

ACOUSTIC DETECTOR AD-300

Installation instructions

Ord. no: 13126

Function

AD-300 is an acoustic microprocessor controlled detector that senses only very low, inaudible frequencies (infrasound 0–3 Hz). Such low frequencies occur for example when doors open, and they are utilised by AD-300. This detector is “deaf” to all other sounds. The integrated changeover relay becomes energised when sound is detected. The relay remains energised during the time set on the integrated timer.

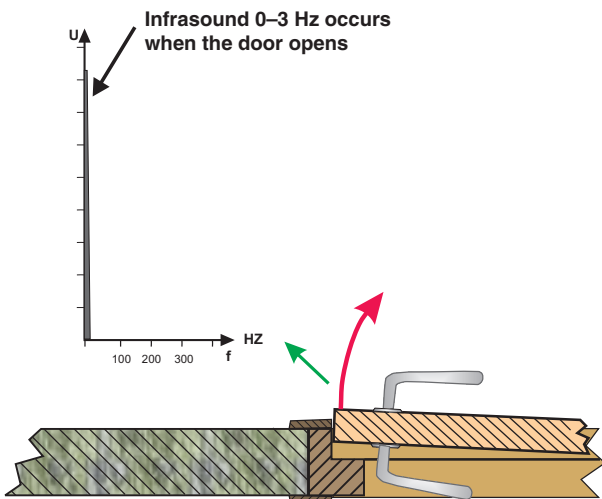


Figure 1. The lights come on before the door is open.

Range of use

AD-300 should be regarded as a “complementary detector” to simplify project work and to improve comfort in the overall installation.

Since the working principle of the detector is based on sound it is able to “listen round corners” and in rooms that have screening furnishings.

AD-300 is designed for use in installations for the control of lighting in combination with IR-detection. The object of the detector is to switch on lights when entering the area and to ensure lighting in places that are out of range of the IR-detector, and thus improve comfort. Switching on is initiated by the inaudible infra-wave that is generated by a door being opened into the area. The function is so fast that the lights come on before the door leaf has moved its own thickness. One does not even notice that the lights were out. From then on presence is detected by the IR-detector, thus keeping the lights on as long as anyone is present. To enable the technique to work it is necessary that the area is limited by **doors that are normally closed** and that they are not sliding doors.

An example of an application in hotel corridors is illustrated by fig. 2. This includes several “concealed doors” that are not sensed by the IR-detectors. With

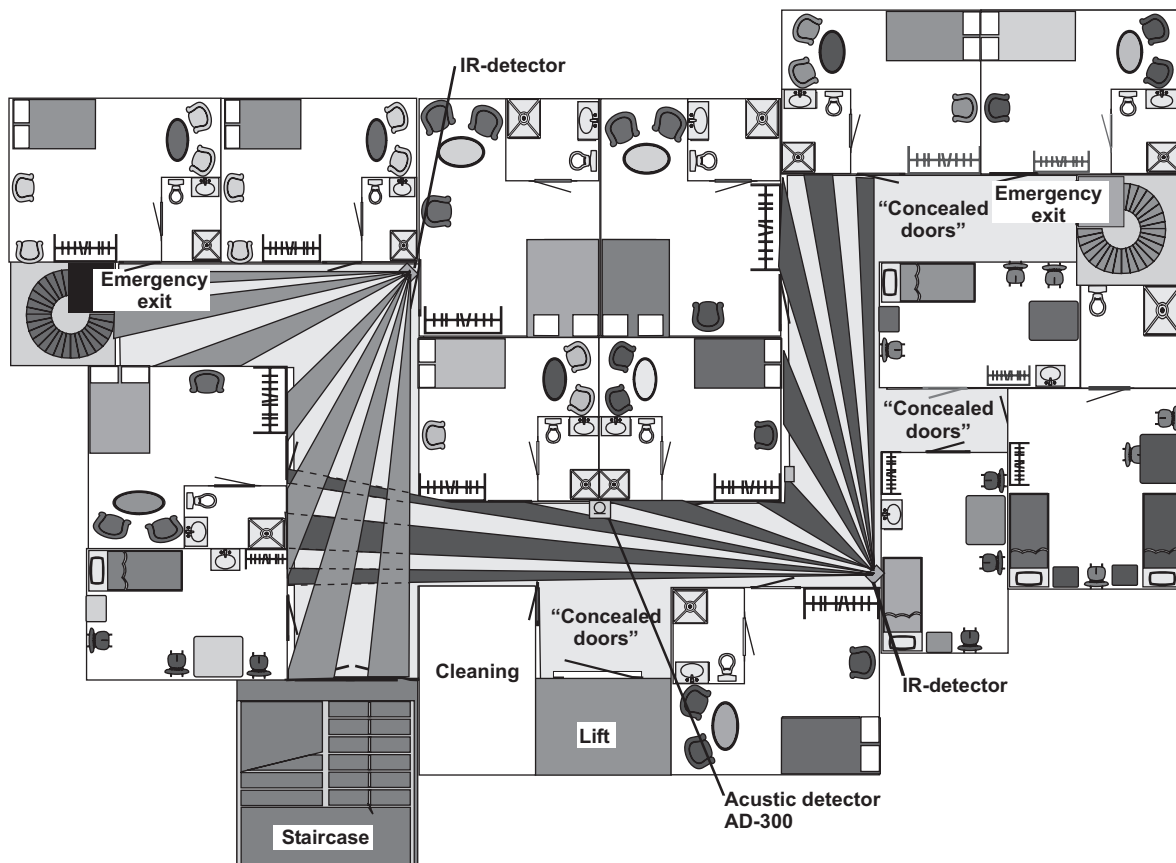


Figure 2. Example of application where AD-300 is used together with IR-detectors. The “concealed doors” are not sensed by the IR-detectors. The lights switch on direct when any door is opened and are then kept on via the IR-detectors.

the aid of AD-300 the lighting is switched on direct when any of the doors are opened.

Thanks to the timer in AD-300 the lights are kept on until the person sensed by the IR-detectors has time to exit the area. The lights will remain on as long as the IR-detector senses presence, plus the set turn-off delay time in the IR-detector. Repeated passage through any of the doors will also prolong the time during which the lights are on. Consequently, acoustic detection enables the control of lighting and fans in areas where it has not previously been technically possible or economically viable by other means.

Detection area

The size of the detection area can vary in relation to the acoustic conditions. The detector works best in closed areas with access through doors. The volume of the detected area should not exceed 500 m³ per detector, although installations up to 2000 m³ have been made. If in doubt, practical tests can suitably be made as guidance for dimensioning. Reality is often **better** than theory.

Installation hints AD-300

To achieve optimum functioning and to avoid interference by low-frequency infrasound generated by doors outside the intended area the doors should be checked.

Feel the doors while they are closed. If they tend to move and indicate "play" although the latch is engaged then any change in pressure in other areas may inadvertently affect the detector. Fit a simple sealing strip to eliminate the play. It is most important that the door remains still and does not work like a large diaphragm. Tightness is not always decisive.

Make a trial installation

It can be suitable to investigate the acoustic conditions by placing a loose, powered detector in the area. It is advisable, by opening and closing doors in the adjacent areas, to check that sensitivity is not set too high.

Check door closers

It is important that door closers to adjoining areas are inspected. They must not be allowed to close with a bang. They may otherwise interfere with operation of the detector and give false detection. Even doors in areas that are not in direct contact with the area subjected to detection can influence the detector, eg, lift doors.

Adjust door closers so that they close the doors smoothly and without bangs. It is also important that doors are not allowed to move because of play. Adjust with sealing strips.

Installation

Connect AD-300 as illustrated below. Voltage supply is to be 12 V DC. AD-300 can be connected in parallel with one or more IR-detectors.

A green LED indicates when the board is powered. AD-300 has an activating period of about 30 seconds while the circuits become stabilised. (See figure 3)

Important

Correct preparation and installation are very important for satisfactory operation. We therefore recommend study of the manual "Presence detection". It describes the technique, a number of application examples and hints for connecting.

The order number for the manual is 35100.

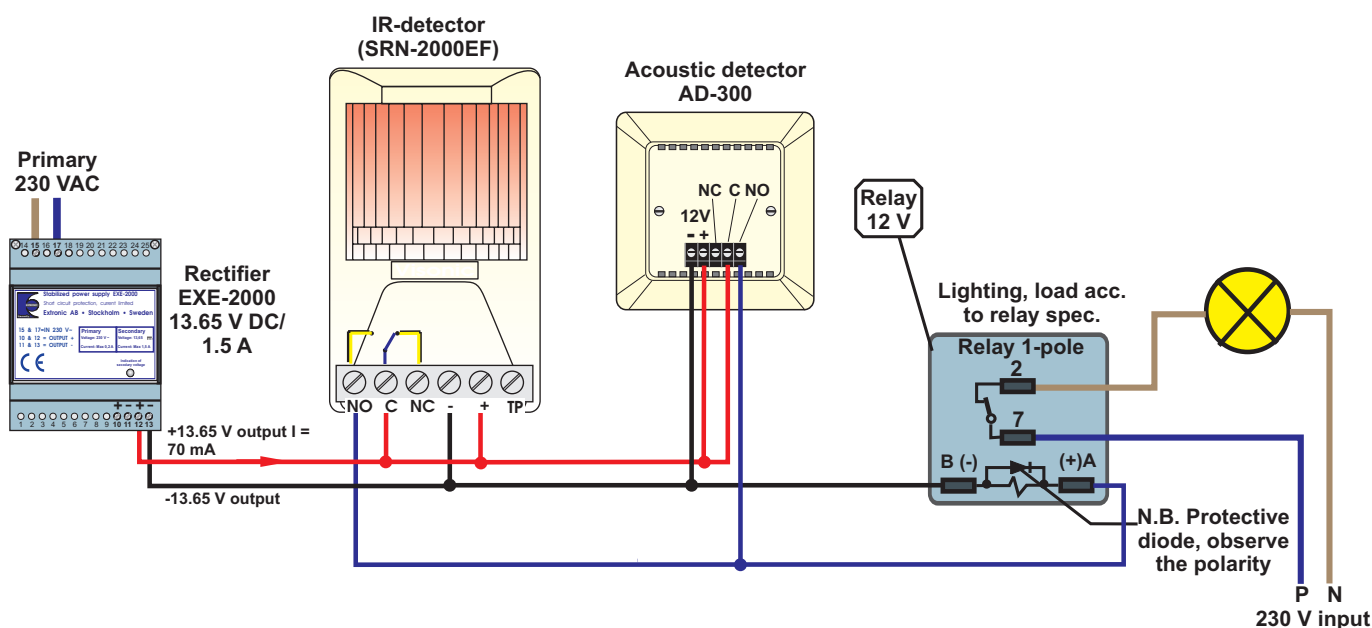


Figure 3. Example of connection with AD-300 and an IR-detector.

Sensitivity setting

Detection of low-frequency sound is indicated by a **yellow diode**. Test the detector by opening doors in the detection areas. For satisfactory functioning set the sensitivity as low as possible with the potentiometer "Sensitivity". (See figure 4)

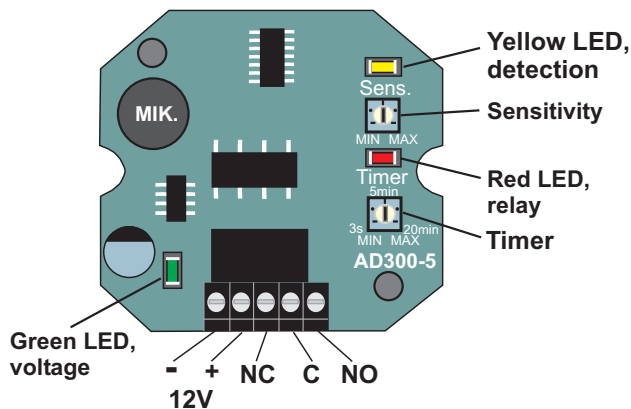


Figure 4. Printed board assembly with potentiometers and terminals

Test also doors in adjoining areas that are not subjected to detection, ie, to minimise the risk of spurious detection.

Time setting

Time setting is adjustable from about 3 seconds to about 20 minutes. The set time begins to run when detection has ceased.

Time setting is made with the potentiometer "Timer". Suitable time is determined by how long it takes from entering the area until the IR-detector can sense presence. 3–5 min can be a suitable guideline.

The relay is released at the end of the time delay.

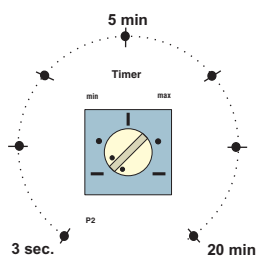


Figure 5. Guide values for time setting

Relay output

The relay has potential-free switching outputs that can be loaded by maximum 1 A/30 V AC.

Use a separate contactor for the connection of fluorescent lamps and larger inductive loads.

Technical specification

Voltage:	12 V DC
Current:	18 mA at rest, 40 mA max.
Max. load:	30 V / 1 A
Sizes:	84 x 84 x 35 mm.
Encapsulation:	Plastic encapsulation for recessed mounting in 67 mm standard electrical point or for surface mounting.
Colour:	White

Note!

Ensure that the lighting fittings are suitable for the repeated switching on and off required by the system. Arrange the project suitably in consultation with your supplier of lighting fittings.