

**E2610 series gas detectors** are compact and easy-to-use instruments.

The devices utilise novel fully calibrated and temperature compensated gas sensors with excellent repeatability, stability and long lifetime.

Two relays with switch-over contact may be used for remote signalling or ventilation control. Flashing LED and an internal buzzer give alarms at two set-points.

### Safety requirements

Always adhere to the safety provisions applicable in the country of use. Do not perform any maintenance operation with the power on. Do not let water or foreign objects inside the device.

### Operating conditions

- The device should be used in explosion-safe (non ATEX -rated) indoor areas at the atmospheric pressure  $\pm 10\%$ , 15...90 %RH, without condensation
- Avoid exposure to highly corrosive gases (H<sub>2</sub>S, SO<sub>2</sub>, HCl, Cl<sub>2</sub> etc), or high concentrations of basic gases, such as ammonia
- Avoid mechanical shock or strong vibrations.
- Avoid sources of electromagnetic interference
- See **Specifications** table for more details

### Installation

There are no precise rules or standards to follow when installing the gas detectors. The following points must be taken into account:

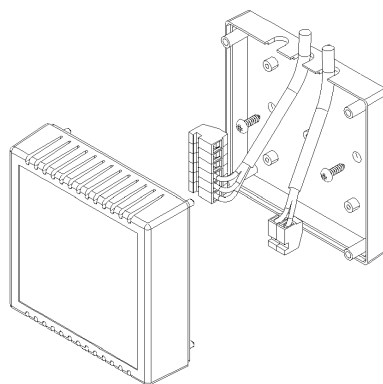
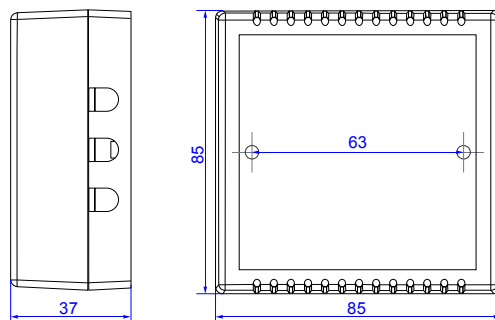
- application (air quality control or leakage detection),
- properties of the space under investigation (room geometry, direction and velocity of air flows etc),
- detected gas (relative density to air, whether the gas is flammable, or toxic, or oxygen displacing),
- safety: strong vibrations, mechanical shock, and the sources of strong electromagnetic interference should be avoided,
- the device should be accessible for maintenance and repair.

For early leakage detection install the sensor as close as possible to the potential leakage sources (flanges, valves, pressure reducers, pumps, etc), taking into consideration other points listed above. Do not locate the detector close to ventilation openings and strong air currents. Avoid the areas without air circulation (corners, niches) as well. For general area monitoring without definite leakage sources, the detectors should be distributed evenly in the room. For personal safety control the detectors are installed in the breathing zone (at the height of the head of people or animals). Recommended sensor position is vertical, pointing downwards. See **Installation guidelines** section for more information.

The gas detector should be mounted on a wall at a place located in proximity to possible gas source. Since carbon monoxide has practically the same density as air, the detector should be installed in the breathing zone (1.5 m above the floor, the height may vary depending on application) or near the potential leakage source. Do not locate the detector close to ventilation openings and strong air currents. Avoid the areas without air circulation (corners, niches) as well. The device should be available for maintenance and repair.

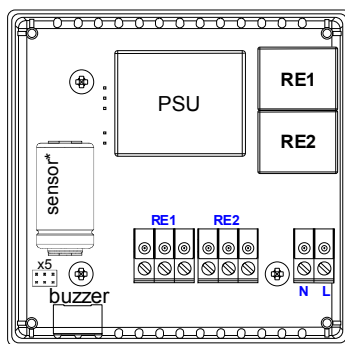
### Connections

1. Detach the base of the enclosure by gently pulling along four guiding pins.
2. Attach the base to the wall with two screws. (see drawings below).



3. Connect the power terminals N and L to the 24 V AC/DC source if you are using detector version -24 or to 230VAC mains if you are using detector version -230. Respect the polarities when connecting to 24 VAC source.

The terminals on the E2610 series devices are suitable for a wide range of wires with cross-section 0,2...1,5 mm<sup>2</sup>. The recommended wire stripping length is 8...9 mm. Loosen the screw, insert the wire end into terminal hole and tighten the screw.



\*Sensors may have different shape and/or size

4. Turn on the power. It may take up to five minutes after switching on for the sensor to stabilize.

5. Push enclosure to the base.

### Operation

During the first 0,5...5 minutes after powering on E2610 performs a warming-up and self-diagnostic routine, indicated by the flashing of each LED. The upper dual-color LED remains continuously green in normal operation and blinks red in case of device or sensor fault. The warm-up time depends on the sensor type, unpowered period and atmosphere.

During the first 30 seconds after powering on you may select automatic or manual mode of alarm release. By shortly (< 2 s) pressing the button on the device's front panel you enable the automatic mode, by pressing the button for 2...10 s — manual mode. The activation of the automatic mode is followed by a single LED blinking and acoustic signal. If manual mode is activated, double acoustic and light signal follows.

If gas concentration exceeds the LOW alarm setpoint, the bottom red LED starts flashing at a rate of 1 Hz, and the relay RE1 switches over. The first alarm stops automatically if the gas concentration drops below 80% of the LOW alarm setpoint.

If gas level exceeds the HIGH alarm setpoint, the bottom red LED starts flashing and the buzzer starts beeping at a rate of 2 Hz, and also the relay RE2 switches over. Depending on the selected release mode, the HIGH alarm stops automatically or can be stopped by pressing the button, on condition that the gas level has dropped below 80% of the LOW alarm setpoint.

Beyond the warm-up period, holding down the button for 2...10 seconds and releasing causes E2610 to reset and perform the self-diagnostic routine for testing purposes.

When holding the button down for over 10 seconds, E2610 imitates the reaching of the HIGH setpoint with the respective light and sound indication and switching over the relays.

### Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of original sale. During this warranty period Manufacturer will, at its option, either repair or replace product that proves to be defective. This warranty is void if the product has been operated in conditions outside ranges specified by Manufacturer or damaged by customer error or negligence or if there has been an unauthorized modification.

## Volatile Organic Compounds

Highly volatile organic liquids. The definitions of VOC may vary depending on application field and country. E2610-VOC is intended to detect vapors of solvents (acetone, benzene, ethanol, ethyl acetate, toluene, xylenes etc.

See Annex for more information on the properties of various gases.

## Installation guidelines

(See **Installation and connections** section for general information.)

Solvent vapors are heavier than air and tend to sink. Consider, if the vapours are heated or not, if the detector is used for fire safety (LEL range) or air quality control (0...100 to 0...1000 ppm range) etc.

## Calibration

E2610-VOC detectors have been calibrated by Manufacturer with standard gas mixtures before delivery. Provided that the sensor is used under moderate conditions, field recalibration is recommended once a year. Please contact your dealer for more information.

## Maintenance

Do not perform any maintenance operation with the power on. Clean the device with soft damp cloth. Do not use any abrasive cleaning agents. Do not immerse the device into water or any cleaning media.

## Delivery set

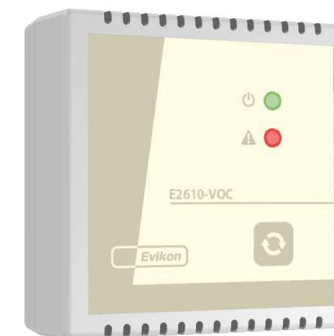
- Solvent Vapors Detector E2610-VOC
- Mounting accessories: 2 screws and 2 plastic dowel plugs

## Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of original sale. During this warranty period Manufacturer will, at its option, either repair or replace product that proves to be defective. This warranty is void if the product has been operated in conditions outside ranges specified by Manufacturer or damaged by customer error or negligence or if there has been an unauthorized modification.

## Specifications

Detected gas	Acetone, Benzene, Ethanol, Ethyl Acetate, Toluene, Xylenes etc	
Default calibration	Toluene	
Sensor type	Metal Oxidel	
Sampling method	Diffusion	
Detection range	0...100% LEL	0...100 to 0...1000 ppm
Resolution	0.1% LEL	1 ppm
Alarm setpoints (release-LOW-HIGH)	7 - 10 - 25 %LEL	70 - 100 - 300 ppm (for 0...500 ppm range)
Response time	<120 seconds	
Sensor lifetime	> 5years	
Calibration interval	12 months	
	-30...+70 °C, 15...90 %RH, without condensation, non-ATEX Normal ambient oxygen level Avoid strong mechanical shock, vibrations or EMI Avoid exposure to corrosive gases	
Warm-up time	up to 1 minute, depending on unpowered period and atmosphere	
Power supply	11...30 VDC with integrated mains supply module 90...265 VAC	
Power consumption	< 2 VA	
Digital interface	UART	
Relay outputs	2 × SPDT, max 5 A, 30 VDC / 250 VAC	
Alarm	Buzzer 85 dB	
Enclosure	ABS plastic with ventilation slots, wall-mount, protection class IP20	
Dimensions	85 × 85 × 37 mm	
Electromagnetic compatibility	according to 2014/30/EU, 2014/35/EU and EN61321-1 standard requirements	



## Solvent Vapors Detector

## E2610-VOC

## User manual



## E2610-VOC User Manual Annex

### Properties of VOC


#### Acetone

Synonyms/Trade Names: Dimethyl ketone, Ketone propane, 2-Propanone

Chemical formula	(CH <sub>3</sub> ) <sub>2</sub> CO	
Molar weight	58	
Relative gas density (to air)	2.0	
Conversion (at 25°C and 1 atm)	1 ppm = 2.38 mg/m <sup>3</sup>	
Boiling point	56.11 °C	
Low explosive limit (LEL), % vol in air	2.5	
Upper explosive limit (UEL), % vol in air	12.8	
Odour	Characteristic pungent smell	
Hazards	Highly flammable. Slightly toxic in normal use. Irritant causing mild skin irritation and moderate to severe eye irritation. At high vapor concentrations, it may depress the CNS.	
Exposure limits	8 hours (2000/39/EC)	1900 mg/m <sup>3</sup> / 500 ppm
	NIOSH REL TWA	590 mg/m <sup>3</sup> / 250 ppm
	IDLH (NIOSH)	2500 ppm [10%LEL]

#### Benzene

Synonyms/Trade Names: Benzol, Phenyl hydride

Chemical formula	C <sub>6</sub> H <sub>6</sub> 	
Molar weight	78	
Relative gas density (to air)	2.69	
Conversion (at 25°C and 1 atm)	1 ppm = 3.19 mg/m <sup>3</sup>	
Boiling point	80 °C	
Low explosive limit (LEL), % vol in air	1.2	
Upper explosive limit (UEL), % vol in air	7.8	
Odour	Hyacinth-like odour	
Hazards	Highly flammable. Irritant. Carcinogen. May cause dizziness; headache, nausea, staggered gait; anorexia, lassitude. Target organs: eyes, skin, respiratory system, blood, central nervous system, bone marrow.	
Exposure limits (NIOSH REL)	Ca TWA	0.319 mg/m <sup>3</sup> / 0.1 ppm
	STEL 15 minutes	1 ppm
	Ca IDLH	500 ppm

#### Terms and abbreviations

**TWA:** time-weighted average concentration for up to a 8-hour workday during a 40-hour workweek. Any substance that NIOSH considers to be a potential occupational carcinogen is designated by the notation "Ca".

**STEL:** 15-minute TWA exposure that should not be exceeded at any time during a workday

**IDLH** (immediately dangerous to life or health): likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment.


**REL** recommended exposure limits.

**NIOSH** (National Institute for Occupational Safety and Health): the US federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. NIOSH data are quoted if EU regulations are not available.


#### Ethanol

Chemical formula	CH <sub>3</sub> CH <sub>2</sub> OH	
Molar weight	46	
Relative gas density (to air)	1.59	
Conversion (at 25°C and 1 atm)	1 ppm = 1.89 mg/m <sup>3</sup>	
Boiling point	78.37°C	
Low explosive limit (LEL), % vol in air	3 - 3.3	
Upper explosive limit (UEL), % vol in air	19	
Odour	Characteristic smell of alcohol	
Hazards	Highly flammable. Gas/air mixtures are explosive. Inhalation of vapours leads to cough, headache, fatigue and drowsiness. High concentrations may damage the fetus. Repeated high exposure may affect the liver and the nervous system.	
Exposure limits according to Commission Directive 2006/15/EC	TWA 8 hours	1210 mg/m <sup>3</sup> / 1000 ppm
	STEL 15 minutes	-

#### Ethyl acetate

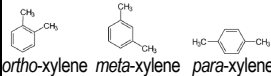
Chemical formula		
Molar weight	88	
Conversion (at 25°C and 1 atm)	1 ppm = 3.60 mg/m <sup>3</sup>	
Boiling point	77.1 °C	
Low explosive limit (LEL), % vol in air	2	
Upper explosive limit (UEL), % vol in air	11.5	
Odour	Sweet "pear" smell	
Hazards	Flammable. Short-term exposure to high levels of ethyl acetate results first in irritation of the eyes, nose and throat, followed by headache, nausea, vomiting, sleepiness, and unconsciousness.	
Exposure limits (NIOSH)	TWA 8 hours	1400 mg/m <sup>3</sup> / 400 ppm
	IDLH	2000 ppm [10%LEL]

#### Toluene

Chemical formula	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> 	
Molar weight	92	
Conversion (at 25°C and 1 atm)	1 ppm = 3.77 mg/m <sup>3</sup>	
Boiling point	110.7°C	
Low explosive limit (LEL), % vol in air	1.1 - 1.27	
Upper explosive limit (UEL), % vol in air	6.75-7.1	
Odour	Characteristic "chemical" smell	
Hazards	Highly flammable. Gas/air mixtures are explosive. Inhalation possible effects: irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paraesthesia; dermatitis; liver, kidney damage	
Exposure limits according to Commission Directive	TWA	192 mg/mm <sup>3</sup> / 50 ppm
	STEL	384 mg/mm <sup>3</sup> / 100 ppm

#### Xylene

(the term is used for any one of three isomers of dimethylbenzene, or a combination thereof)

Chemical formula	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>		
Isomers			
Molar weight	106		
Conversion (at 25°C and 1 atm)	1 ppm = 4.34 mg/m <sup>3</sup>		
Boiling point	144.4 °C	139 °C	138.35 °C
Low explosive limit (LEL), % vol in air	0.9 - 1.1		
Upper explosive limit (UEL), % vol in air	6.0-7.0		
Odour	Characteristic "chemical" smell		
Hazards	Flammable. Inhaling can cause dizziness, headache, drowsiness, and nausea.		
Exposure limits according to Commission Directive 2000/39/EC	TWA 8 hours	221 mg/mm <sup>3</sup> / 50 ppm	
	STEL 15 minutes	442 mg/mm <sup>3</sup> / 100 ppm	