzer emits a continuous tone.

Explanation: 'Alarm 2'.
The detected concentration exceeded the alarm threshold 1 in the controlled area. In this example, a threshold value of 13% L.E.L. (Factory value). The alarm relay, red led and buzzer are kept active until the reset key is pressed.

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║M:OVR           ║
```
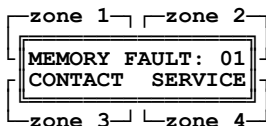
The red led lights in correspondence with the symbol '⚠' and the buzzer emits a continuous tone.

Explanation: 'Over Range state'
The upper limit of the measuring range has been exceeded.
Alarm relay, red led and buzzer and indication 'OVR' are latched as active until the reset button is pressed.

Message displayed:

```
┌─zone 1─┐ ┌─zone 2─┐
║MEMORY FAULT: 01║
║CONTACT  SERVICE║
└─zone 3─┘ └─zone 4─┘
```

Explanation: 'Memory fault'.
An error in one of the internal memories has been detected. The operation is not reliable anymore.
Contact service for device replacement. Codes errors are: 01 (EEprom memory fault), 02 (RTC module fault) and 03 (Flash memory fault).

---

[e] PERIODICAL CHECK

The periodical check should feature the following controls:
a. (every 3 .. 6 months): **Functional check** of the correct operation of the entire detection system by applying calibrated gas to each remote sensor and check of the value displayed.
Also refer to the sensor User Manual for further information.
b. (every 12 months): **Instrumental check** of the transfer function of the central unit and correct detection of the abnormal situations.
This can be done by disconnecting the sensors from inputs and forcing through a proper calibrator the input current of each zone to the significant current values (e.g. 0mA: loop broken, 2mA: fault, 4..20mA: normal operation, >20mA: overrange).

---

[f] OPERATING LIMITATION

01. This device can be set either for flammable gases like Methane ('M'), LPG ('G') and Petrol vapours (V) or for toxic gases like CO ('C').
02. For cross sensitivities refer to the remote sensor User Manual.
03. Response time $T_{90:}$ Not applicable.
04. Temperature operating range: +5°C .. +55°C
05. Humidity operating range: 20% .. 90% RH (non cond.)
06. Pressure operating range: 800 .. 1100 hPa
07. Power supply: 230V~ 50/60 Hz
08. Power absorption: 9,5VA
09. Electrical wirings: See section[b].
10. Batteries: See section[p].
11. Sample flow rate: Not applicable.
12. Warm-up time: Not applicable.
13. Stabilization time: Not applicable
14. Contacts rating: 5 x 8A 250V~ cosφ=1
15. Prealarm threshold range: Methane, L.P.G. and
                                 Petrol vapours
                                 OFF / 1%..100% LEL
                                 CO OFF / 1 .. 999 pp
16. Alarm 1 threshold range: Methane, L.P.G. and
                                 Petrol vapours
                                 OFF /1%..100% LEL
                                 CO OFF / 1 .. 999 ppm
17. Alarm 2 threshold range: Methane, L.P.G. and
                                 Petrol vapours
                                 OFF / 1%..100% LEL
                                 CO OFF / 1 .. 999 ppm
18. Protection rating: IP 20
19. Dimensions: 158 x 90 x 71 mm (L x A x P)
20. Weight: ~ 850 gr.
21. ATEX protection: This device must be installed in
                                 NON-CLASSIFIED ATEX zones.

---

[g] STORAGE

Temperature: +5°C .. +55°C.
Humidity: 20% .. 90% RH (non cond.)
Pressure: 800 .. 1100 hPa

---

[h] % L.E.L. TO % v/v CONVERSION

Please refer to the remote sensor User Manual.

---

[i] CONTAMINANTS

Not applicable to the Central Unit. For remote sensor please refer to the remote sensor User Manual.

---

[l] SAMPLING LINES

Not applicable.

---

[m] ALARM AND FAULT SIGNALS

Refer to sections [b] (OPERATION, INSTALLATION AND MAINTENANCE), [c] (INSTALLER PARAMETERS SETTINGS), [o] (AUTOMATIC RESET) and to Fig. 5.

[n] TROUBLESHOOTING

- **Problem.**
  The password has been lost.
  Remedy:
  Reset the unit with the installer parameter 'Restore default'; In this case, all settings will be reset to factory values and you will need to reprogram the control unit.
- **Problem.**
  One channel (zone) shows the '**L**' fault message.
  Possible cause:
  The input current loop is broken or the transmitter is not powered.
  Remedy:
  Check connections between the transmitter and the central unit searching for interruptions. Check also with a multimeter for the presence of a voltage around 12Vdc between terminals '+V' and 'Gnd' of the relevant zone.

[o] AUTOMATIC RESET

- Pre-alarm relays action could be 'auto-resetting' in case the latching parameter (in **Relay latch - Latch pral**) has been set to '**N**'. Please refer to proper section for further details.
- The action of the auxiliary relays can be 'self-resetting' when the 'latch' parameter (on **Relay latch - Latch aux1 / Latch aux2**) has been set on '**N**'. Please refer to proper section for further details.
- The alarm relay action can **NOT** be self-resetting. Refer to the relevant section for details.

[p] BATTERIES MAINTENANCE

This central unit features input terminals (6 and 7) for an external 12Vdc power backup. Nonetheless it does not provide any recharging function. This means that an external unit capable of both providing 12V and recharging function for its battery must be wired in case a power lack tolerant system is required. In the diagrams provided in this User Manual the device ACCSGB12 has been used as an example. The battery maintenance operations must be based on what the manufacturer of this additional device suggests.

[q] SPARE PARTS

This central unit has no user serviceable parts.

[r] ACCESSORIES

This central unit has no accessories.

[s] SPECIAL INFORMATION

No additional information or instructions are required other than those already provided.

[t] 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.
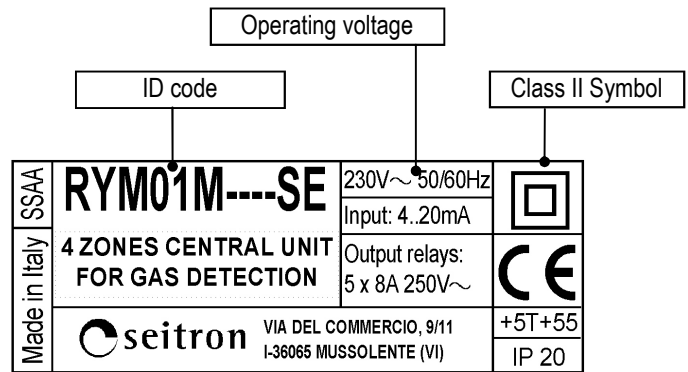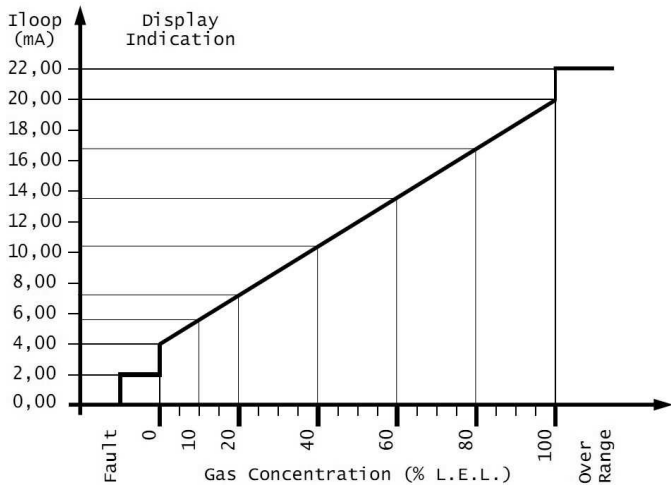
[u] MARKING
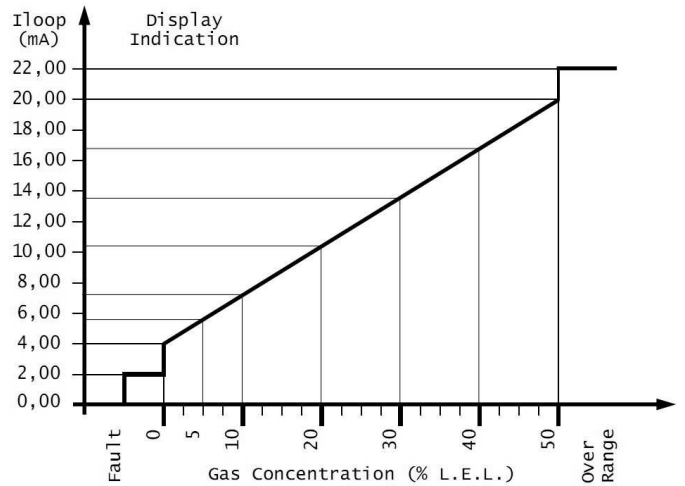

Fig. 1: Example of product label.

⚠ **WARNING**
- **This unit IS NOT approved for the installation in ATEX classified areas.**
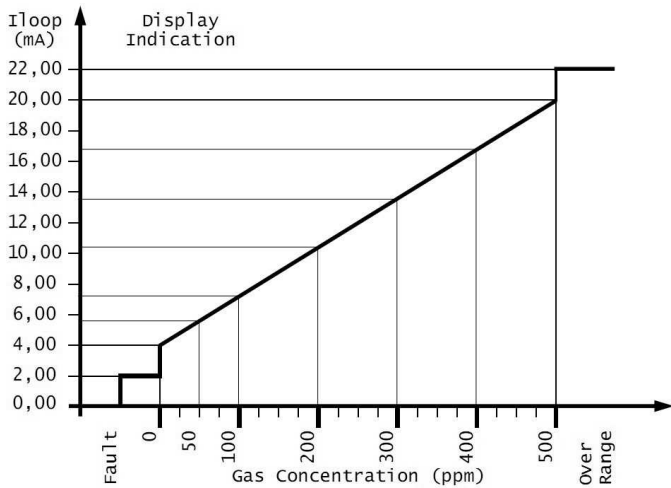
[v] Concentration - current charts

Fig. 2. Display concentration vs. Input Current - 100% L.E.L.

This chart is valid for the use of a 4..20mA transmitter which delivers 20mA in correspondence of 100% L.E.L. Setting of the parameter 'Zone- @ fs' must be 100% L.E.L.


Fig. 3. Display concentration vs. Input Current - 50% L.E.L.

This chart is valid for the use of a 4..20mA transmitter which delivers 20mA in correspondence of 50% L.E.L. Setting of the parameter 'Zone- @ fs' must be 50% L.E.L.


Fig. 4. Display concentration vs. Input Current - 500ppm.

This chart is valid for the use of a 4..20mA transmitter which delivers 20mA in correspondence of 500ppm. Setting of the parameter 'Zone- @ fs' must be 500ppm.
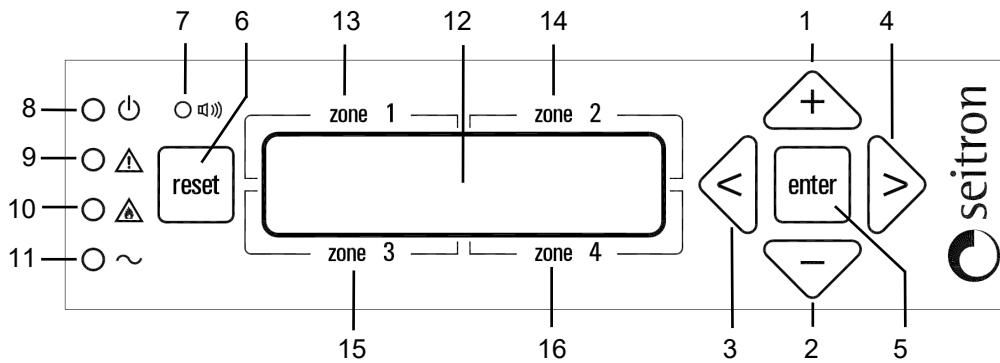
Fig. 5. Front panel - Keyboard explanation

1. **Increase button.** This key is used during configuration to increase values in numeric fields as well as to scroll through different options for a given parameter.
2. **Decrease button.** This key is used during configuration to decrease values in numeric fields as well as to scroll through different options for a given parameter.
3. **Shift left button.** This key is used during configuration to move to previous submenu.
4. **Shift right button.** This key is used during configuration to move to the next submenu.
5. **Enter button.** This key, when in configuration mode, allows to enter the various menus and to confirm the selected parameter.
6. **Reset button.** This key features two functions:
   Quits the current menu and returns to the upper level menu. When depressed more than 3 seconds, it shows the last alarm or prealarm that happened in all zones.
7. **Buzzer.** Inside the central unit a buzzer is mounted which is activated any time an abnormal situation is detected.
8. **On-Off indicator.** This indicator shows the presence of power supply for the central unit, either from mains or from the optional battery backup system.

9. **Fault indicator.** This indicator shows the presence of a fault in a remote sensor or in the wiring to the central unit. Refer to proper section for explanation of the possible causes of fault.
10. **Alarm indicator.** This indicator shows the presence of an alarm or overrange in the system. The indicator flashes in case of pre-alarm condition, while is steadily turned on in case of alarm or overrange. Refer to proper section for further details.
11. **Mains indicator.** This indicator is turned on when mains power is present. Together with On-Off indicator shows whether the unit is working with mians power or battery backup power.
12. **Display.** Through this 16 characters by 2 lines display all messages are shown to the user.
13. **Zone 1 display area.** In this area the user can read the actual gas concentration, the gas type for which the zone has been programmed and the presence of any abnormal situation like pre-alarm, alarm, fault or overrange (please refer to proper section for in depth description of the messages).
14. **Zone 2 display area.** Same as point 13. but for Zone 2.
15. **Area display Zona 3.** Same as point 13. but for Zone 3.
16. **Area display Zona 4.** Same as point 13. but for Zone 4.
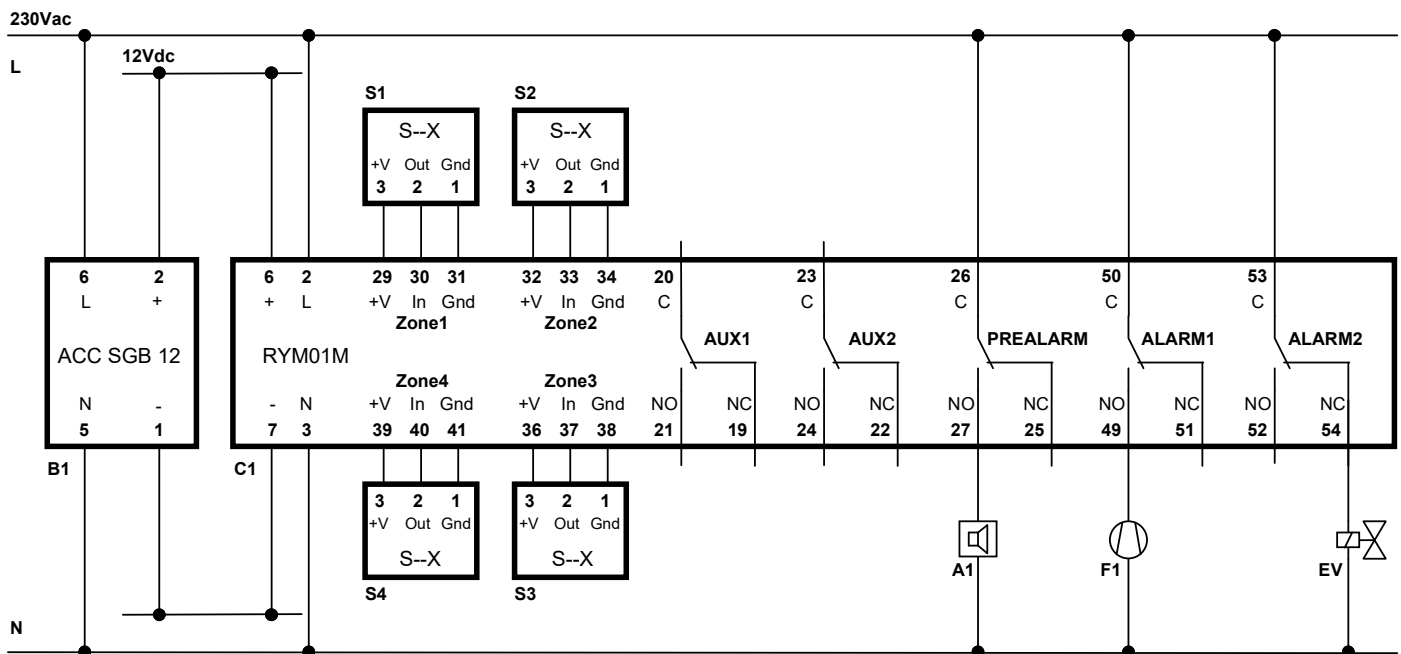
Fig. 6. Wiring example with 230Vac NC electrovalve.

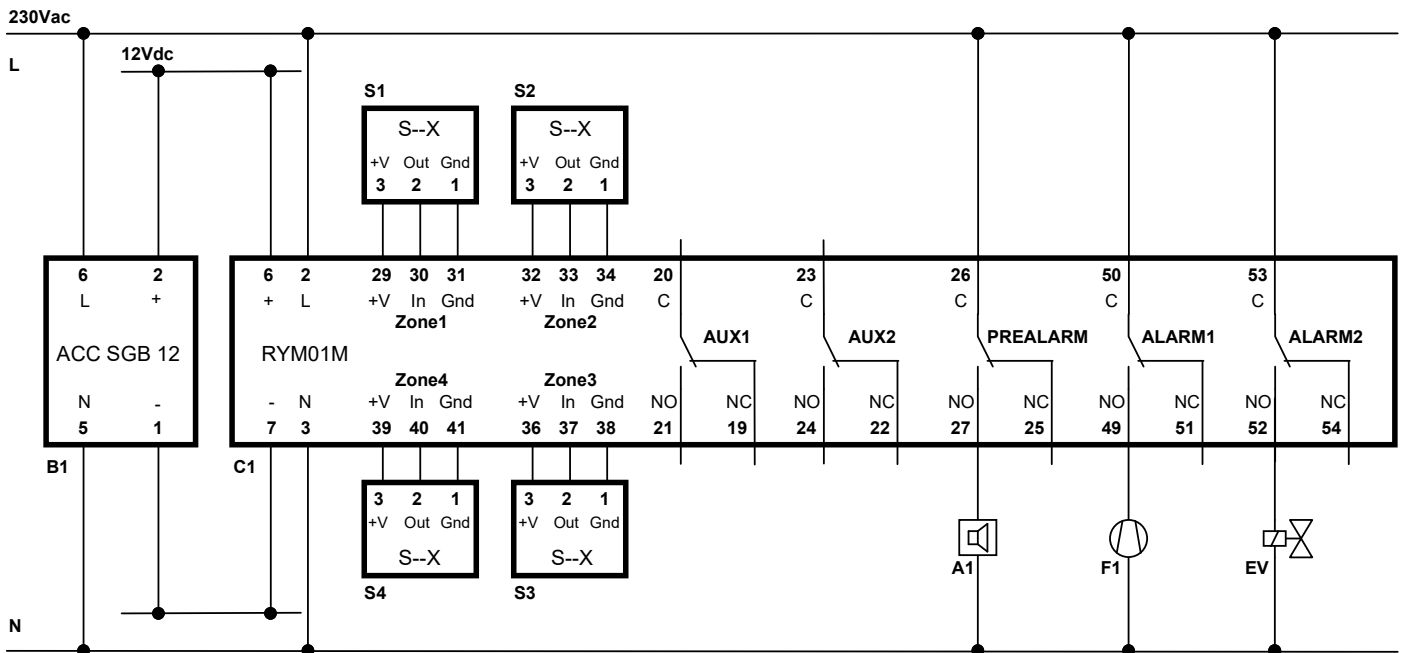|	
C1:	**Central unit.** Type RYM01M.
B1:	**Battery backup system.** This device must be capable of supplying energy to the central unit in case of power lack. In this diagram type ACC SGB12 has been used.
S1..S4:	**Gas sensors.** In this diagram remote sensors of the SX--X series are used (please refer to the sensor User Manual for additional information).
A1:	**Acoustic sirens (230Vac).** These are activated when the alarm relay in each single zone is activated.
F1:	**Air extractors (230Vac).** These are activated when the pre-alarm relay in each single zone is activated.
EV:	**Gas shut-off electrovalve (230Vac).** This wiring diagram is valid for Normally Closed type electrovalve.
AUX1 / AUX2:	**Auxiliary relays.**
PREALARM:	**Pre-alarm relays.** Refer to proper paragraph for additional information.
ALARM1 / ALARM2:	**Alarm relays.** Refer to proper paragraph for additional information.

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Fig. 7. Wiring example with 230Vac NC electrovalve.

C1:   **Central unit.** Type RYM01M.
B1:   **Battery backup system.** This device must be capable of supplying energy to the central unit in case of power lack. In this diagram type ACC SGB12 has been used.
S1..S4:   **Gas sensors.** In this diagram remote sensors of the SX--X series are used (please refer to the sensor User Manual for additional information).
A1:   **Acoustic sirens (230Vac).** These are activated when the alarm relay in each single zone is activated.
F1:   **Air extractors (230Vac).** These are activated when the pre-alarm relay in each single zone is activated.
EV: **Valvola intercettazione gas (230Vac).** Questo schema e' valido per una valvola di tipo Normalmente Chiuso.
AUX1 / AUX2:   **Auxiliary relays.**
PREALARM: **Pre-alarm relays.** Refer to proper paragraph for additional information.
ALARM1 / ALARM2:   **Alarm relays.** Refer to proper paragraph for additional information.

NOTE: *This diagram features a 'positive safety'. For proper operation the parameter 'Auxiliary relay logic' must be set to 'REV' so that any lack of power would result in the relay opening and valve deactivation.*
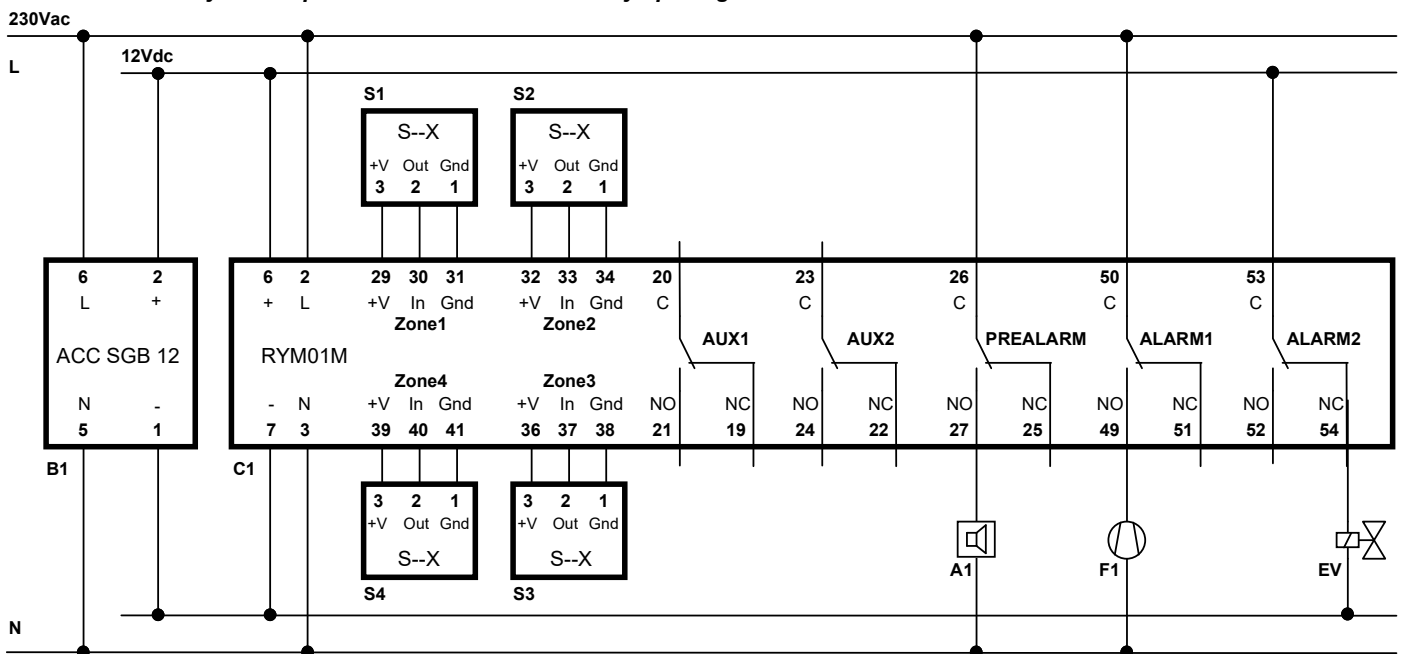

Fig. 8. Wiring example with 12Vdc NC electrovalve.

C1:   **Central unit.** Type RYM01M.
B1:   **Battery backup system.** This device must be capable of supplying energy to the central unit in case of power lack. In this diagram type ACC SGB12 has been used.
EV: **Gas shut-off electrovalve (12Vdc).** This wiring diagram is valid for Normally Closed type electrovalve.
S1..S4:   **Gas sensors.** In this diagram remote sensors of the SX--X series are used (please refer to the sensor User Manual for additional information).
F1:   **Air extractors (230Vac).** These are activated when the pre-alarm relay in each single zone is activated.
A1:   **Acoustic sirens (230Vac).** These are activated when the alarm relay in each single zone is activated.
AUX1 / AUX2:   **Auxiliary relays.**
PREALARM: **Pre-alarm relays.** Refer to proper paragraph for additional information.
ALARM1 / ALARM2:   **Alarm relays.** Refer to proper paragraph for additional information.

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