EsiWelma s.r.l.

Sensigas®

Carbon Dioxide (CO_2) gas detectors

IP30 Protection Rating

URD20SW

Use

The URD20SW detectors can be used to measure the concentration of Carbon Dioxide and to control transmitters or actuating devices where there are abnormal concentrations well below the gas hazard threshold.

The URD20SW detectors can also be used to monitor Carbon Dioxide as an indication of the quality of the air in hotels, offices, exhibition centres, shops, restaurants, schools, conference rooms, cinemas, theatres and ventilation systems in general.

Operation

The URD20SW detectors are designed to interface with the UCE1 and UCE4 control units and, more generally, with any 4...20mA or 0...10V (in addition 0…20mA or 2…10Vdc) control unit or data acquisition systems.

Ordering

To order, simply state the part number as follows: **URD20SW**

Technical specifications

Type of sensor	NDIR (non-dispersive infrared)
Detectable Gas	Carbon dioxide (CO_2)
Power supply	24Vac (50/60Hz±10%), 24Vdc
Max power consumption	1.6W
Measuring range	0÷20.000ppm (other ranges on request)
Measuring precision (@25°C)	± 100ppm + 3% of the readout
Measuring stability	2% on full scale, for the lifetime of the sensor
Measuring linearity	1% of full scale
Warm-up time	< 2m
Stabilization time	< 2m, 10m for maximum accuracy
Response time	< 2m (T90)
Average operational life of Sensor (in air)	15 years from installation
Analog output	4…20mA or 0…10Vdc (0…20mA or 2…10Vdc)
Max detectable area	about 100 m^2 (approximate; for larger areas install several devices at suitable distances from each other)
Ambient Temperature (°C)	
- Operating	0…50°C
- Storage	-40…70°C
Ambient humidity (%RH)	
- Operating	0...95% RH (non condensing)
- Storage	0...95% RH (non condensing)
Protection Rating	IP30
Enclosure	ABS/PC UL94-V0 flame retardant
Dimensions and weight	See dedicated section
Options & Accessories	
Gas calibration Kit **TUL40..**	See installation and commissioning chapter
EC Conformity	
EMC Directives / Standards	EMC 2004/108/EC EN 61000-6-1 + EN 61000-6-3
LVD Directives / Standards	Not applicable

Mechanical installation

Carefully read the instructions and electronic connection diagrams in this document and follow them to the letter. Keep this document in a safe place for future consultation.

The device must be installed by qualified technicians.

Installation guidelines

Since Carbon Dioxide is heavier than air, it will be concentrated close to the floor.

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.

Installation procedure

Install the detector as follows:

Use the tip of a screwdriver to lightly push down the upper tabs of the detector until the wall mounting plate is separated from the actual detector body. See Fig 1, steps 1 to 4.

Fig 1

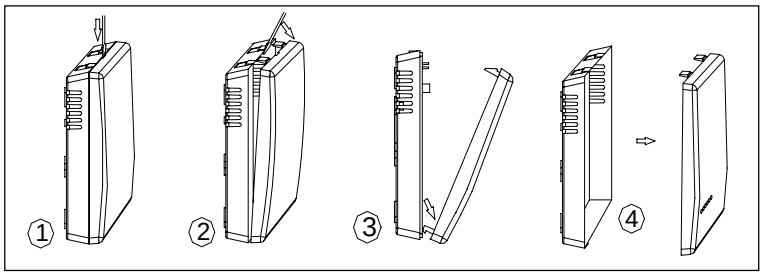
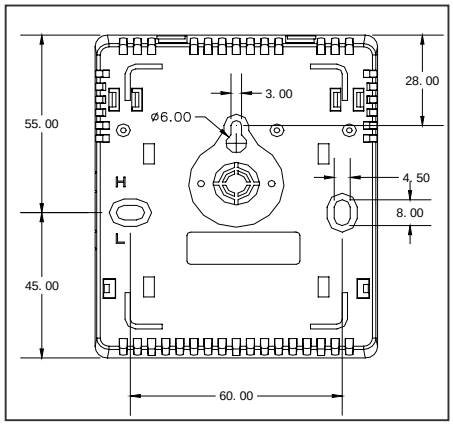


Fig 2



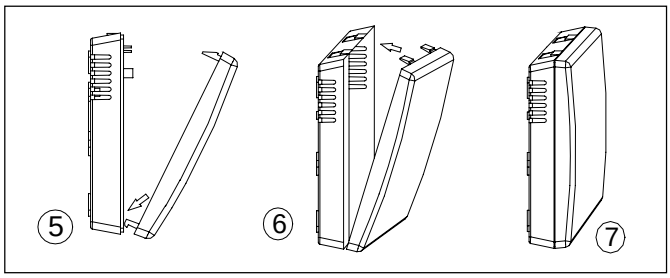
Fix the mounting plate to the wall with the screws supplied or a suitable wall bracket, or to the recessed mounting cabinet used.

See Fig 2 for the fixing template.

Connect the wiring; make sure the cables pass through the wall-mounting plate.

Remount the detector body onto the wall-mounting plate; make sure the tabs click into place. See Fig 3, steps 5 to 7.

Fig. 3



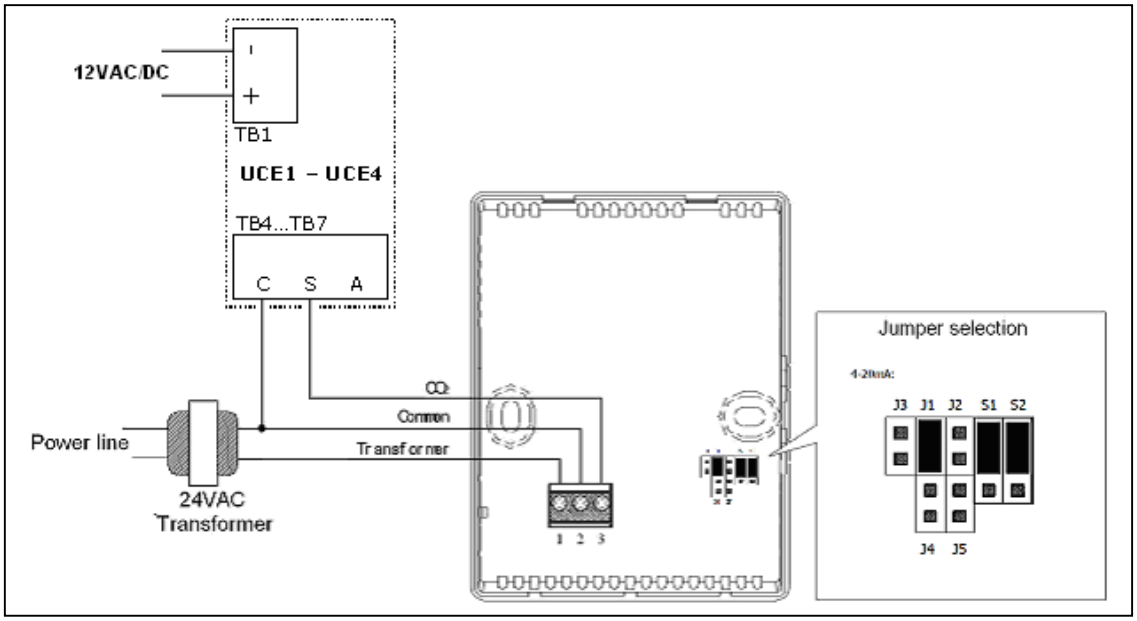
Electrical Installation

CAUTION: Make sure the device power supply is off before cabling and configuration operations.

Install the sensor in compliance with laws in force.

Terminal board and electrical connections

Cabling:



Configuration:

Depending on the connecting distance, use at least 3-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.

Selecting the analog output type

In order to change the configuration, switch off the power supply, input the new settings by J1, S1 and S2 jumpers as shown in the diagram, then power-up again; in particular:

The default setting for the sensor output is 4...20mA signal.

Select the analog output type by J1, S1 and S2 jumpers
Jumpers J2, J3, J4 and J5 are just for manufacture test with default of disconnection.
Please don't change it!

Jumper S1-S2	Jumper J1	Analog Output
Lower two pins blocked	disconnected	0…10Vdc
Upper two pins blocked	disconnected	0…20mA
Lower two pins blocked	Connected	2…10Vdc
Upper two pins blocked	Connected	4…20mA (default)

Checklist after mechanical and electrical installation

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 detector will enter a 2-minute warm-up phase after power-up.

After this time, the sensor will switch to normal operating mode, but it will take about 10 minutes before it reaches top performance level.

Carry out an operational response test using a CO_2 gas cylinder with nozzle; release a small amount of gas close to the grille below and control the variation of the output current / output voltage.

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.

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

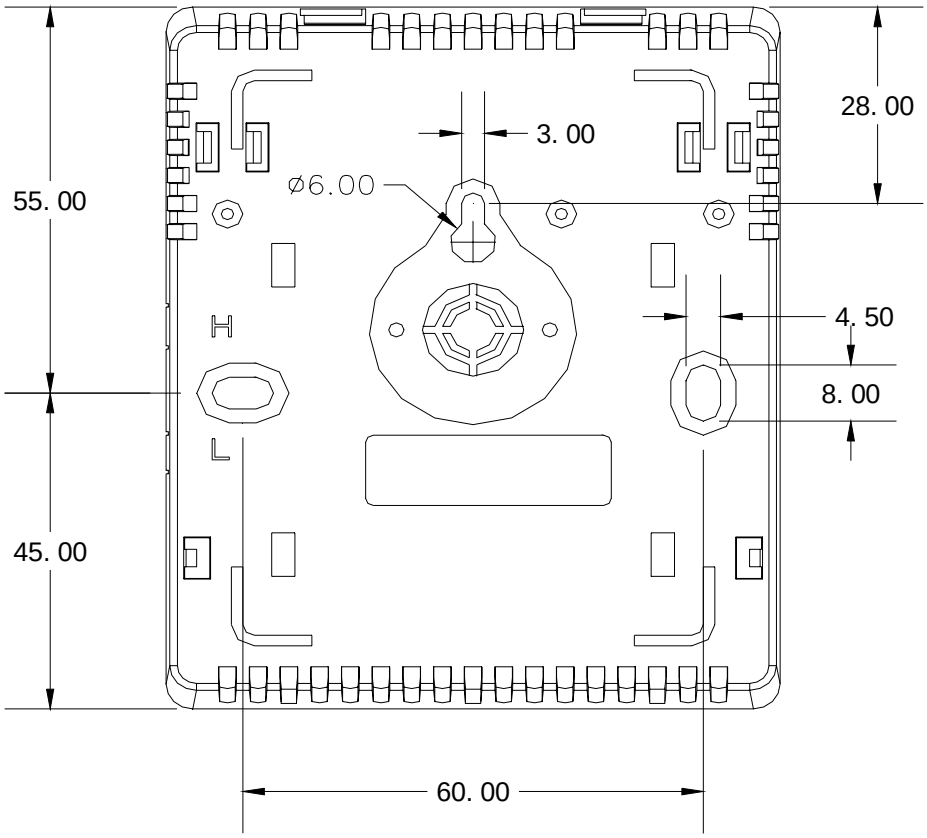
Warranty

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 (at the end of this document) must be sent when returning the product under warranty.

Dimensions and weight

Dimensions (HxWxD): 102mm×90mm×40mm. Weight: 0.12 Kg



Installation data

To be filled in by Installer		*Installer's stamp and signature*
Installation site:		
Part number:	Manufacturing date:	
Installation date:	Replacement date:	