EsiWelma®
a Navim Group Company

Sensigas®

Gas detectors
Carbon dioxide (CO_2)

IP65 protection degree

URD40SI

11…14Vdc power supply.

Not Dispersive Infrared (NDIR) sensor designed for the detection of carbon dioxide (CO_2).

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 URD40SI detectors are used to detect the presence of carbon dioxide (CO_2), in non-classified areas.

It detects carbon dioxide leaks or emissions in industrial environments, hospitals, fermentation plants, greenhouses, stables and, more in general, where carbon dioxide is stored, generated or produced.

URD40SI 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 and energises the system relays if associate.

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

To order, simply state the part number: **URD40SI**.

For special versions, on request, please contact Customer Service.

Technical characteristics

Type of sensor	NDIR (Non Dispersive Infrared)
Detectable Gas	Carbon dioxide (CO_2)
Power supply	11÷14Vdc
Max power consumption	1,6W
Measuring range	0...20.000 ppm
Precision	± 5% full scale, ± 10% readout
Repeatability	± 5% full scale, ± 10% readout
Measurement resolution	20 ppm
Microprocessor resolution	1024 points (10 bit)
Digital filter system	Kalman Filter
Watchdog	Internal
Warm-up time	< 2m
Stabilization time	< 2m
Response time	< 25s (T90)
Average Sensor life (in air)	255 weeks
Threshold limit settings (default setting):	
Pre-alarm	2000 ppm
1st threshold alarm	4000 ppm
2nd threshold alarm	8000 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 the 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
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

EC Conformity

EMC Directives / Standards	Electromagnetic Compatibility Directive 2014/30/EU / EN50270 / EN 61326-1
LVD Directives / Standards	Not applicable

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.

Mechanical installation

The relative density of carbon dioxide is about one and a half times that of air, so it tends to collect at floor level in closed, unventilated environments. Therefore, the sensor must be installed about 30 cm above the floor level.

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.

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

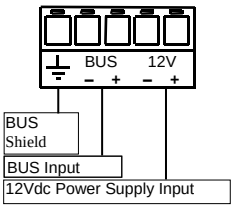
the product packaging can be reused. Keep it for future use or to return the product to the supplier.

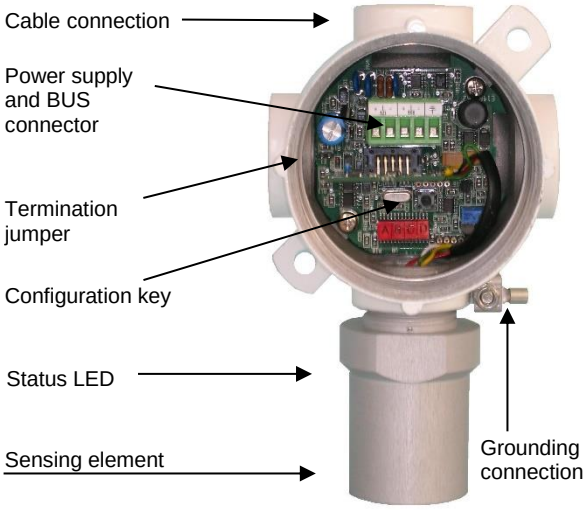
Electrical installation and configuration

<u>CAUTION:</u> Make the area safe and ensure that the device power supply is off before cabling and configuration operations.

Install the sensor in compliance with laws in force.
1“ NPT cable glands are used for cable entry.
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 0.75mm^2 up to 100m, 1mm^2 up to 200m, 1.5mm^2 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..** gas 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

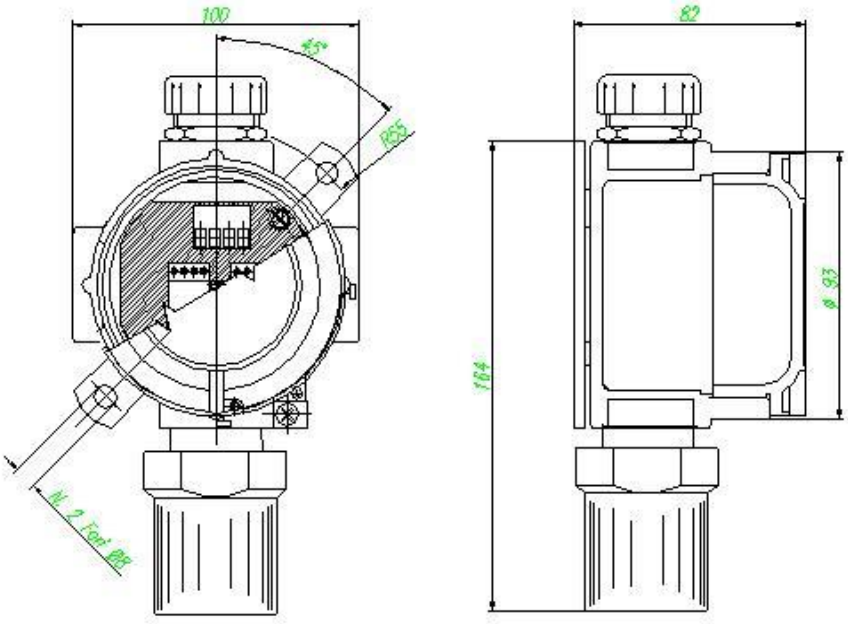
Warranty on EsiWelma products is valid for 12 months from installation date and no longer than 24 months from manufacturing date on the product. Installation data, stamp and signature on the data sheet filled in by the installer will be considered proof for warranty.
A copy of the warranty data sheet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