Sensigas®

Gas detectors

ATEX II 3G Ex nA d IIC T6 Gb certified

UR.40.S

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.S 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.S 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 S ─────────► S = Not Sparking execution

Sensing element type:
P= Professional Cat; S = Standard Cat.; T = Semiconductor with threshold operation

"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 ⟨Ex⟩ II 3G Ex nA d IIC T6 Gb BVI 07 ATEX0033 -20°C ≤ TA ≤ +50°C	

Legend of Marking

CE — Marking in conformity with all applicable EC Directives

⟨Ex⟩ — Marking for all equipments in conformity to ATEX 2014/34/EC Directive

II — Equipments Group for surface industry

3 — Equipments Category 3 for use in Zone 2

G — Equipments intended for use in explosive gas atmosphere, caused by mixture of air and gas, vapours, flammable mists

Ex nA d IIC T6 Gb — Protection mode according to EN60079-0 and EN60079-15 sensor body with type of protection d in compliance with EN60079-1

BVI 07 ATEX 0033 — Type examination certificate

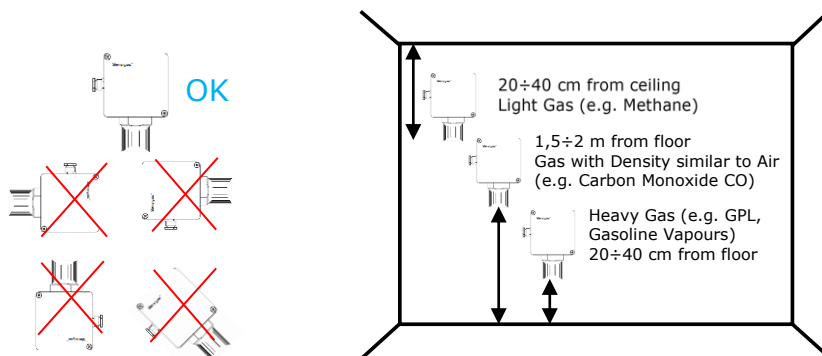-20°C ≤ TA ≤ +50°C — Operating temperature range

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

For Sensors installation, follow the rules as in the diagram:

OK

20÷40 cm from ceiling
Light Gas (e.g. Methane)

1,5÷2 m from floor
Gas with Density similar to Air
(e.g. Carbon Monoxide CO)

Heavy Gas (e.g. GPL,
Gasoline Vapours)
20÷40 cm from floor

The following rules to install the detectors are strictly recommended:

1. where accidental gas leakages are possible
2. at least 1.5m far from any source of heat or point of heavy ventilation
3. not in spaces where ventilation is poor and gas-pocket can form
4. far from whatever can hinder the gas to flow naturally
5. far from appliances that throughout their normal working can have functional gas leakage
6. in spaces where temperature is between -20°C and 50°C and relative humidity lower than 90% (no dew)
7. assemble and dismantle detector only when there is no voltage.

The quantities of detectors to be installed in a room are proportional to the height and the surface of the room itself.

This parameter depends on a great range of variables, which is why **the following graph is not a rule, but a simple help for installation for light gas detectors**

Altezza Height (m)

Superficie coperta m²
Covered Surface (m²)
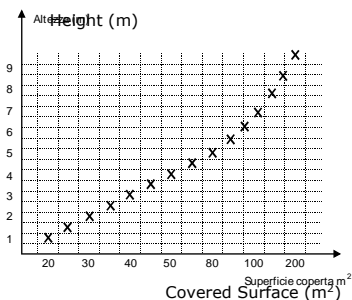
Media Coverage in m²	Areas with normal geometry		Areas with particular geometry (beams, ceilings, wells, barriers to gas diffusion)	
Sensor Type	Light Gas	Heavy Gas	Light Gas	Heavy Gas
Standard Pellistor	80…100	50…80	50…80	30…50
Electrochemical Cell	100…300		60…150	

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.
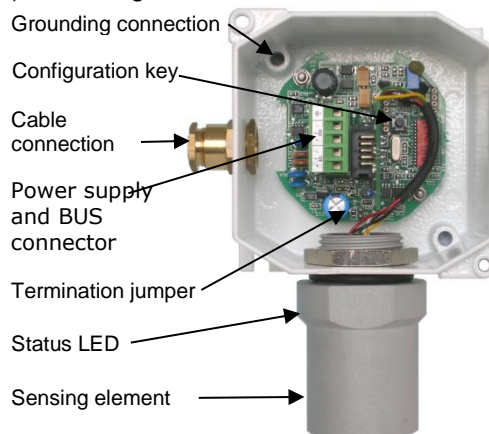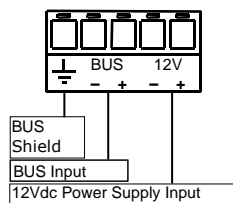
Electrical installation and configuration

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.
The cable gland provided on the housing is used for cable entry. The diameter of the cable sheath must be no more than 8 mm.
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.

BUS Shield
BUS Input
12Vdc Power Supply Input

Grounding connection
Configuration key
Cable connection
Power supply and BUS connector
Termination jumper
Status LED
Sensing element

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): 155x100x60mm.   Weight: 0.65Kg
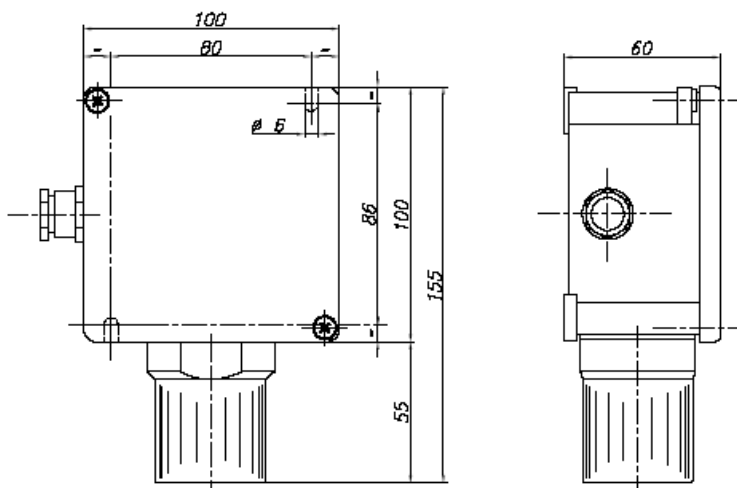
Due to our policy of continuous product improvement, specifications are subject to change without notice.