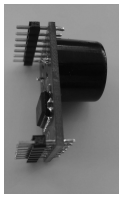
Sensor Module CUBI-M1AX

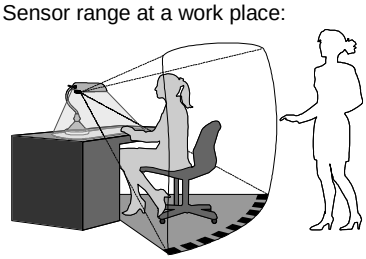
Details

super sensitive Ultrasonic Motion Detector for individual work places

CM1ax



Sensor range at a work place:



Operating Principle

The CUBI-M1AX is a high sensitive motion detector for PCB mounting.

The Sensor Module CUBI-M1AX works based on the Ultrasonic Echo Principle. The new technology mimics the orientation function of bats called echolocation: The sensor emits short pulse-like bursts of inaudible ultrasonic energy. Returning echoes are analyzed by an internal microchip to paint a "picture" of the scanned area.

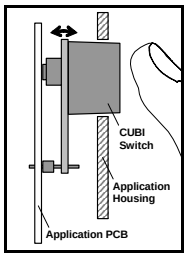
In these "pictures", close-up objects can be separated from the background. Inside the close-up range the resolution is 2mm, enough to detect the breathing motion of a person sitting quietly at his or her desk. Background motions are cut off as if there was an invisible wall. Passers-by do not trigger the sensor. The range is adjustable.

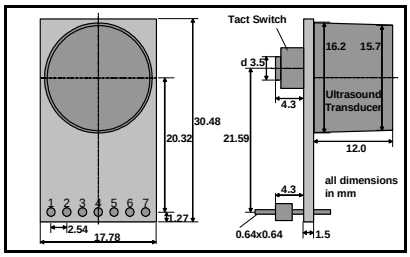
- **best application: individual work areas, cubicles**
- **even detects the breathing of a person sitting quietly**
- **also good as proximity sensor for mirror lighting for examble**
- **tiny, easy to integrate**

Dimensions and Application

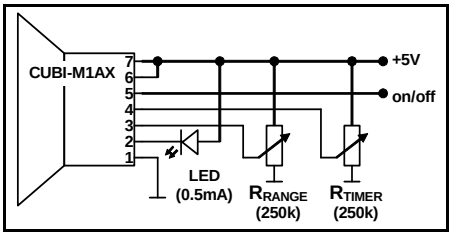
The Sensor Module CUBI-M1AX is soldered onto a PCB by two rows of pins. The pin row at the bottom (pins 1..7) is used for power and signal connection. The upper pin row (pins 8..14) are for mechanical fixing only.

The ultrasound transducer is located in an opening in the appliance's housing.





Pins and Basic Circuitry



8..14 – i/c ... internal connection, do not connect to each other or any signal!

7 – P5V ….. Power Supply +5V

6 – RX …… Input; for service purpose, connect to P5V

5 – SOUT .. Output; H(Ri 6kΩ)=on, L=off

4 – TIMER . Input Timer; 0V=Min ... +5V=Max (16 steps)

3 – RANGE Input Range; 0V=Min … +5V=Max (16 steps)

2 – LED …. Output LED; L(Ri 6kΩ)=LEDon, H=LEDoff; blinking indicates operating rhythm, bright blinking = motion

1 – GND … Ground

Problems?

The LED does not blink:

- Some computer monitors, dimmers and lamps emit strong electrical noise. Moving the CUBI-M1AX a little usually helps.
- Drills and lathes also emit ultrasound that could interfere with the CUBI-M1AX. Do not use it in mechanical workshops.
- Do not use the CUBI-M1AX together with ultrasonic sensors from other manufacturers in the same room.

The CUBI-M1AX does not "see" you or does not reliably "see" you:

- Check that the CUBI-M1AX's view is not obstructed (e.g. pile of books).
- Check the range setting.

The LED blinks brightly, even when the covered area is unoccupied:

- The CUBI-M1AX is extremely sensitive (sensitivity levels down to 2mm!). Check curtains etc. for movement. Re-direct the CUBI-M1AX or reduce the range (adjuster).
- Warm or cold air flows through the CUBI-M1AX's close-up range. Decreasing the range will reduce false switching. However, use is not recommended in immediate vicinity of open windows, radiators and air conditioners.

Specifications

- Range 1m - 2m (3.5' - 6.5') adjustable
- Angle of view 60°
- Timer 2sec - 2min adjustable
- Sensitivity 2mm (1/10")
- Ultrasound 40kHz, inaudible for human beings and pets
- Dimensions 30.48mm x 17.78mm (1.2" x 0.7")
- Power supply 5V DC (+/-5%), 12mA typ. (15mA max.)
- Several (recommended up to 3) CUBI Modules can operate in the same room
- Use is not recommended in immediate vicinity of open windows, radiators or air conditioners
- For indoor use in dry environment
- RoHS compliant