Installation Manual for All Housings

ϵSENSE™ (-D)
CO$_2$ transmitter

ϵSENSE™- D ϵSENSE™- K and ϵSENSE™- Ip54

General

The IAQ-sensor product ϵSENSE (sensor for wall mounting) is designed to measure carbon dioxide (CO$_2$) in rooms. Option - Tr is prepared for temperature measurements by the resistive temperature probe mounted by the user. The temperature probe is potential free (floating). Option - D displays the measured CO$_2$ value in ppm (parts-per-million) on the LCD.

The units are designed for connecting to Direct Digital Control (DDC) with 0-10V or 2-10V signal inputs. The two parallel signal outputs OUT1 (0-10V) and OUT2 (2-10V or 4-20 mA) give linear signal voltages or currents corresponding to the measuring range. The output OUT2 also indicates the *status* by setting the output voltage to 1V or the output current to 2 mA when the sensor self-diagnostics detects any error.

eSENSE™ (-D)
CO$_2$ transmitter for wall mounting

To open the wall mounted housing

Press here to open.

Closed housing seen from above. Pressing a screwdriver on the locking hook opens the housing. The locking hook is then released.

Dimensions and holes

4(0,16)   4(0,16)   28(1,10)   80(3,15)

100(3,94)   30(1,18)

30(1,18)

60(2,36)
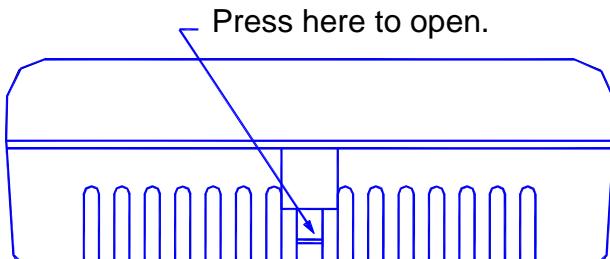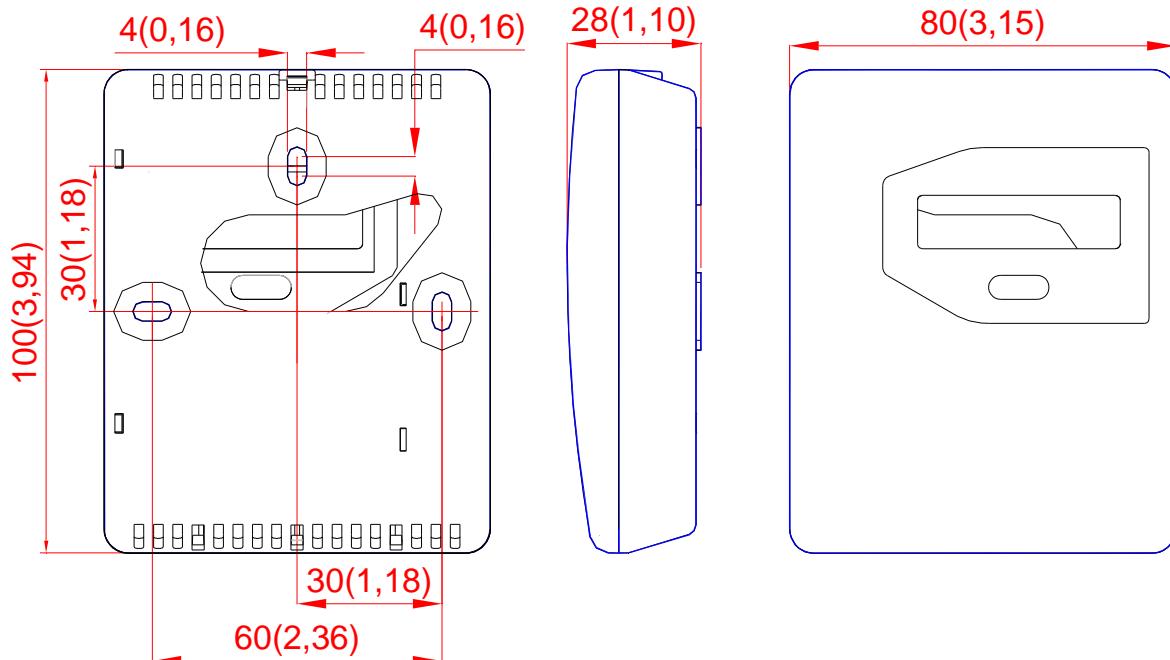
The dimensions of the sensor in mm and (inches)

εSENSE™ (-D)-K

CO$_2$ transmitter for mounting in ventilation ducts

1 Sampling probe
2 Sealing gasket
3 Largest locking knob
4 2 washers BRB 5,3x10x1
5 2 screws RXS 4,8x16
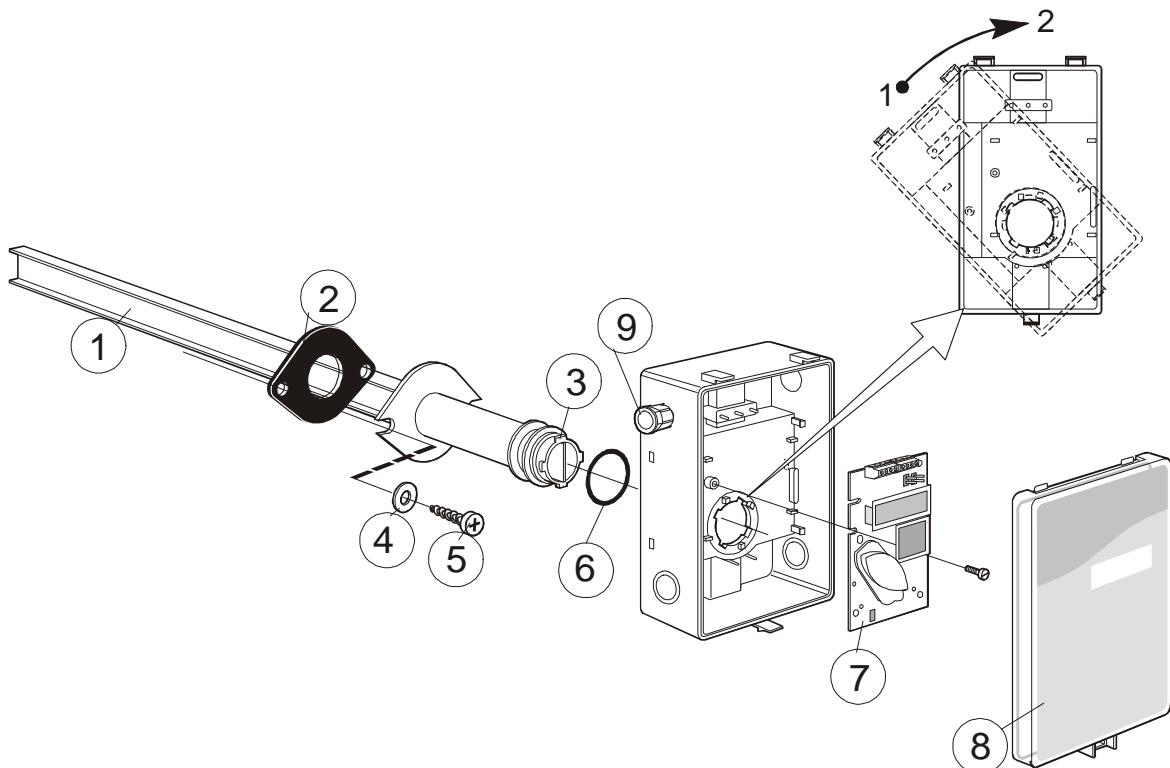
6 O-ring 29,2x3,53 (Factory supplied mounted in box)
7 PCB (Factory supplied mounted in box)
8 Snap-in lid
9 PG9 cable entry bushing

Parts of the εSENSE for duct mounting

Mounting of ɛSENSE on to the duct.
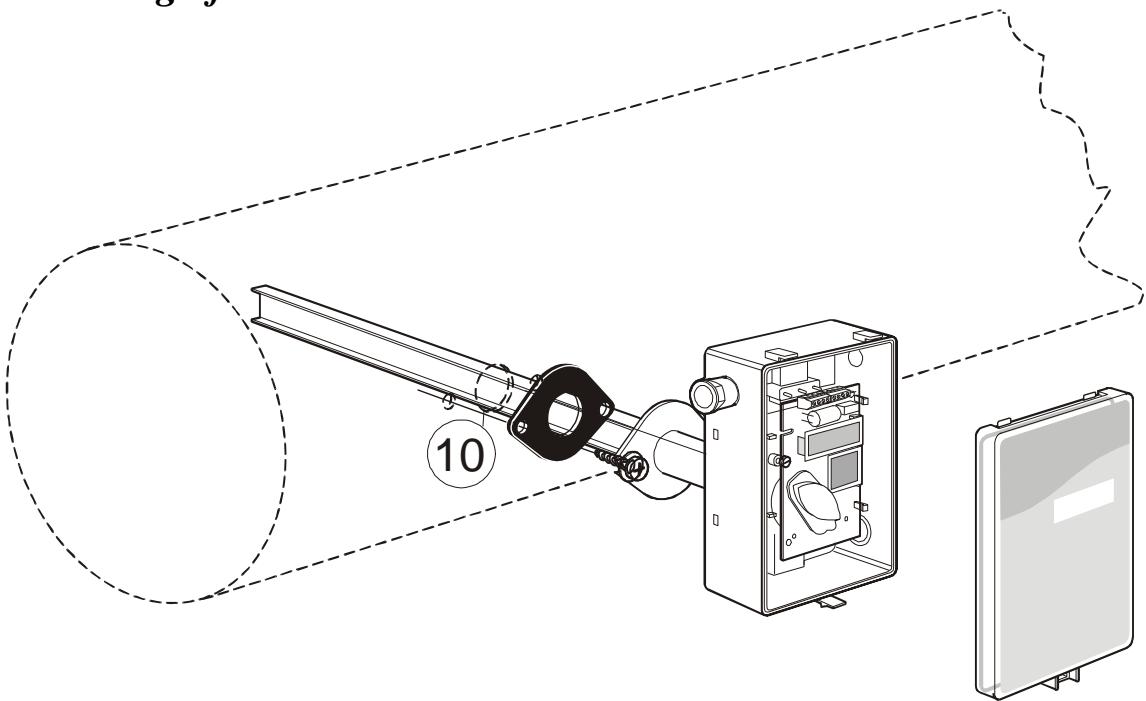
10   Hole with 25 mm diameter
11   Temperature sensor with 110 mm cable mounted in the sampling probe

Figure 3. Mounting of the sensor to the ventilation duct

Mounting Instruction

Since there might be a substantial pressure difference in duct mounting applications, it is essential to avoid ambient air from suction into the duct-mounting box. For correct function it is indispensable that the sealing of the box cover, the cable entry bushings, the cable feed through and the duct entrance are absolutely tight. The duct entrance may need extra sealing paste in order to prevent leakage. The PCB must be handed carefully and protected from electrostatic discharge.

1) **Electrical cable entry:** The box has a factory mounted cable entry bushing in dimension PG9. Never feed more than one cable through each cable entry bushing, or else gas might leak through!

2) **Mounting the tube:** Drill a hole (10) with 25 mm diameter (or 1 inch) for the sampling probe and two holes with 4 mm diameter for the screws (5) into the air duct and mount the tube (1) with the gasket (2). The sampling probe should be mounted with the largest locking knob on top. The unit can be mounted with the air coming from the left or right.

3) **Attaching the sensor box** is made to the sampling probe by a snap-in bayonet fitting. Orient the box onto the sampling probe so that the box upside is on the same side as the largest locking knob (3). When the probe is fitted into the notches of the box, then turn the box clockwise until stop (see Figure 1). Position 1 indicates *open* where the box can be removed from the sampling probe. In position 2 the box is locked to the probe.

Dimensions

46(1,81)

84(3,31)

204(8,03)

141,8(5,56)
151,3(5,96)

42(1,65)

The dimensions of the sensor in mm and (inches)

56(2,2)

6(0,24)

55(2,16)

66(2,6)
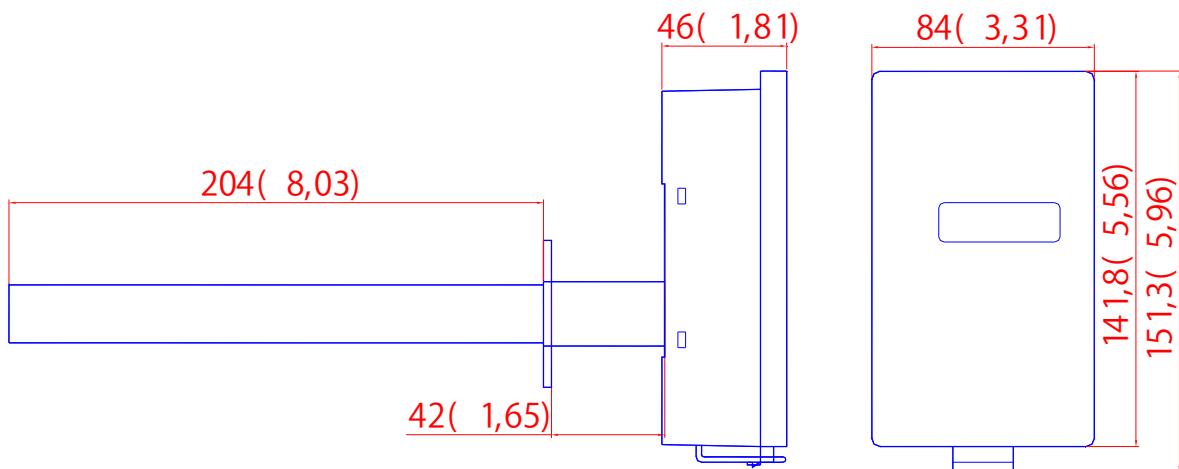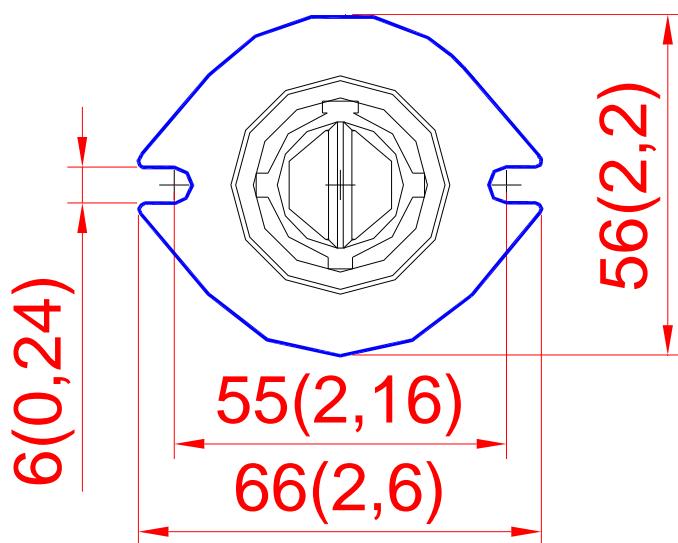
The dimensions of the sampling probe in mm and (inches)

εSENSE™ (-D) –IP54
CO_2 transmitter mounted in industrial housing
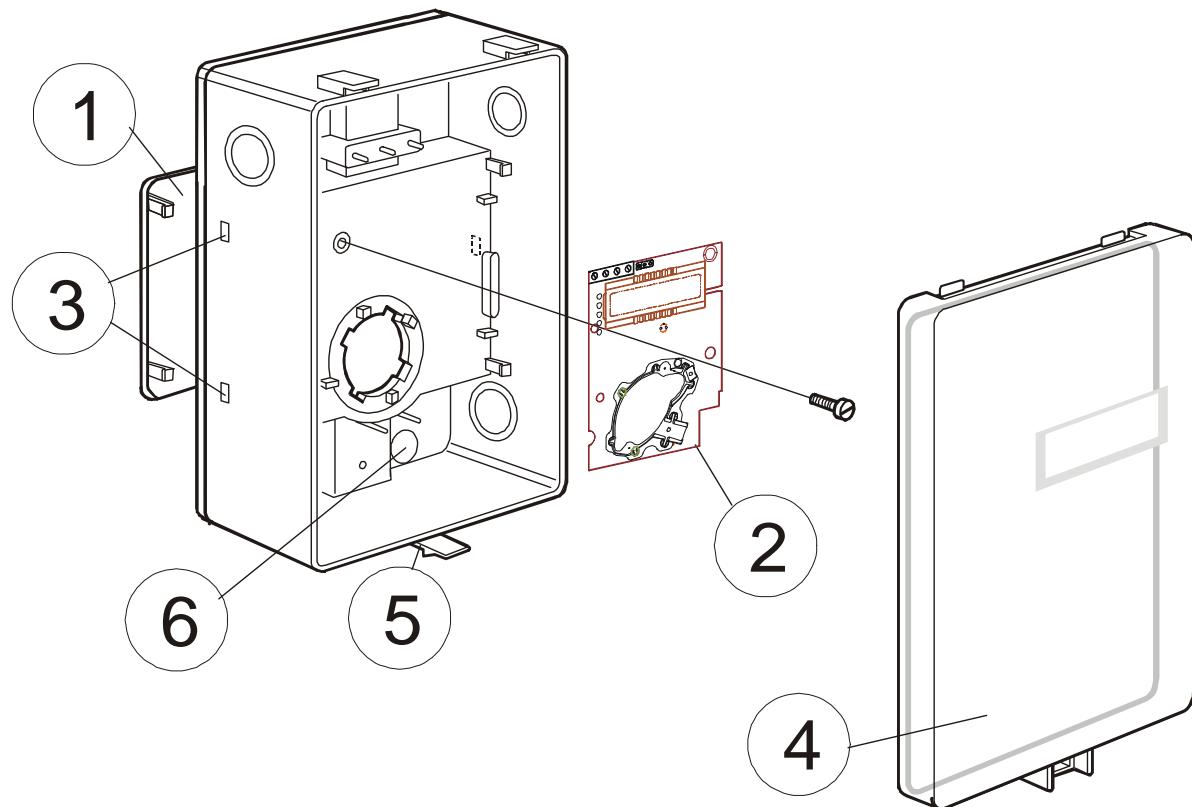
1 Wall plate
2 CB (Factory supplied mounted in box)
3 Hole for wall plate hooks
4 Snap-in lid
5 Locking screw of the lid (not shown)
6 Air holes

85 (3,35)

141,8 (5,58)

Option display

10 (0,39)

38,5 (1,5)

9,5 (0,37)
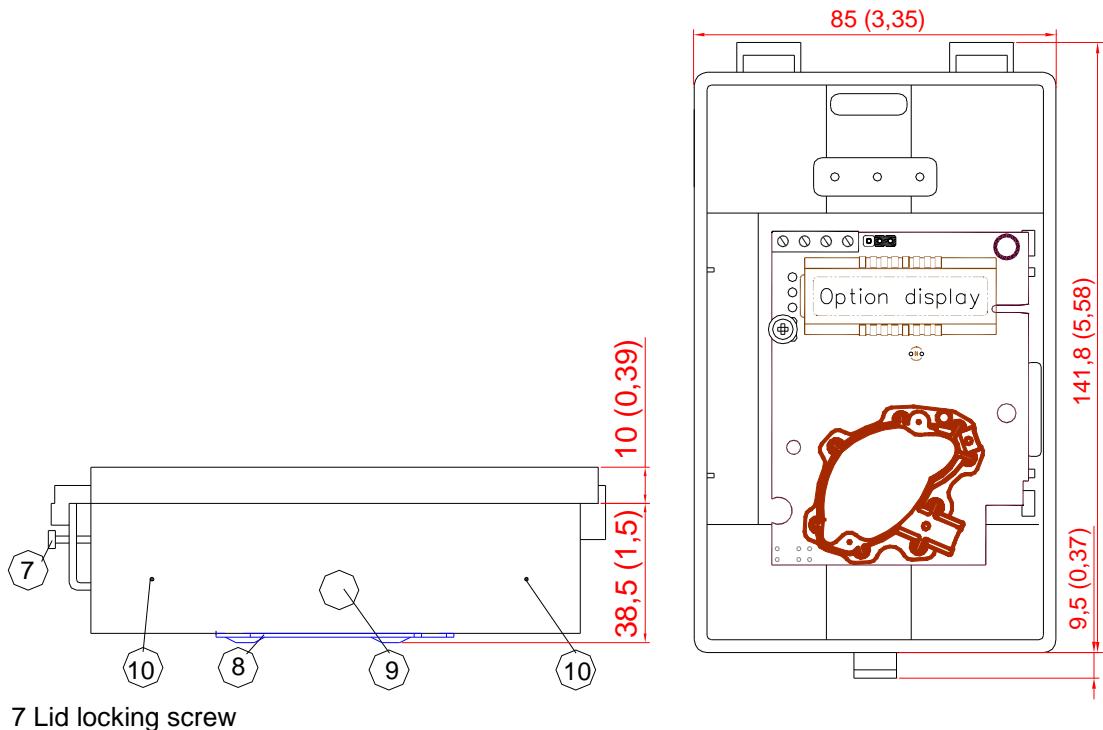
7 Lid locking screw
8 Wall plate
9 Screw to hold the wall plate
10 Drill marking for cable entry bushings

63(2,48)

42(1,65)

39,9(1,57)

66(2,60)

Ø5(0,20)

Ø5(0,20)

40,5(1,59)

17,5(0,69)

41(1,61)

82(3,23)

Ø5(0,20)

Dismounting the wall plate

The sensor is delivered with the wall plate mounted. The wall plate has to be removed before the sensor is mounted onto the wall. Unscrew the screw on the side of the box.

Wall Mounting Instruction
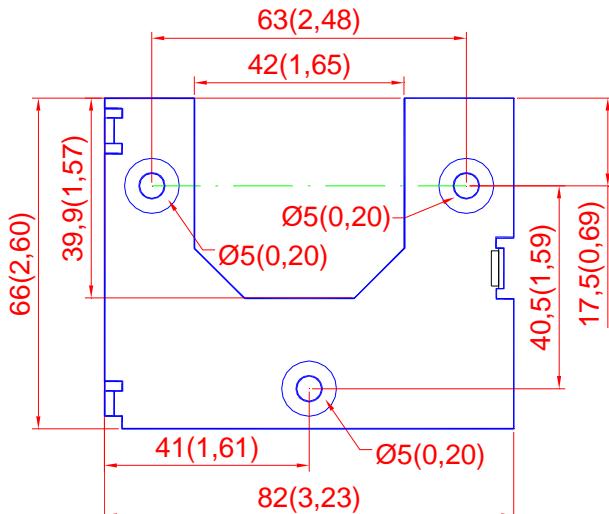
1) **Electrical cable entry:** The box has a factory mounted cable entry bushing in dimension PG9. Never feed more than one cable through each cable entry bushing, or else gas might leak through!
2) **Screw the wall plate onto the wall:** The wall plate has holes for three screws. Drill holes for 3,5mm screws and put dowel into them. Dowels and screws 3,5 x 25mm are included in a plastic bag
3) **Attaching the sensor box** to the wall plate is done by a snap-in fitting. The wall plate has three hooks that fit in holes in the sensor box. Fasten the screw on the side of the box.
4) **The lid can be locked** with the screw at the bottom of the sensor box.

If for some reason the PCB must be removed it must be handed carefully and protected from electrostatic discharge! Normally, removing the PCB is not required.

Electrical connections

The power supply has to be connected to **+~** and ⏚ . ⏚ is considered as system ground. *The same ground reference has to be used for the εSENSE unit and for the DDC/signal receiver.*

⚠ **PLEASE NOTE!**
The same ground reference has to be used for the εSENSE unit and for the control system!

Terminal	Function	Electrical data	Remarks Standard settings	Remarks Settings of this sensor
+~ ⏚	Power (+) Power ground (-)	24 VAC/DC+ (+-20%), 2W 24 VAC/DC-	 System voltage reference	
OUT1 OUT2	Analogue output 1 (+) Analogue output 2 (+)	0-10 VDC 2,0-10,0 VDC or 4,0-20,0 mA 0,9-1,6 VDC or 1.5-2,5 mA 0 VDC or 0mA	0-2000 ppm CO_2 0-2000 ppm CO_2 Status = ERROR Status = NOT READY	

Table I. Connections of the main terminal of εSENSE
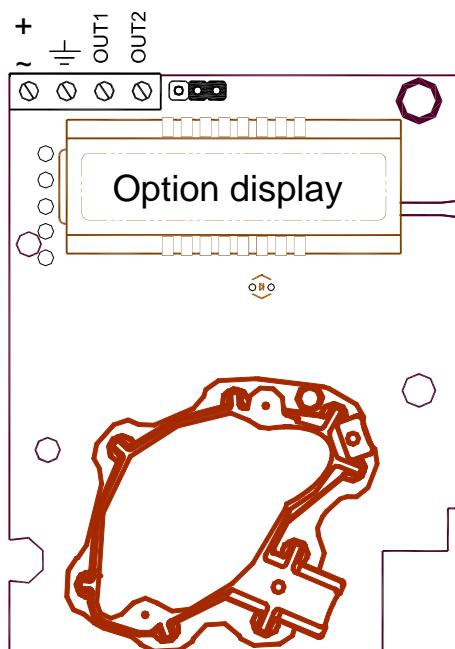
PCB with jumper to configure OUT2
For current output 4-20mA or
voltage output 2-10VDC
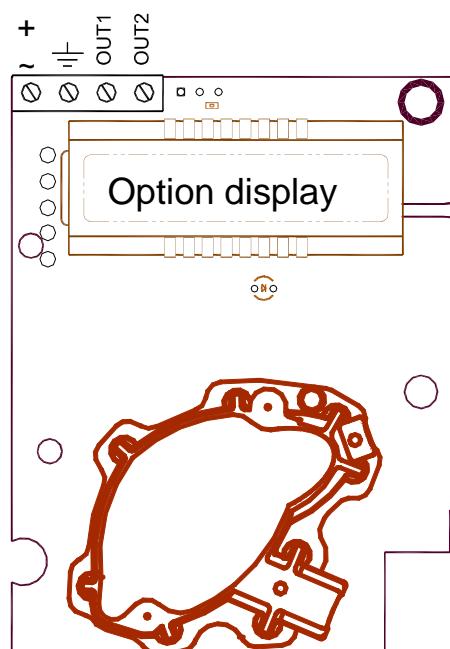
PCB with mounted resistor OUT2 is then
configured for voltage output 2-10VDC
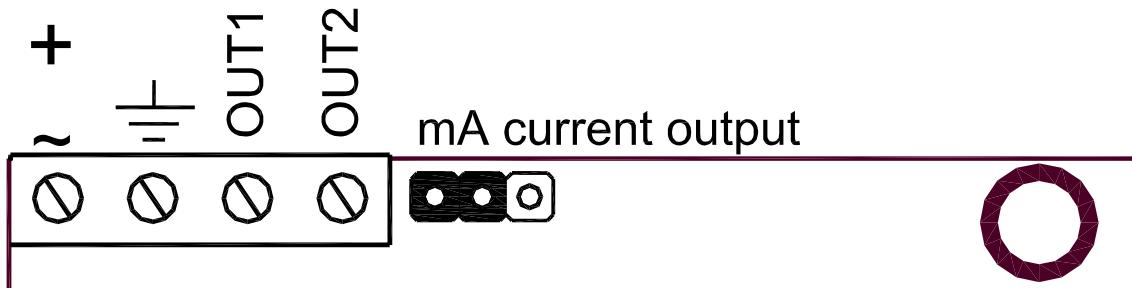
Enlarged picture of the PCB with the jumper set to current output (left position)
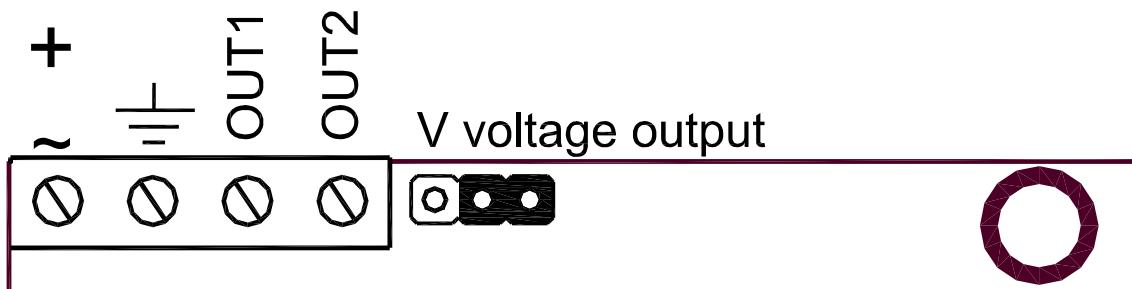
Enlarged picture of the PCB with the jumper set to voltage output (right position)

Self diagnostics

The system contains complete self-diagnostic procedures that are executed automatically when the sensor is in operation. The yellow LED is lit if an error is found. Sensors with display show a *wrench* if an error is found. The wrench is shown and the yellow LED is lit during the first seconds after power up and if the measuring range exceeded. They are automatically turned off when the sensor returns to normal operation. The output OUT2 indicates the same information by setting the output voltage to 1V or 2 mA.

Maintenance

The *eSense K50* is basically maintenance free in normal environments thanks to the built-in self-correcting *ABC* algorithm. Discuss your application with SenseAir in order to get advice for a proper calibration strategy.

PLEASE NOTE!
The sensor accuracy is defined at continuous operation (at least 3 weeks after installation)

PLEASE NOTE! Electronic products should be disposed of via a suitable recycling centre.

WARRANTY AND LIMITATION OF LIABILITY

1. SenseAir warrants that for a period of twentyfour (24) months following receipt by Buyer the Product supplied by SenseAir to Buyer will be, under normal use and care, free from defects in workmanship or material and to be in material conformity with SenseAir's specifications. Units returned to SenseAir for warranty repairs shall be shipped to SenseAir, at Buyer's expense, according to SenseAir's instruction. Within ninety (90) days of the receipt of product, SenseAir shall replace or repair such units and shall ship them to Buyer's designated return destination freight pre paid.

2. Warranty Limitations. This warranty does not extend to any unit that has been subject to misuse, neglect or accident; that has been damaged by causes external to the unit; that has been used in violation of SenseAir's instructions; that has been affixed to any non-standard Accessory attachment; or that has been modified, disassembled, or reassembled by anyone other than SenseAir.

3. The retailer is not responsible for any consequential loss or damages, which may occur by reason of purchase and use of this product. The warranty is, in any event, strictly limited to the replacement/repair of the product

This product is in accordance with the EMC 2004/108/EC, 92/31/EEG including amendments by the CE-marking Directive 93/68/EEC
The product fulfils the following demands: EN 61000-4-2 level 2,
EN 61000-4-3 level 2, EN 61000-4-4 level 4, EN 61000-4-6, EN 61000-4-8 level 4,
EN 55022 class B

CE