

Sensigas[®]

Oxygen detectors

ATEX II 2G Ex d IIC T6 Gb certified

URS40SE



11...14Vdc power supply.
Electrochemical cell sensor designed for the detection of oxygen (O₂).
Up to three alarm thresholds plus sensing element fail.
LED on sensing element body to indicate operating status.
Automatic countdown of sensor life.

Use

The URS40SE detectors are used to detect the presence of oxygen (O₂), in areas classified as Zone 1.

An **Oxygen excess** forms if it leaks in hospitals, laboratories, welding centres and, more in general, where oxygen is stored.

Oxygen deficiency is an indirect measurement of the presence of other explosive or asphyxiant gases that deplete the oxygen in the air.

URS40SE 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 an oxygen leak or an absence of oxygen, the detector compares the measured concentration value with the threshold limit setpoints and energises the system relays if associate.

Alarm information is transmitted to the Control Unit, which energises its own internal relay module (MRO) and the remote Relay and Display modules depending on the associations.

Ordering

To order, simply state the part number: **URS40SE**.
For special versions, on request, please contact Customer Service.

Technical characteristics

Type of sensor	Electrochemical cell	
Detectable Gas	O₂ excess	O₂ deficiency
Power supply	11÷14Vdc	
Max power consumption	0,7W	
Measuring range	0...30% O ₂	
Precision	± 2,5% of full scale range (in air)	
Repeatability	± 2,5% of full scale range	
Measurement resolution	0.1% O ₂	
Microprocessor resolution	1024 points (10 bit)	
Digital filter system	Kalman Filter	
Watchdog	Internal	
Warm-up time	< 2m	
Stabilization time	< 2m	
Response time	< 10s (T20), < 45s (T90)	
Average Sensor life (in air)	120 weeks	
Threshold limit settings (default setting):		
	Pre-alarm	22% O ₂ 19% O ₂
	1 st threshold alarm	23% O ₂ 17% O ₂
	2 nd threshold alarm	24% O ₂ 15% O ₂
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 with detector energized The steady LED status can be forced by the Control Unit to identify the sensor on the plant	
Dimensions and weight	See dedicated section	
<u>Options & Accessories</u>		
TUL40.. Gas calibration kit	See installation and commissioning chapter	
TUS40 Handheld terminal for service and maintenance	See installation and commissioning chapter	
CRG40 Gas collecting cone	See dedicated data sheet	
PAP40 Powerful jets protection	See dedicated data sheet	
ATEX markings	 1370  II 2G Ex d IIC T6 Gb BVI 07 ATEX 0032 + Ext 02/14 -20°C ≤ T _A ≤ +50°C	

Key to marking information



1370



II

2

G

Marking in conformity with all applicable EC Directives
 Identification number of Notified Body involved in production control
 CE marking for all equipment in conformity with Directive ATEX 2014/34/EC
 Equipment group for surface industry
 Equipment category 2 for use in Zone 1
 Equipment intended for use in explosive gas atmosphere, caused by mixture of air and gas, vapours, flammable mist
 Ex d IIC T6 Gb Type of protection complying with EN60079-0 and EN60079-1
 BVI 07 ATEX 0032 + Ext 02/14 EC-type examination certificate
 -20°C ≤ T_A ≤ +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

Oxygen excess

Since oxygen weighs more or less the same as air, unless there is forced or natural air circulation, it tends to spread at the point of the leak.

So, the excess oxygen detectors must be installed near any likely leakage points, in order to detect the excess oxygen as quickly as possible.

Oxygen deficiency

Detection of oxygen deficiency has the purpose of indirectly detecting the presence of other gases that deplete the oxygen in the air, therefore causing asphyxiation problems, for example.

In this case, the detectors must be located at the breathing height of the occupants in the premises. 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.

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.

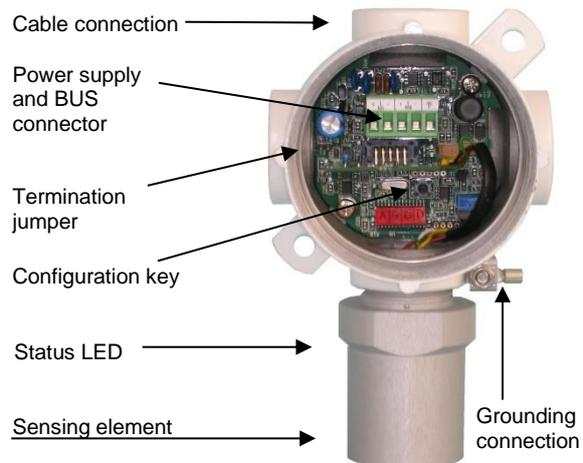
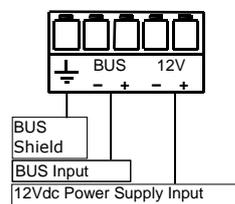
Install the sensor in compliance with EN 60079-14.

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.

Terminal board and electrical connections



Cabling:

Depending on the connecting distance, use at least 4-core cable, min. diameter 0.75mm² up to 100m, 1mm² up to 200m, 1.5mm² up to 500m.

Use shielded cable where there is a risk of electromagnetic interference.

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

A sensor functional test should be carried out every three-six months.

Routine

Routine maintenance involves repeating the same tests as set forth in "checklist after mechanical and electrical installation".

Corrective

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.

Sensors may need to be re-calibrated, using the **TUL40..** calibration kit and the **TUS40-40** handheld terminal, which must be connected to the sensor via the communication on the Power supply and BUS connector.

For the re-calibration procedure, see the instructions supplied with the handheld terminal.

Decommissioning

Remove power from the detector, disconnect all wiring and conduits and dismount the housing from all the blocking systems.

Warranty

Warranty on EsiWelma products is valid for 12 months from installation date and no longer than 24 months from manufacturing date on the product. Installation data, stamp and signature on the data sheet filled in by the installer will be considered proof for warranty.

A copy of the warranty data sheet must be sent when returning the product under warranty.

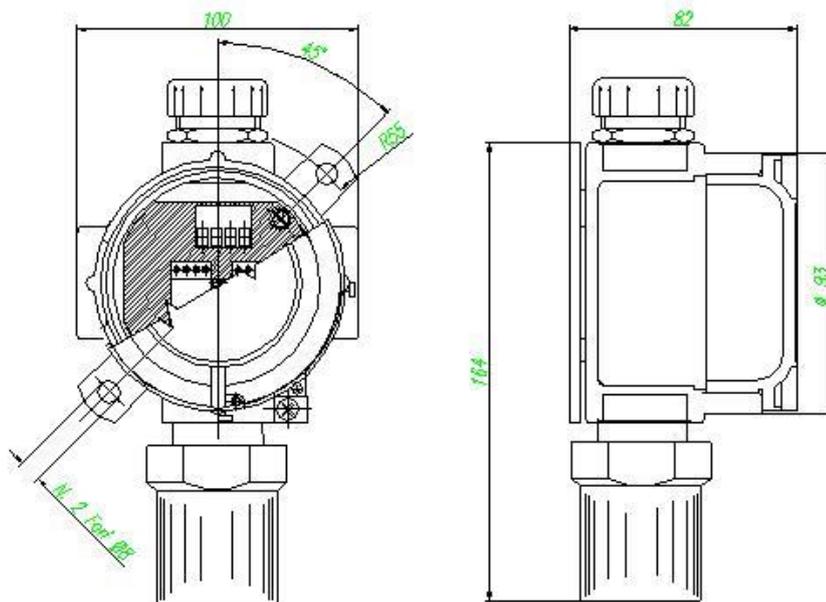
Accessories

TUL40.. Gas calibration Kit
TUS40 Handheld terminal
CRG40 Gas collecting cone
PAP40 Powerful jets protection

Dimensions and weight

Dimensions (HxWxD): 164x100x82mm.

Weight: 0.8Kg



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

EsiWelma® srl	EW0526A1_en - rev. A	Oxygen detectors - URS40SE
05/10/2020	Gas detection systems for industrial environments	4/4