

Installation instructions

GENERAL

The UCE1 control unit can be used to connect one detector (model URx13 or URx20/21..) to create gas detection systems in environments such as boiler rooms, workshops, warehouses, laboratories etc.; the incorporated alarm relay can be used to control a solenoid valve or an accessory device (siren, flashing light, extractor, etc.). The installation of a gas or carbon monoxide detection system does not constitute a release from compliance with all regulations for the installation and use of gas devices and with the relative safety standards and legal provisions in force for this kind of system. Installation, periodic inspections and maintenance of devices and systems must be carried out by qualified service technicians.

TECHNICAL SPECIFICATIONS

UCE1 control unit (data URx20/21.. detectors in brackets)

Power supply:	12 Vac/dc \pm 10%
Consumption:	about 160mA (320mA) with the detector only 460mA (620mA) with detector and failure output
Connections:	two terminals of 2.5 mm ²
Protection:	Power input fuse 1A 5x20mm
Inputs:	one, for UGR13, URP13, URO13 detectors, or URx20/21.. detectors (different types of gas)
Detector connection:	three terminals of 2.5 mm ² : C (-12...24V); S (+4...20mA); A (+12...24V)
Max cable run length:	50 m
Diameter of the 3 wires:	1.5 mm ²
Alarm output:	1 relay with one contact SPDT 8A 250Vac
Failure output:	one open collector 12Vdc / 300mA max
Output connections:	three terminals of 2.5 mm ² for C-NC-NO relay two terminals of 2.5 mm ² for open collector
Visual alarms:	1 green LED: power on 1 yellow LED: failure 1 red LED: gas alarm
Audible alarms:	1 buzzer noise level > 60db at 1m
"Reset/Test" button:	1 for alarm Reset and detector Test
Enclosure:	RAL7035 grey, self-extinguishing plastic house
Dimensions and weight:	105x90x58 mm (6 modules to standard DIN 43880), 185 g
Mounting:	Back panel Omega DIN rail (EN 50022)
Protection rating:	IP20; IP40 when correctly installed in electric panel
Room temperature:	-20...+55°C
Humidity:	\leq 90% RH (non condensing)



0474 / xxxx (manufacturing year)
CERTIFICATE n. MED327120CS
MED 2014/90/EU / IEC 60092-504
EMC 2014/30/EU / EN50270 / EN 61326-1
LV 2014/35/EU / EN60730-1
EN60079-29-1

URx13 (URx20/21..) detectors

Power supply:	from the UCE1 control unit
Consumption:	40 mA (200mA)
Connections:	three terminals of 2.5 mm ² : C (-12...24V); S (+4...20mA); A (+12...24V)
URx13 models:	Methane Gas URG13 LPG URP13 Carbon Monoxide URO13
URx20/21.. models:	Various gases, see dedicated data sheet
Calibration:	URG13: 10% LEL of Methane URP13: 12% LEL of LPG URO13: 200ppm of CO (URx20/21..: 20% LEL, 100ppm CO)
Enclosure:	self-extinguishing plastic
Dimensions and weight:	66x90x45 mm (depending on model), 65 g
Mounting:	wall-mounted using plastic screws and anchors
Protection:	IP44 (IP44, IP55 or IP65 depending on model)
Room temperature:	0...+50°C (-20...+50°C till -40...+70°C)
Humidity:	\leq 90% RH (non condensing)
LVD Directives/Standards	Not applicable
EMC Directives/Standards	EMC 2014/30/EU / EN50270

Other features of URx20/21.. detectors

See their technical features on dedicated data sheet.

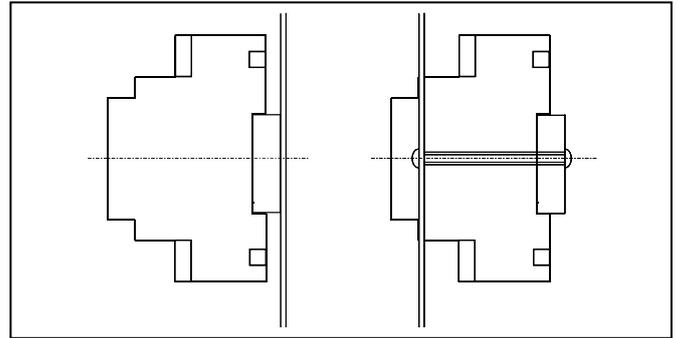
INSTALLATION

MOUNTING

Ensure correct environmental conditions (See Technical Specifications).

UCE1 control unit

To guarantee the correct protection rating for the device it must be installed in an electric panel manufactured according to the laws in force for workplaces and that can also house the power supply system. Mount the control unit on a rail (to DIN EN 50022), using accessories for standard electric panels. It can be installed on a mounting plate or in DIN rail modules.



URx13 (URx20SW) detectors

To be used for wall-mounting (vertical), attached by plastic screws and anchors. To install, insert a screwdriver in the recess at the bottom of the enclosure to open it; avoid damage to the sensor and do not touch the calibration devices. The detectors must be correctly positioned for the system to operate properly. For this purpose, the control units must be installed:

- in zones with constant natural air circulation
- in zones free of dust and dirt that could clog up the sensor and make it ineffective
- never near running water, exhaust vents, windows, openings etc.
- at a suitable distance from the gas-fuelled equipment to avoid the system taking inappropriate action due to possible functional loss.

The positioning also depends on the type of gas that is to be detected, in particular:

- URG13: Methane gas - high, about 20-30 cm from ceiling
- URP13: LPG - low, about 20-30 cm from floor
- URO13: CO - about 1.5 m from floor

For new plants, the detector must be installed at the last possible moment so that typical worksite activities (particularly welding, painting, sealing etc.), do not damage the actual detector (particularly the sensing element).

URx20/21.. detectors

See installation instructions on dedicated data sheet.

ELECTRICAL CONNECTIONS

Normal electric cables can be used. Still, if detectors are to be installed in environments with high exposure to EMI, it is advisable to use shielded cables. The detection system must always be operating, so power switches or other devices that could inadvertently make the detector inoperative must not be used. Do not touch the sensing element and the electronic circuits for any reason whatsoever. Tampering of any kind may cause the system to operate incorrectly.

Ensure compliance with all current electric standards.

UCE1 control unit

The control unit must be powered at 12 Vac/dc; use transformers with double insulation, sized for uninterrupted use for the power utilised (See Technical specifications).
 For connecting the relay output use wires with a minimum diameter of 1.5 mm².
 Prepare wiring connections according to the electrical diagrams contained in these instructions.

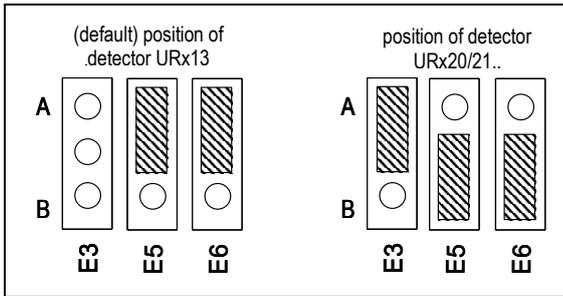
URx13 or URx20/21.. detector

Prepare wiring connections according to the electrical diagrams contained in these instructions, using wires with a minimum diameter of 1.5 mm² for a maximum length of 50 m.

COMMISSIONING

The UCE1 control unit and the URx13 or URx20/21.. detectors are safety control devices, therefore they must not be tampered with; do not touch the sensor or the electronics for any reason whatsoever. Carry out the following controls:

- the power supply for the control unit must comply with the values provided (12 Vac/dc ± 10%)
- make sure the power consumed by any device connected to the relay terminals is below or the same as the maximum capacity of the contacts (See Technical specifications)
- make sure the consumption of any device connected to the open collector output terminals is below what is declared in the technical data
- the detector must be compatible with the type of gas to monitor and correctly connected to the control unit.
 Depending on the type of detector to connect it is necessary to position jumpers E5 and E6 as follows:



- the operating mode (positive or negative logic) selected must be consistent with the system choices. As regards this, check the position of Jumper E1 (See Operation)
- the operating mode selected for the relay must be consistent with the system choices. As regards this, check the position of Jumper E2 (See Operation)
- test the gas alarm and the detector failure condition events (See Operation).

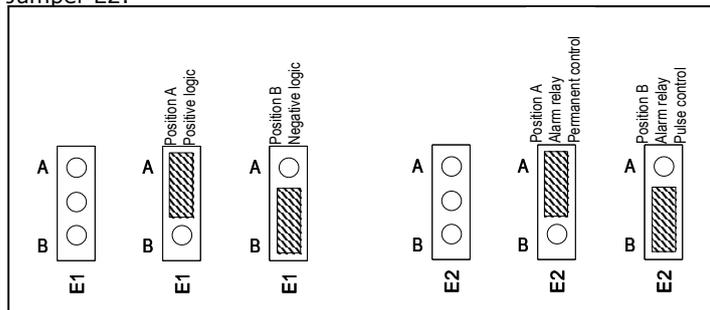
OPERATION

The Jumper E1 can be used to select the operating mode (positive or negative logic).

The control unit signals its operating status through LEDs. Depending on the operating mode selected through Jumper E1, in a normal situation (no alarm), the LEDs, the OC output and the relay are as follows:

positive operating logic: LEDs on; relay energised, OC output = ON
 negative operating logic: LEDs off; relay de-energised, OC output= OFF

If the negative operating logic is selected, the alarm relay can be permanently or impulse controlled, depending on the position of Jumper E2:



Once the correct power is supplied, the control unit carries out the following phases in sequence:

LED and buzzer tests (about 5 seconds)

Whichever operating mode is selected, the LEDs will switch on in sequence and the buzzer will sound briefly.

Warm-up of detector (about 3 minutes)

During this phase, which brings the detector up to the correct operating temperature, the gas detection system is not operational. During this phase, if the wiring connections are correct, the control unit display shows the following:

Interface		Positive logic	Negative logic
Power supply LED	Green	Flashing 1 Hz	Flashing 1 Hz
Failure LED	Yellow	On	Off
Gas alarm LED	Red	On	Off
Alarm buzzer		No sound	No sound
Alarm relay		Energised	De-energised
Failure output		On	Off

Operating test (about 3 minutes)

Once the detector warm-up phase is complete, the device enters the operating test phase. During this phase, all internal timing is reset to ease operating verification of the detector (alarm simulation). In this case, the control unit display shows the following:

Interface		Positive logic	Negative logic
Power supply LED	Green	Flashing 2 Hz	Flashing 2 Hz
Failure LED	Yellow	On	Off
Gas alarm LED	Red	On	Off
Alarm buzzer		No sound	No sound
Alarm relay		Energised	De-energised
Failure output		On	Off

Keep the "Reset/Test" button pressed down for over 1 second to interrupt the operating test phase. To test the detector correctly, proceed as follows:

Gas alarm test:

Bring the test cylinder close to the detector grille and release a small amount of gas (caution: if the gas is aimed directly at the sensor, this will be permanently damaged). For CO testing of detector, smoke produced by combustion can be used. The control unit will signal the alarm as follows:

Interface		Positive logic	Negative logic
Detector alarm LED	Red	Off	On
Alarm buzzer		Continuous sound	Continuous sound
Alarm relay		De-energised	Energised (permanently or pulsed depending on E2)
Failure output		Off	On

Keep the "Reset/Test" button pressed down for 1 second to silence the alarm (if there is no gas remaining) and terminate the operating test phase. To restart the Test phase, just keep the relative button pressed down for about 6 seconds.

Caution

The repeated use or high concentration of interfering substances (alcohol, lighter fluid etc.) can cause permanent damage to the sensor and put the device out of order.

Detector failure test

Simulate a failure in the detector as follows:

- disconnect the cable of the detector and verify the following alerts:

Interface		Positive logic	Negative logic
Detector Failure LED	Yellow	Off	On
Alarm buzzer		Intermittent sound	Intermittent sound
Failure output		Off	On

- reconnect the detector and press the "Reset/Test" to return the control unit to normal operating mode, making the sure the conditions of the various interfaces are reset

Normal operation

This is the normal operating phase of the control unit during which both gas alarm monitoring and self-testing of the instrument (detector) and the system (control unit) are active. During this phase, where there are no alarms and/or abnormalities, the control unit display shows the following:

Interface		Positive logic	Negative logic
Power supply LED	Green	On	On
Failure LED	Yellow	On	Off
Gas alarm LED	Red	On	Off
Alarm buzzer		No sound	No sound
Alarm relay		Energised	De-energised
Failure output		On	Off

When dangerous concentrations of gas are detected, the control unit enters the gas alarm phase and carries out the following operations:

Interface		Positive logic	Negative logic
Detector alarm LED	Red	Off	On
Alarm buzzer		Continuous sound	Continuous sound
Alarm relay		De-energised	Energised (permanently or pulsed depending on E2)
Failure output		On	Off

Once the gas alarm condition is normalised, the control unit needs to be reset to its normal operating status. Press the "Reset/Test" button on the front of the control unit to reset it.

If there are abnormalities (detector and/or control unit), the control unit will show the following display:

Interface		Positive logic	Negative logic
Failure LED	Yellow	Off	On
Alarm buzzer		Intermittent sound	Intermittent sound
Failure output		On	Off

Once the failure is fixed, the control unit needs to be reset to its normal operating status. Press the "Reset/Test" button on the front of the control unit to reset it.

Caution: it is advisable to repeat the operating test at least once a year, or after a prolonged period of stoppage and in any case, every time the detector is replaced.

Caution

The average lifetime of the URx13 and URx20/21.. detectors is 5 years from installation date. They must be replaced before the end of the 5th year of use. The average lifetime of detectors is calculated for use in a typical environment, normally free from polluting agents (gases, solvents etc.). More frequent and higher concentrations of these substances can accelerate the normal oxidation process of the sensing element, subsequently shortening its lifetime.

GAS ALARM

If an alarm signals a gas leak or the presence of carbon monoxide, proceed as follows:

- put out flames and switch off all gas equipment
- do not for any reason switch on or off lights or any electrical equipment
- open doors and windows to air the environment
- look for and eliminate the cause of the alarm. If this is not possible, leave the building and contact emergency services from outside.

ENVIRONMENTAL COMPATIBILITY AND DISPOSAL

This product has been designed and constructed using materials and processes that take into account the environmental issue. Refer to the following notes for disposal of the product at the end of its working life, or when it is replaced:

- for disposal purposes, this product is classified as an electric and electronic device: do not dispose of it with normal household waste, in particular as regards the printed circuit
- comply with all local laws in force
- as far as possible reuse basic materials to keep environmental impact to a minimum
- use local depots and waste recycling companies, or contact the supplier or manufacturer to return used products or to ask for information on environmental compatibility and waste disposal
- the product packaging can be reused. Keep it for future use or to return the product to the supplier.



TROUBLESHOOTING

Problem	Possible cause
NC valve does not open	- Valve not connected - Alarm in progress - Detector warm-up phase in progress - Defective detector - Presence of failure
NO valve does not close	- Valve not connected - Connection cables cut - No alarm active
"Reset/Test" button does not reset to initial conditions	- Alarm in progress - Failure occurring in control unit
Sensor in alarm immediately after the end of the preheating phase	During the preheating phase, the sensor did not reach thermal stabilization. Wait further minutes and then reset the alarm with the "Reset / Test" button

