C7110A
ROOM AIR QUALITY SENSOR

FEATURES

- **Measurement of a variety of air quality factors**
- **Output signal: 0...10 Vdc**
- **Adjustable output offset**
- **Easy installation and wiring connection**

SPECIFICATION

Supply voltage	15...24 Vdc / 24 Vac
Power consumption	< 1 W
Output signal	0...10 Vdc (increases as air quality worsens)
Weight /Dimensions	approx. 125 g / see page 3
Electrical connection	Screw terminal block for conductors up to 1.5 mm²

Air Quality Sensor

Sensitivity/Linearity	see Fig. 1 on page 2
Dynamic behavior	see Fig. 6 on page 4

Ambient Limits

Transport and storage temperature	−10...+70 °C (+14...+158 °F)
Humidity	5...95%rh, non-condensing

Safety

Protection class	II as per EN60730-1
Protection standard	IP30 as per EN60529
Flame retardant	V0 as per UL94
	Plastic ABS

GENERAL

The C7110A Room Air Quality Sensor is suitable for measuring air quality in rooms, offices, and production bays.

This mixed gas sensor can be used to control ventilation plants. It detects unpleasant odors, tobacco smoke, and vapors emitted by such materials as furniture, carpets, paint, glue, etc. As proven in practice, this device detects those substances typically present in air having a poor quality, some of which may otherwise go undetected by room occupants, themselves. This sensor has proven itself in numerous applications over many years.

Models

Order Number	Description	Output
C7110A1005	Room Air Quality Sensor	0...10Vdc

FUNCTION

The electrical conductivity of a heated tin-dioxide semi-conductor sensor varies in proportion to the number of molecules of the reducing agents. This leads to a voltage at the measuring element which is amplified to an output voltage of 0V to 10Vdc.

The following particles and gases can be detected: cigarette smoke, hydrogen, carbon monoxide, ethanol, ammonia, etc.

In contrast to CO_2 sensors, which selectively measure the concentration of only one type of gas, a mixed gas sensor is a broadband detector, i.e. the sensor signal does not indicate the type of gas or its concentration in ppm (parts per million). The complex and constantly changing composition of room air makes it necessary to perform broadband air quality measurement.
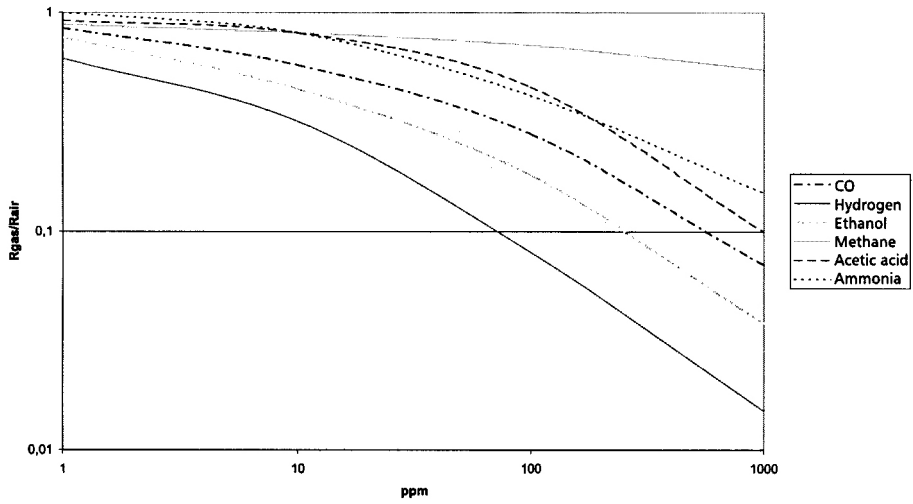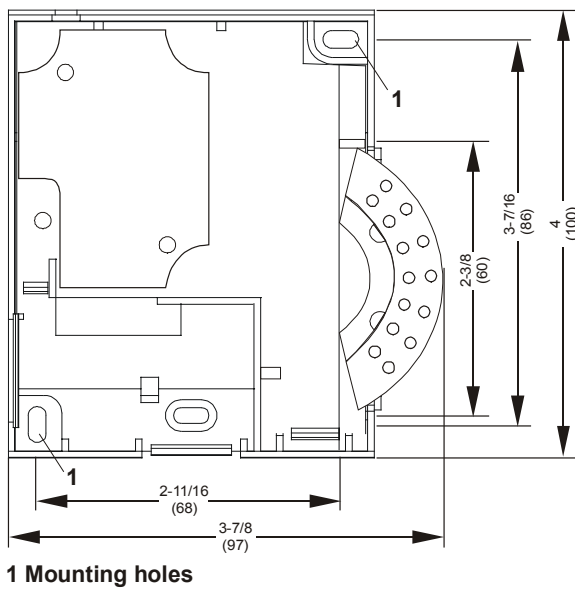
CE

EN0B-0295GE51 R0101

Fig. 1 Sensor sensitivity with different gases
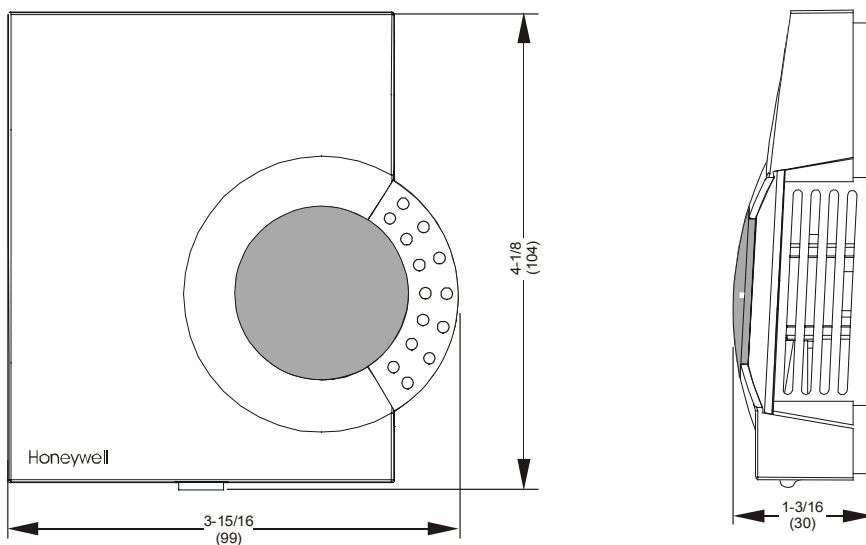

1 Mounting holes

Fig. 2 Dimensions and mounting holes in inches (mm)

INSTALLATION

All wiring must comply with local electrical codes and ordinances or as specified on installation wiring diagrams.

Wall module wiring can be sized from 16 to 22 AWG (1.5 to 0.34 mm²), depending on the application. The maximum length of wire from a device to a wall module is 1000 ft (305 m). Twisted pair wire is recommended for wire runs longer than 100 ft (30.5 m).
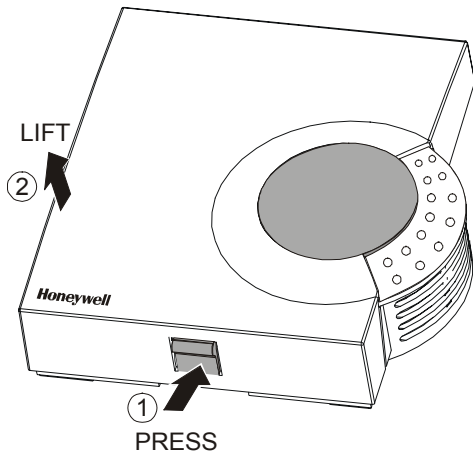

Fig. 3 Cover disassembly

Mounting Procedure

1. The cover of the air quality sensor is fixed by a tab on the underside of the unit; to disassemble the cover and the subbase, see Fig. 3.

2. **a)** Mount the sensor onto the wall outlet box, or
   b) bore wall holes as specified in Fig. 2 and mount the wall module with appropriate screws.

IMPORTANT

   Screw-type terminal blocks are designed to accept no more than one 16 AWG (1.5 mm²) conductor.

3. Connect the wires to the terminal block as follows:
   a) Strip 3/16 in. (5 mm) of insulation from the conductor.
   b) Insert the wire in the required terminal location (see Fig. 4) and tighten the screw to complete the termination.

4. Remount the cover as shown in Fig. 5 and make sure that the tab on the underside engages.

NOTE: Maintain a mounting clearance of approx. 4 in. (10 cm) to the right-hand side of the module in order to allow free airflow to the air quality sensor.

Keep wiring at least one ft (305 mm) away from large inductive loads such as motors, line starters, lighting ballast, and large power distribution panels. Run wall module wiring separately from 50 Vac or greater power wiring.
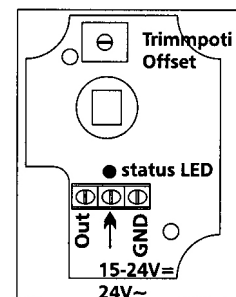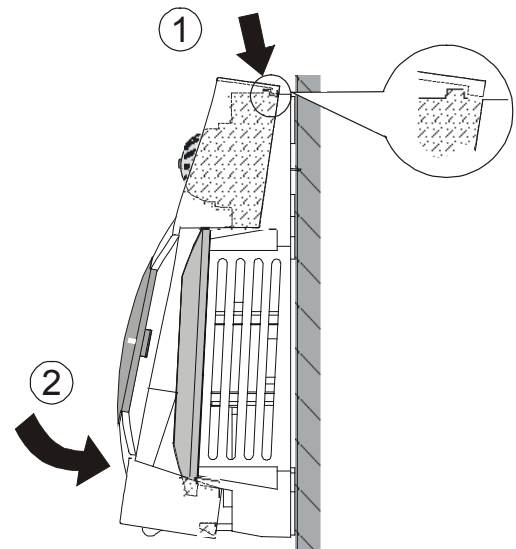

Fig. 4 Wiring Connection and Trimming Potentiometer

Fig. 5 Cover assembly

OFFSET SETTING

The setpoint for acceptable air quality is set approximately during installation. The exact setting must be done by the room user in accordance with his personal perception.
To do this, the output signal can be adjusted using a trimming potentiometer located on the sensor board which increases or reduces the offset of the output signal.

Fig. 6 shows the dynamic characteristics of the air quality sensor, monitored during test measurements in a sample room. This voltage diagram as a function of different occupancy conditions is only an example and must be proven for other ambient conditions.
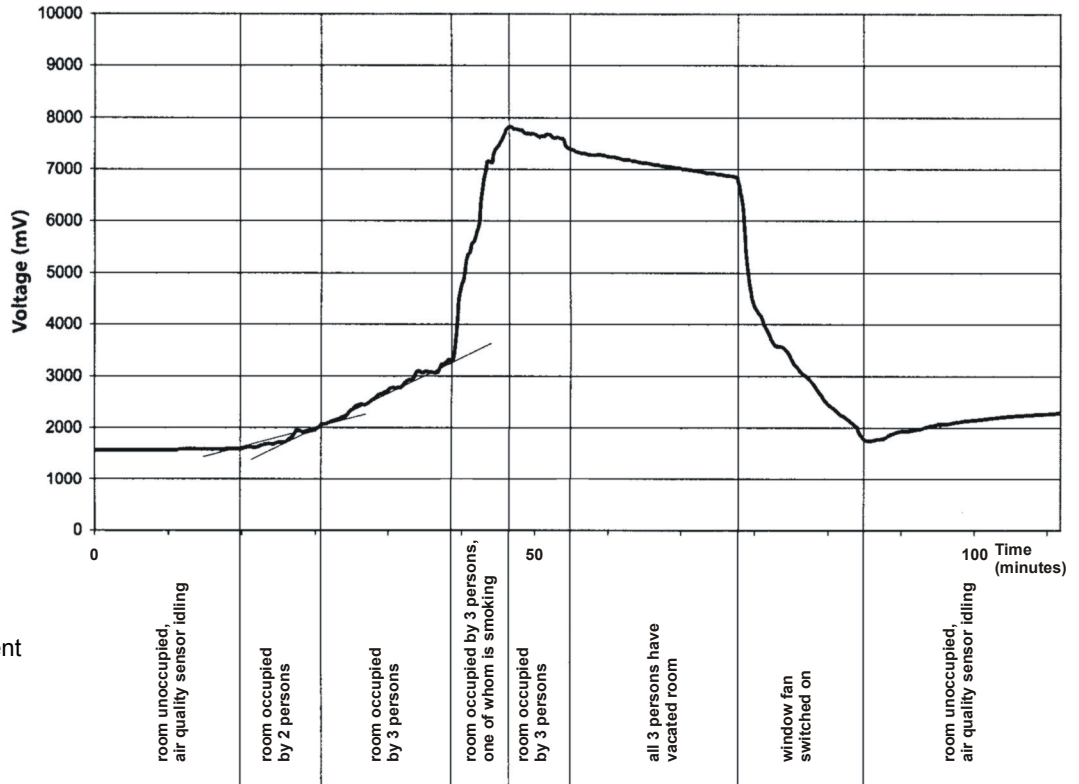
Dynamic behavior at different occupancy conditions.
room volume: 33.6 m^3
occupancy: 1...3 persons

Fig. 6 Dynamic behavior of Room Air Quality Sensor

LED - Display

The sensor has one red LED located on the sensor board.
The LED indicates the device's operating status:

— LED brightness is proportional to 0..10Volts output for reference.