DB-xLQ – duct and room air quality sensors



DB-R



DB-K

The appearance of the product may differ from the illustration. Technical specifications are subject to change.

DB-xLQ SERIES

APPLICATION AND USE

Air quality sensors for HVAC systems in residential and commercial buildings. They carry out air quality measurement based on a mixed gas VOC (Volatile Organic Compounds) and are suitable for:

- measuring the air quality inside offices, hotels, meeting rooms, homes, shops, restaurants and so on,
- quantitative analysis of the contamination of room air, caused by polluting gases,
- setting of the sensitivity threshold according to the maximum air contamination expected,
- ventilation of premises only when necessary, to allow energy saving.

KEY FEATURES

Detectable gases:

- carbon monoxide CO,
- hydrogen sulphide H_2S,
- solvent vapours,
- alkane vapours,
- cigarette smoke,
- car exhaust,
- air produced by human breathing,
- combustion smoke from wood, paper and plastics.

TECHNICAL SPECIFICATION

TYPE	CO2 OUTPUT	APPLICATION
DB-RLQ	0...10 V_{DC}, 0...20 mA, 4...20 mA	room
DB-KLQ	0...10 V_{DC}, 0...20 mA, 4...20 mA	duct

Power supply:	15...36 V_{DC} or 24 $V_{AC/DC}$ ± 10%, 50/-60 Hz
	120 mA current consumption
Outputs:	0... 10 V_{DC}, 0...20 mA or 4...20 mA, selectable by jumpers
Sensor:	VOC (volatile organic compounds)
Working conditions:	-10...+50°C
	10...95 % r.h. (non condensing)
Storage:	-20...+50°C
	< 95% r.h.
Housing:	room: similar to RAL 9010 (white)
	duct: natural color of plastic material

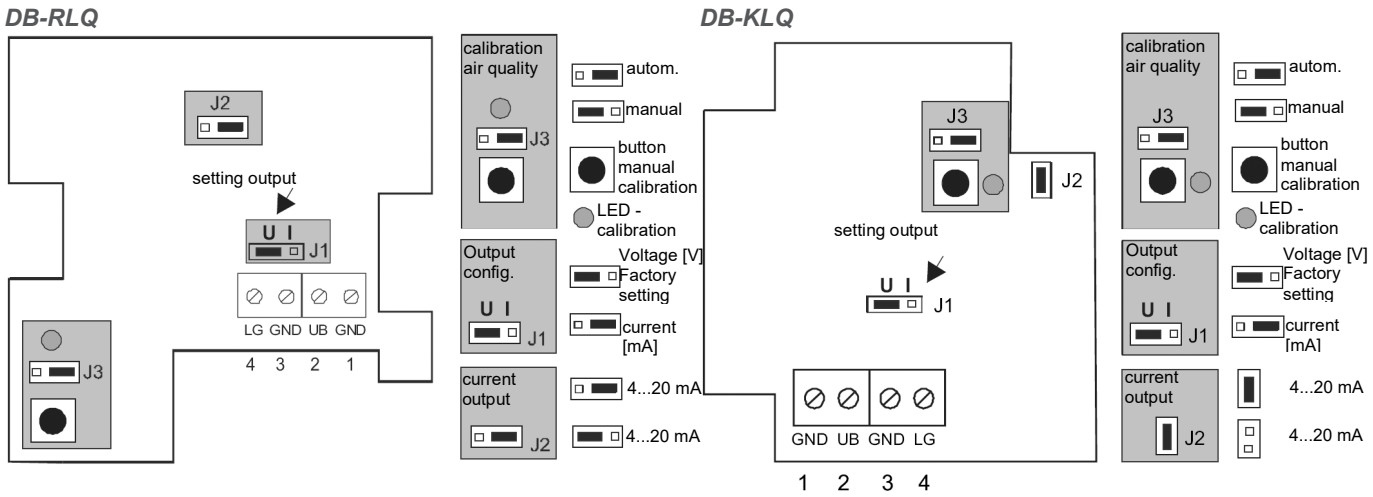
Protection:	room: IP30, class III
	duct: IP65, class III, GS-RO-16 filter
Dimensions:	room: 75 x 75 x 25 mm
	duct: 65 x 59 x 36 mm
	(pipe L= 206 mm, diameter= 16 mm)
Weight:	80...260 g
CE standards:	EN 60335-1: safety for electrical devices for household usage and similar purposes
	EN 60529: IP degree of protection
	EN 60730: domestic controls

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Warnings

The air quality monitoring sensor cannot be used for purposes of safety.

ELECTRICAL WIRING

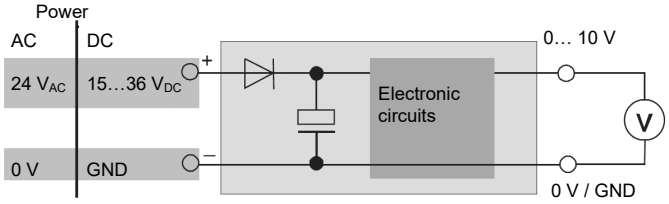


Power supply	AC	DC
→ 1	0 V	GND
→ 2	24 V~	15…36 V_{DC}
Output		
3 →	GND / 0 V	GND
4 → (LQ)	0...10 V	0...10 V

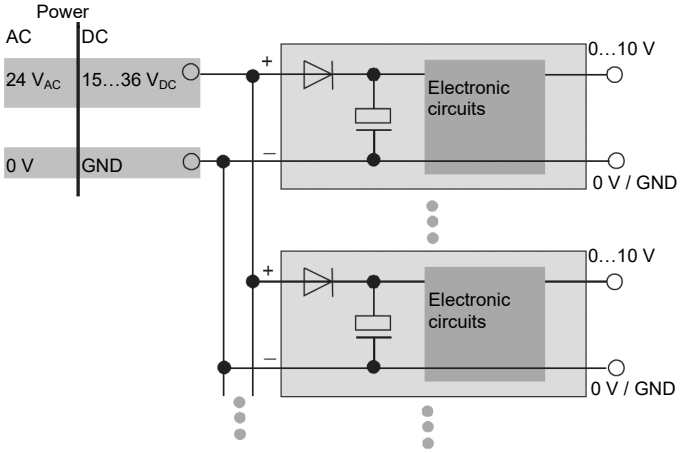
ground (1) and (3) are electrically connected on the PCB.

INSTALLATION

To protect the unit against reverse polarity, a protection diode is used. This allows the transmitter to be used with 24 V_{AC} power supply. The output signal must be measured with a suitable instrument and referenced to GND terminal. If the instrument is operated in direct current power supply, connect the 15.. . 36 V_{DC} input to the UB terminal and the ground to the GND terminal.

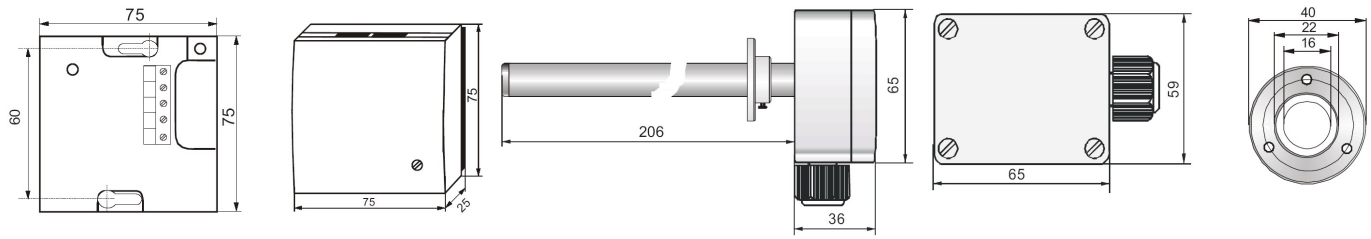


If several instruments are supplied with 24 V_{AC} power supply, all inputs have to be connected to the same phase. Otherwise all instruments could be damaged. All outputs have to be measured referenced to the same potential (see figure below).



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DIMENSIONS [mm]



Measurement and calibration of air quality by customer

The lifetime of the sensors is limited based on how it is used, particularly the type and concentration of gas. The measurement of air quality detects the general condition of air. The 0... 10 V_{DC} output signal depends on different gases, for instance cigarette smoke, deodorant sprays, detergents, adhesives etc.

The apparatus is made and calibrated for use in rooms where gas-phase stripping has finished. The zero point and the measurement range are factory set by using synthetic air and a fixed amount of hydrogen respectively. The standard use of the unit is the detection of changes of the air quality related to the fixed zero point.

There can be an overstep of the measurement range or an overload of the sensor in some cases (new carpets, fresh paint etc.). The customer himself has to calibrate the unit according to the circumstances of use in those cases.

Automatic self- calibration of air quality (default, jumper J3 in position "AUTO" , see diagram)

The measurement value of air quality is saved for 4 weeks. After that time the minimum of the saved values is set to zero point (output 1.0 V_{DC}). The maximum correction is limited to 1 V_{DC} at each interval of four weeks. Long term drift and aging effects of the sensor element are eliminated almost completely. The autocalibration only works if fresh air is supplied to the sensor at least one time within four weeks.

Manual calibration of air quality

The manual calibration can be started by pressing the button "manual calibration" regardless of jumper J3. The instrument should operate for at least 2 hours at "normal air" before starting the manual calibration. Press the button "manual calibration" for about 5 sec until the LED starts flashing. Now the output is automatically set to 1 V_{DC} at the actual environmental conditions. During that process the LED is on. After finishing the calibration successfully, the LED will be light off. The automatic self-calibration is deactivated if jumper J3 is in position "manual".

Starting operation

After power is switched on a self-test is performed and the unit is preheated. During that phase, for about 60 minutes, the measurement value is not correct.

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

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