EsiWelma®
a Navim Group Company

Sensigas®

Gas detectors

ATEX II 2G Ex d IIC T6 Gb certified

UR.40.E

11…14Vdc power supply. Sensing element - catalytic (S version), pellistor (P version) or semiconductor (T version) for explosive gases, and electrochemical cell (S or P version) or semiconductor (T) for toxic gases. Up to three threshold limit values.
LED on the sensing element for operating status indication.
Automatic countdown of sensor lifetime.

Use

UR.40.E detectors are used to detect the presence of methane, LPG, carbon monoxide (CO), gasoline vapours and on request, acetylene, hydrogen, ammonia, propane, octane and ethanol in industrial environments and thermal power stations. The UR.40.E detectors transmit data from a local bus connected with their Control Unit, which acts as the master unit of the gas detection system.

Operation

If there is a gas leakage, the detector compares the measured concentration value with the threshold limit setpoints. Alarm information is transmitted to the Control Unit, which energises its own internal relay module (MR0) and the remote Relay and Display modules depending on the associations.

Ordering

Simply indicate product code: please, refer to “available models”.

Available Models

Code: UR () yy z E

- E= Explosion proof execution
- z: Sensing element type: P= Professional Cat; S = Standard Cat.; T = Semiconductor with threshold operation
- yy: “40” or “52” Bus Based System like EW40 or EW52; “20” for Stand Alone detectors with 4…20 mA output & 4 optional VFC relays output
- (): Models on request — G= Methane; P= LPG; O= Carbon monoxide; B= Gasoline vapours; L = Acetylene; I = Hydrogen; M = Ammonia; C= Propane; T = Octane; E = Ethyl Alcohol; S= Oxygen; D = Carbon dioxide; X= Xylene; A= Acetone; H= Hexane; Q= Ciclo-Hexane; T= Toluene; N= Pentane; U=Butane; F= Heptane; K=Ethane; J= Ethanol; V= Methanol; Z= Benzene; Y= Ethyl Acetate; W= Hydrogen cyanide; HS= Sulphuric acid; HC= Hydrogen chloride; CL= Chlorine; N1= Nitrogen monoxide; N2= Nitrogen Dioxide; N3= Nitrous Oxide; HY=Hydrocarbons.

For other gases, please contact Customer Service.

Technical characteristics

Type of sensor	Standard Catalytic, Pellistor or Semiconductor	Electrochemical Cell or Semiconductor
Detectable Gas (see available models)	Explosive Gas	Toxic Gas
Power supply	11÷14Vdc	11÷14Vdc
Max power consumption	1.6W	0.7W
Measuring range	0…50% LEL	0..500 ppm
Precision (Standard Catalytic, Pellistor or Electrochemical Cell)	± 5% full scale, ± 10% readout	
Precision (Semiconductor)	± 10% full scale (on calibration point)	
Repeatability	± 5% full scale, ± 10% readout	
Measurement resolution	1% LEL	5 ppm
Microprocessor resolution	1024 points (10 bit)	1024 points (10 bit)
Digital filter system	Kalman Filter	Kalman Filter
Watchdog	Internal	Internal
Warm-up time	< 2m	< 2m
Stabilization time	< 2m	< 2m
Response time	< 20s (T50), < 60s (T90)	
Long-term stability		< 5%/year (Electrochemical cells)
Offset (%LEL/year)	< ±6 (S), < ±3 (P)	
Span (%LEL/year)	< ±6 (S), < ±3 (P)	
Average Sensor life (in air)	255 weeks	255 weeks
Settable threshold limit values, default settings:		
Pre-alarm	10% LEL	50 ppm
1st threshold alarm	20% LEL	100 ppm
2nd threshold alarm	40% LEL	200 ppm
Operating Temperature	-20 ÷ 50 °C	
Storage Temperature	-20 ÷ 70 °C	
Relative Humidity (without condensing)		
- Operation	15 ÷ 90 %RH	
- Storage	45 ÷ 75 %RH	
Operating pressure (KPa)	80 ÷ 110	
Air speed (m/s)	≤ 6	
Visual warnings	Red LED visible on sensor body The steady LED status can be forced by the Control Unit to identify the sensor on the plant	
Dimensions and weight	See dedicated section	
Options & Accessories		
TUL40.. Gas calibration Kit	See installation and commissioning chapter provided with Control Unit	
CRG40 Gas collecting cone	See dedicated data sheet	
PAP40 Powerful jets protection	See dedicated data sheet	
ATEX marking	CE 1370 ⟨Ex⟩ II 2G Ex d IIC T6 Gb BVI 07 ATEX 0032 + Ext 02/14 -20°C ≤ T_A ≤ +50°C	

Legend of Marking

CE	Marking in conformity with all applicable EC Directives
1370	Identification number of Notified Organism for manufacturing survey
⟨Ex⟩	Marking for all equipments in conformity to ATEX 2014/34/EC Directive
II	Equipments Group for surface industry
2	Equipments Category 2 for use in Zone 1
G	Equipments intended for use in explosive gas atmosphere, caused by mixture of air and gas, vapours, flammable mists
Ex d IIC T6 Gb	Protection mode according to EN60079-0 and EN60079-1
BVI 07 ATEX 0032	EC-type examination certificate + relevant extensions
-20°C ≤ TA ≤ +50°C	Operating temperature range

Sensors lifetime

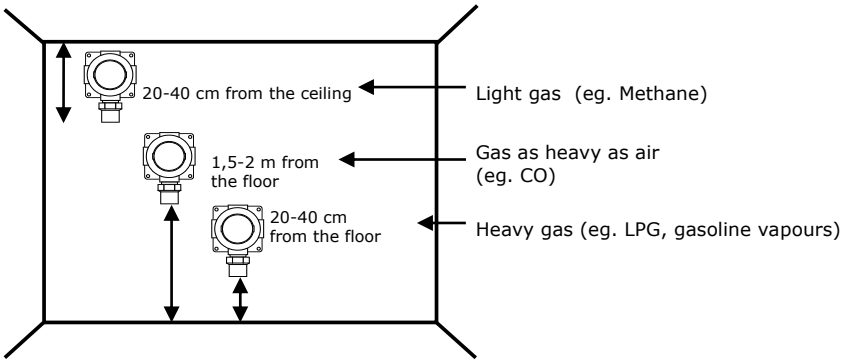
Sensor average lifetime (see technical characteristics) is referred to a typical usage in a pollution-free environment. Presence of a high concentration of pollutants can shorten the lifetime of the sensing element.

Once the detection system starts up, it has to be supplied with energy during all the lifetime of its sensors.

Seasonal use of the detection system is not recommended.

Installation

To install the detectors, follow the instructions below:
about 20-40cm from the floor to detect gases heavier than air (LPG or Gasoline Vapours)
about 20-40cm from the ceiling to detect gases lighter than air (Methane)
about 1.5-2m from the floor to detect gases as heavy as air (CO)

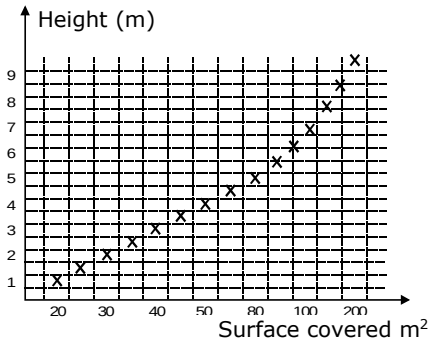


Take into consideration the following specific installation guidelines, as well as the above instructions, for location of the detectors.

The detectors must be installed:

1. where accidental gas leakages are possible
2. at least 1.5m away from heat sources or from vent holes
3. not in spaces where ventilation is poor and where gas pockets may form
4. away from hindrances to natural gas flow
5. away from equipment that may leak gas during normal operations
6. in environments with a temperature range of -20°C to 50°C and relative humidity below 90% (non-condensing)
7. Disconnect equipment from the power supply when mounting and dismantling detectors.

The number of detectors to be installed in an environment are proportionate to the height and area of the room itself. This parameter (see above) depends on a wide range of variables; the graph below should be seen as an aid and not as a rule for installation.



NOTE:

Approximate values.

The curve shows the volume (floor surface and ceiling height) covered by a Methane detector.

Special recommendations

CAUTION: safety is guaranteed only if cover is screwed on tight.

- Tighten the cover clockwise, and when it is screwed on, make sure that there is no more than 0.5 mm between housing and cover. This guarantees that it is screwed on tight. Remember to tighten the hexagon locking grub screw that fits into the end of the cover.
- Ensure compliance with the words << DO NOT OPEN WHEN ENERGISED >>, clearly indicated on the cover. Alternatively, make the area safe before opening the sensor cover.

Electrical installation and configuration

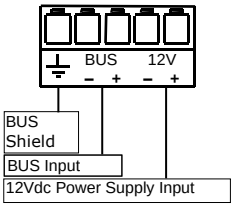
CAUTION: **Make the area safe and ensure that the device power supply is off before cabling and configuration operations.**

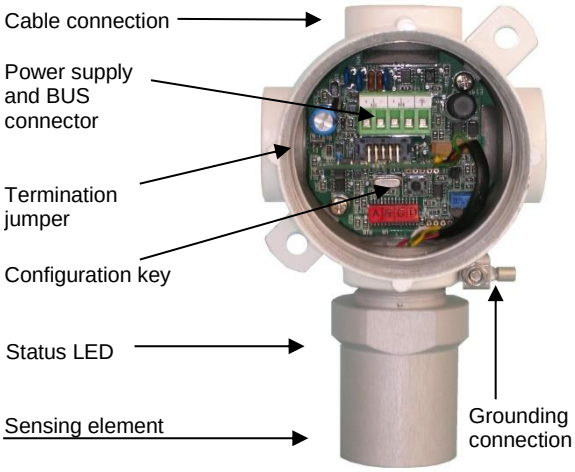
Install the sensor in compliance with EN 60079-14.

ATEX certified 1“ NPT cable glands are used for cable entry, in compliance with standards EN 60079-0 and EN 60079-1 (Ex d protection mode).

Ground the sensor using the internal grounding system.

Refer to the Control Unit manual for all cabling information (cable type and specifications, bus topology, length of connections etc.) and configuration.





Checklist after mechanical and electrical installation

Before using the sensor, it must be recognised by the Control Unit through an assignment operation (refer to the manual of the aforesaid Control Unit for correct execution).

The sensors are factory calibrated so they normally do not require any other calibration once installed. Still, after installation, an operational check of the sensors is recommended.

The status LED means the following:

- Flashing at 2Hz — NOT ASSIGNED
- Flashing about every 10 sec — ASSIGNED AND WORKING
- Steady — ALARM

Maintenance

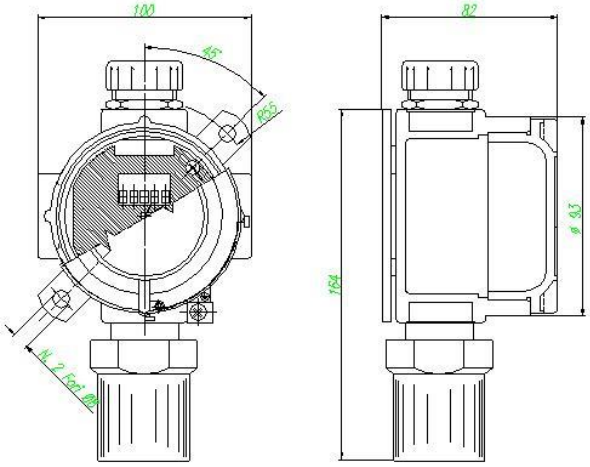
Every three-six months, check that:

- in free air, the measurement value shown on the Control Unit is lower than 1% of the LEL for explosive gases or at 10 ppm
- after applying appropriate gas mixture via the **TUL40..** test kit, the measurement value shown on the Control Unit is between 45% and 55% of the LEL or between 450 and 550 ppm and the status LED is steady on.

If any abnormalities are found during routine sensor maintenance, return the sensor concerned to the supplier / installer, who in turn will send it back to the manufacturer.

Dimensions and weight

Dimensions (HxWxD): 164x100x82mm. Weight: 0.8Kg



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