

it	Istruzioni di installazione	Centralina rivelazione fughe gas
en	Installation instructions	Gas leak detection system
fr	Instruction de installation	Système de détection de fuite de gaz

Sensigas® UCE11

en English

These instructions must be kept together with the device.



General Information

The installation, the periodical inspections, or the devices replacement must be done by qualified technicians.

The installation of a gas leak detection system for methane or liquid petroleum gas (LPG), do not exempt from the compliance to the safety rules and to all the laws in force concerning the installation and the use of gas-operating-devices, for the ventilation of the rooms and for the discharge of flue gases.

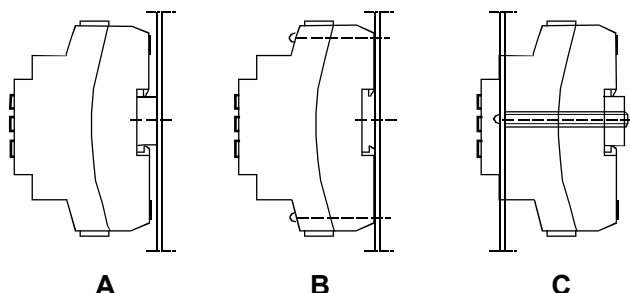
Installation

Mounting

Check that environmental specifications of the installation place are compatible with the values listed on Technical Data.

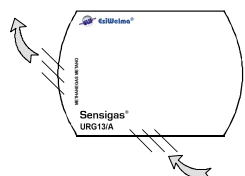
Control Unit UCE11

- A on DIN bar (EN50022-35 x 7.5) min length 120mm
- B on wall, with 2 screws
- C on panel front end using a DIN bar length 150mm and n°2 50mm spacers, screws and washers



Sensors UR.13/A

- On wall in an area subject to natural air circulation.
- Never close to water jets, suction grids, windows, openings, etc.
- At a suitable distance from gas devices in order to avoid unexpected system actions due to functional losses.
- In an accessible position for controls and inspections.



Respect the correct mount orientation in order to ensure the normal convection air flow inside the sensor.

- URG13/A:** High, 20...30cm from the ceiling, to detect light gases like methane etc.
- URG13.P/A:** Low, 20...30cm from the floor, to detect heavy gases like LPG, propane, butane etc.
- URO13/A:** At about 1,5m from the floor, to detect carbon monoxide (CO)



NOTE for sensor installation

In case of a new plant the sensor should be installed as latest as possible so that typical working-place activities (particularly welding, painting, etc.) cannot damage the sensors (particularly their sensing element). In any case the installation must be completed before gas devices and gas appliances are activated.

Wiring

Common electric cables can be used. However, when installing in places subject to high electromagnetic interference, use of shielded cables is recommended.

The UCE11 must be **permanently** powered at 24VAC.



There is no protection against accidental connection with 230V on the 24V side.

Use double insulation safety transformers; they should be sized for continuous operation at rated power (refer to Technical Data).

- Comply with all current regulations for wiring
- Connections must be done in accordance with the diagrams reported in the following operating instructions
- Conform to indicated cable length and cross section
- Connect only valves at 12VDC with absorbed power not greater than 13W to EV output
- Internal relay with positive logic operation that is always energized contact in case of alarm or fault absence.



Never touch for any reason the sensing element or electronic circuit. Any tampering might compromise the correct system operation.

Commissioning

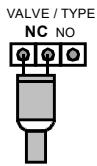
Control Unit UCE11 does not require any programming or parameterization.

- Check that the sensor is suitable for the gas type to be detected:
 - URG13/A = Methane sensor
 - URG13.P/A = LPG sensor
 - URO13/A = Carbon Monoxide (CO) sensor
- Check that power absorbed by any devices connected to relay terminals is lower than or equal to contacts maximum ratings (please refer to Technical Data).
- If no valve should be connected to EV output, insert a valve termination Rv 1.8Kohm 1/2W (factory supplied) in the EV terminal. This will avoid any wrong valve fault signal.

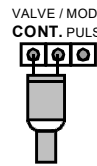
Jumper Setup

- Set jumper JP2 VALVE TYPE to NC for normally closed valve type (deliver condition) or to NO for normally open valve type.
- Set jumper JP3 VALVE MODE only if normally open valve is used. CONT position allows to set EV output constantly powered in case of gas alarm, while PULSE position allows to set it powered by impulses at 10s intervals.

Jumper for valve type selection



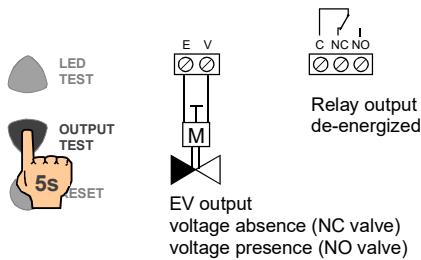
Jumper for valve mode selection



NOTE: EACH CHANGE OF JUMPER SETUP MUST BE MADE UNDER POWER OFF.

Buttons functions

- OUTPUT TEST button: if pressed for at least 5s, starting from normal operating condition, temporarily activates all outputs (valve + relay) in order to check regular operation of intervention and signal devices.



Note: relay operation in positive logic

Energized relay = alarm / fault absence

De-energized relay = alarm / fault presence

- LED TEST button: temporarily turns all LEDs ON in order to check their integrity.



Operation

When the UCE11 is powered at 24VAC **preheating phase** starts up (about 1 min) while LEDs will indicate:

- Green LED flashing (frequency 1Hz)
- Yellow LED steady on
- Red LED steady on

During this phase there is no voltage at EV terminals, so it is not possible to energize the solenoid valve if NC type, while it is possible to energize it if NO type. Further, the relay is not energized.

After preheating phase, the **test phase** follows (3 min) while it is possible to check sensor operation. To this purpose, all internal timings for alarm management are zeroed.

In this phase LEDs will indicate:

- Green LED flashing (frequency 2Hz)
- Yellow LED steady on
- Red LED steady on

During this phase there is voltage at NC solenoid valve, so it is possible to open it using its manual actuator placed on the same valve. The relay is energized.

Connect the battery to relevant terminals paying attention to polarity.

Operation test

During normal operation it is possible to simulate an alarm, in order to check system functionality. Act as follows:

- Activate test phase (if no more active after preheating) holding down RESET button for at least 5s.
- With cover fitted on approach a gas source to sensor grid, and let come out a small amount of gas.



CAUTION: don't spray the gas directly on the sensor, otherwise it will be permanently damaged. Act to increase gradually the gas concentration close to the sensing element.

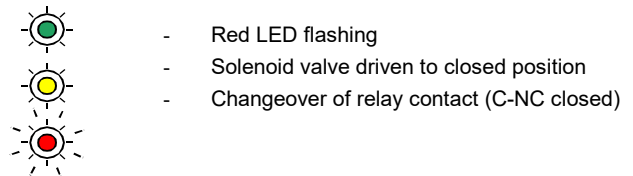


Sensors can be permanently damaged when exposed to high or continuous concentrations of interfering substances (like fresh paint, ammonia based cleaning materials, alcoholic or silicone solvents etc).

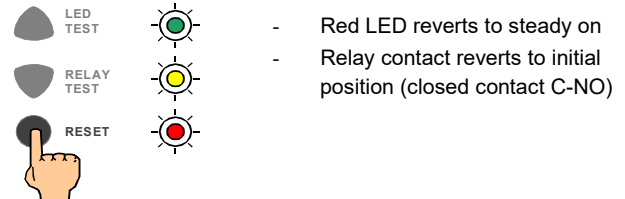


To check carbon monoxide sensor a combustion smoke can be used.

After these operation the control unit must indicate a gas alarm status with these effects:



To restore normal operation, once alarm status is over, press RESET.



Note:

- An alarm or fault condition during test phase (3 min) causes flashing of the relevant red or yellow LED at 2Hz frequency instead of 1 Hz as indicated in functional table. This latter will be valid for events starting from normal operating condition.
- Return to normal operating condition by pressing RESET button is possible only if there aren't any active alarms.

Open the solenoid valve manually.

The control unit continuously checks connections integrity both for sensor and valve.

i The sensor will perform best if used in an area where the only gas or vapor present, besides fresh air, is the gas or vapor that you wish to detect.

If used in an area contaminated with relative high concentration of different interfering substances (like fresh paint, ammonia based cleaning materials, alcoholic or silicone solvents etc.), false alarms may occur.

i IMPORTANT

We recommend to repeat operating test at least once a year or after a long stop period and in any case every time that a sensor is replaced.

Technical Data

Control Unit UCE11

Power supply voltage	24VAC +/- 10%
Frequency	50/60Hz
Power consumption	21VA max (with battery under charge)
Sensor inputs	1 x UR.13/A
Control outputs	- Electronic 12VDC (13W max) - SPDT Relay 250V 5(3)A
Controlled valve type	Normally Closed or Normally Open
Operation logic	positive (normally energized relay, de-energizes in case of alarm / fault)

"VALVE TYPE" Jumper

Valve type	NO = Normally Open NC = Normally Closed
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"VALVE MODE" Jumper

Valve output mode (for NO type only)	CONT = continuous PULSE = pulses (1 pulse every 10s)
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Optical signals (please refer to functional tables)

Green LED	Power presence / test
Yellow LED	Sensor / valve / control unit fault
Red LED	Gas alarm

Sensor connection length cable 1.5mm² max 80m

Valve connection length cable 1.5mm² max 80m

cable 1.5mm² max 40m (13W)

Battery protection fuse T3.15A 250V 5x20

Dimensions 130 x 106 x 56.5 mm

Protection IP20 – EN60529

Room temperature 0...50°C

Room humidity Max 90% R.H. non condensing

Sensor UR.13/A

Sensing element Tin dioxide semiconductor

Alarm threshold

URG13/A	20% LEL methane (10000ppm)
URG13.P/A	20% LEL LPG (3720ppm)
URO13/A	200 ppm CO

Protection IP44 (if correctly installed)

Average life time 5 years from installation date

Room temperature 0...50°C

Room humidity Max 90% R.H. non condensing

Built-in relay

Operation Positive logic (normally energized).
de-energizes in case of alarm / fault

Changeover contact Voltage free 250VAC 5(3)A

Built-in battery charger

Charge voltage 13.8VDC

Charge current 0.5A max

Battery 12VDC 4+6 Ah (not supplied)
Automatic intervention and current limit

CE Conformity

Regulations	Low Voltage	2014/35/UE
	Electromagnetic Compatibility	2014/30/UE
Standards	EN50194	
	EN50270	



CAUTION

Lifetime of sensors URG13/A, URG13.P/A e URO13/A is 5 years from installation date. It is necessary to substitute them systematically before the end of the 5th year of use.

Average lifetime of sensors has been calculated considering a typical usage in an environment free of pollution substances (gases, solvents, etc.). A frequent presence or high concentration of these substances may accelerate normal oxidation process of the sensing element and consequently shorten its decay time (lifetime).

Functional tables

LEDs status	LEDs status		
Functions	Green LED	Yellow LED	Red LED
Sensor preheating ph. (1 min)	Flash 1Hz	ON	ON
TEST phase (3 min)	Flash 2Hz	ON	ON
Normal operation	ON	ON	ON
Gas alarm	ON	ON	Flash 1Hz
Valve fault (*)	ON	Flash 1Hz	ON
Sensor fault	ON	Flash 1Hz	OFF
General fault	ON	OFF	OFF

Output status	Output status	
Functions	output EV (NC valve)	relay output
Sensor preheating ph. (1 min)	Voltage absence	De-energized
TEST phase (3 min)	Voltage presence	Energized
Normal operation	Voltage presence	Energized
Gas alarm	Voltage absence	De-energized
Valve fault (*)	Voltage absence	De-energized
Sensor fault	Voltage absence	De-energized
General fault	Voltage absence	De-energized

(*) A valve fault is detected by short circuit (normally closed valve) and open circuit (normally open valve).

Simultaneousness of 2 or more events causes a combined management of LEDs and outputs in accordance with a defined priority.



IMPORTANT

IN CASE OF ALARM FOR GAS LEAK OR CARBON MONOXYDE PRESENCE ACT AS FOLLOWS:

- Cut off all free flames and all gas-supplied devices
- Do not switch-on or switch-off electrical lights or any other electrically-supplied appliance, in order to avoid the sparking (cause of explosion for explosive gas)
- Close the main valve of gas network or of LPG gas bottle
- Open windows and doors to ventilate the rooms
- Look for the cause of the alarm, and eliminate it. If you are not able to find and to eliminate the cause of the alarm, leave the building, and, from the outside, call for emergency aids.



Environmental compatibility and disposal

This product was developed and manufactured using materials and processes which take full account of environmental issues and which comply with our environmental standards.

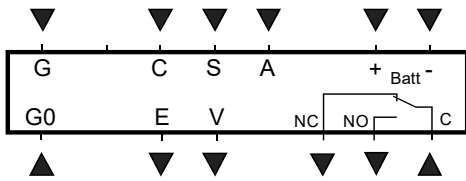
Please note the following for disposal at the end of the product life, or in the event of its replacement:

- For disposal, this product is defined as waste from electrical and electronic equipment ("electronic waste"); do not dispose of it as household waste. This applies particularly to the PCB assembly.
- **Observe all current local laws and regulations.**
- Always aim for maximum re-use of the basic materials at minimum environmental stress. Observe any notes on materials and disposal that may be attached to individual components.
- Use local depots and waste management companies, or refer to your supplier or manufacturer to return used products or to obtain further information on environmental compatibility and waste disposal.
- The UCE11 shipping case can be recycled. Retain it for future use or in case of product return to the manufacturer.

Troubleshooting

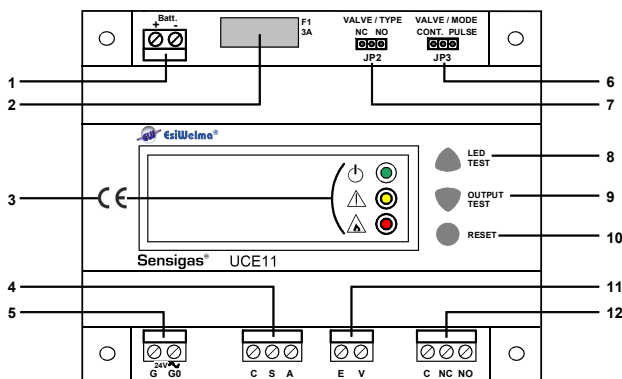
Effect	Possible cause
NC valve does not open	<ul style="list-style-type: none"> Valve not connected No power NO valve type instead of NC type Incompatible valve type (power consumption > 13W) Alarm not reset or current Current sensor preheating phase Defective or not connected sensor Fault presence
NO valve does not close	<ul style="list-style-type: none"> Valve not connected Sensor not in alarm condition Cable interrupted
RESET button does not restore default conditions	<ul style="list-style-type: none"> Sensor still in alarm condition Control unit fault (yellow LED OFF)
Output Test button does not work	<ul style="list-style-type: none"> Current fault / alarm

Connections



- G 24VAC Power supply, voltage
- G0 24VAC Power supply, system neutral
- C Sensor input (common)
- S Sensor input (signal)
- A Sensor input (power)
- E Valve output 12VDC
- V Valve output 12VDC
- C Relay output (common)
- NC Relay output (normally closed contact)
- NO Relay output (normally open contact)
- Batt + Battery output +
- Batt - Battery output -

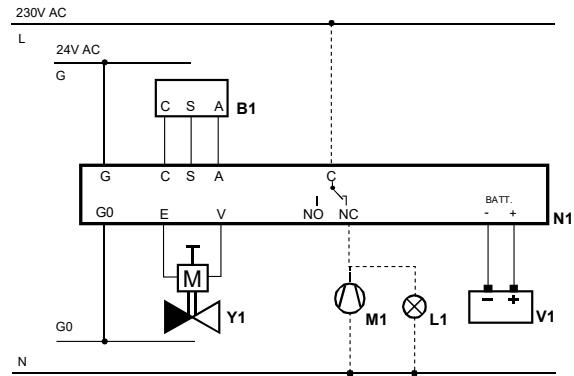
Layout



- 1 Battery connection terminal
- 2 Battery protection fuse T3.15A
- 3 Control Unit /sensor status LEDs
- 4 Remote sensor terminal
- 5 24VAC power supply terminal
- 6 Valve Mode Jumper
- 7 Valve Type Jumper
- 8 LED Test button
- 9 OUTPUT Test button
- 10 RESET button
- 11 12VDC valve terminal
- 12 Relay output

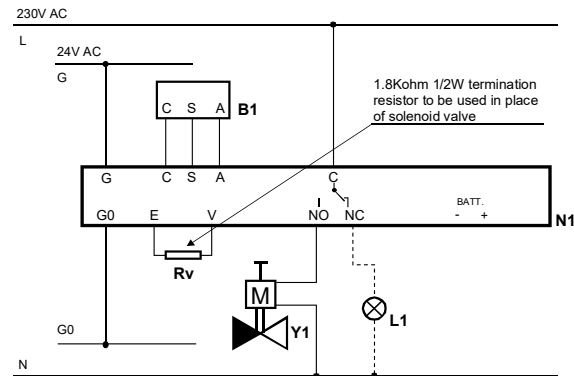
Wiring diagrams

Control Unit UCE11 with sensor and 12VDC solenoid valve. 12V buffer battery. Control of auxiliary devices (signal lamps or air extractors).



- N1 Control unit UCE11
- B1 Sensor UR.13/A
- Y1 Solenoid valve 12VDC
- V1 Battery 12VDC 4÷6Ah (not supplied)
- L1 Signal lamp 230VAC
- M1 Extractor

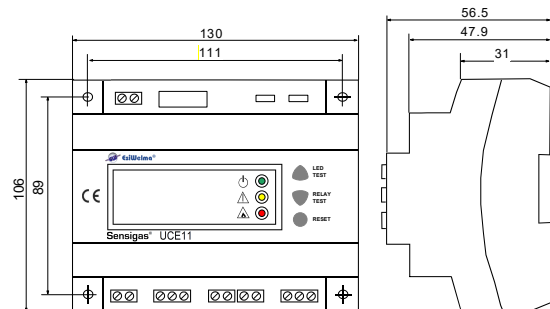
Control unit UCE11 with sensor and 230VAC solenoid valve. Control of auxiliary devices (signal lamps, etc.).



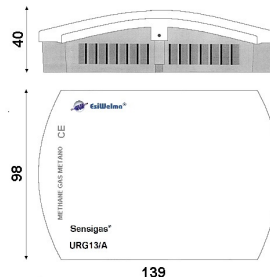
- N1 Control unit UCE11
- B1 Sensor UR.13/A
- Y1 Solenoid valve 230VAC
- Rv Termination resistor EV 1.8Kohm 1/2W (factory supplied)
- L1 Signal lamp 230VAC

Dimensions


Control unit UCE11



Sensors UR.13/A



Dimensions in mm

 Due to our policy of continuous product improvement, specifications are subject to change without notice.