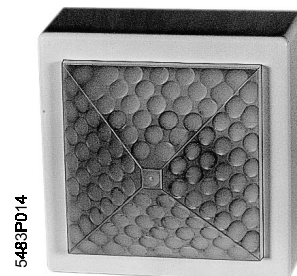


Presence Detector

with one control,
360° surveillance, for ceiling mounting

QPA83.2



Microprocessor-based passive infrared presence detector for demand-dependent control of HVAC equipment.

The detector operates on AC 230 V and has a potential-free HVAC control output.

Use

The QPA83.2 presence detector is a self-contained unit designed for the control of HVAC equipment.

It is used especially in spaces that are occupied on a temporary basis, where the presence of a moving infrared source (persons) shall be detected.

The presence detector can be used in all kinds of spaces where, for maximum energy savings, demand-dependent control is given preference over fixed time scheduling.

Typical use (HVAC only)

- Hospital rooms, hotel rooms, single or open plan offices, conference rooms.

Criteria for use

- Primarily in rooms where few physical movements occur; confined quadrature detection zone.

Tasks that can be performed

- Control of fans
- Switching of temperature setpoints
- Activation of room air conditioners
- Control of circulating pumps

Functions

The QPA83.2 presence detector has an infrared sensor which detects changes in passive infrared radiation in the space, which are then converted into electric control pulses.

It captures changes in the thermal pattern caused by physical movements. This is achieved by making a comparison of the thermal radiation of people and the constant thermal radiation of the environment.

The detection zone is determined by the detector's height above the floor (refer to illustration under «Engineering notes»). Up to a height of 5 m, the unit's sensitivity is sufficient to detect specific physical movements of people (typically 50 cm).

Control output

A potential-free contact is used for HVAC functions. The control output is independent of the intensity of daylight.

If a person enters the unit's detection zone, the contact will close after a certain switch on delay time has elapsed (adjustable from 0 to 300 seconds), which activates the respective HVAC unit. If the person leaves the detection zone, the contact will open after a certain switch off delay time (adjustable from 0.5 to 30 minutes) and the controlled unit will be deactivated.

Ordering

When ordering, please give name and type reference of the presence detector.

Mechanical design

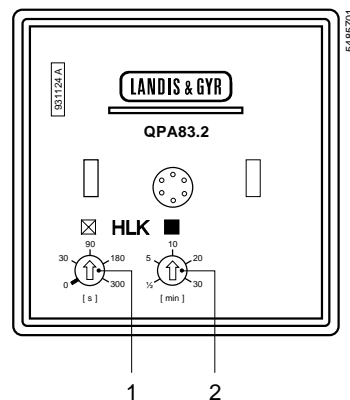
The unit consists of an upper and a lower housing section.

Both sections are attached together and secured by a clamp. The electrical connections are established via pins.

The upper housing section contains the actual detector. It consists of a white plastic casing which accommodates a pyramid-shaped plastic insert with the integral Fresnel lenses and an insert with the pyroelectric sensors, microelectronics, setting potentiometers, securing clamps and pins.

The lower section houses the power part. It is designed for fitting into a recessed conduit box (single conduit box of 58 mm dia.).

Setting elements



- 1 Setting potentiometer for switch on delay (control output Q23/Q24); typical setting: 90s
- 2 Setting potentiometer for switch off delay (control output Q23/Q24); typical setting: 10 min

Disposal

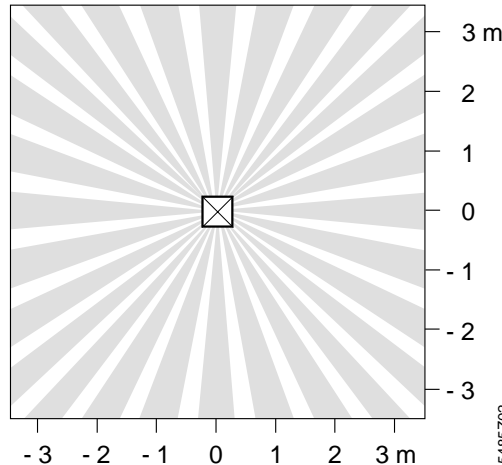
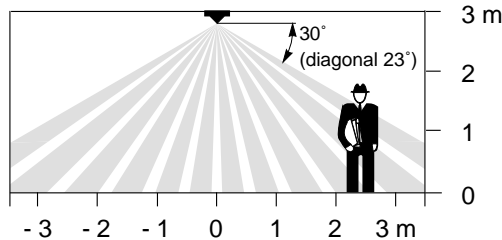
To ensure environmentally compatible disposal, the larger plastic components are labeled with a material description as per ISO/DIS 11 469.

Engineering notes

For the correct detection of persons, the detector's location is of utmost importance. It should be chosen such that most movements of the people in the space will be within the detection zone. This is a mandatory requirement when controlling lighting systems. Depending on the application, it may be necessary to use the QPA83.2 or QPA83.1 (180° surveillance, refer to data sheet 5484). Both units can also be combined, if desired.

Detection zones

Spatial arrangement of detection zones for an installation height of 3 m above the floor.



Checklist for planning

Detection of movements

- People must be present within the detection zone.
- The presence detector must be located such that it clearly detects all people.
- The presence detector cannot see through glass. Hence, glass doors and windows confine the detection zone.
- Interference by partitions, shelves, plants, etc., must be avoided.
- The detection zone has the shape of a pyramid. The area covered on the floor is exactly a square (see illustration). The size of the square is solely determined by the detector's height above the floor.

Vandalism

When fitted to the ceiling, the detector is automatically out of reach and thus safe against vandalism.

Possible sources of error

- Moving objects (curtains covering radiators, revolving doors, etc.) that are too close to the presence detector (within 2 m).
- Objects that warm up rather quickly (lamps, air inlets, radiators, etc.) and that are too close to the presence detector.
- Direct solar radiation hitting the presence detector.

Fitting notes

- The detector locations specified in the planning documentation must not be changed.
- There is a choice of fitting the detector on a recessed conduit box (using a single conduit box of 58 mm dia.) and surface mounting (using a standard bezel of 50 mm depth).
- To avoid damage to the detector, only the power part should be fitted at first. The actual detector should be installed only at the time the plant is commissioned. The optical part of the detector should be handled with care. No pressure must be exerted on the plastic insert!

The unit is supplied complete with installation instructions.

Commissioning notes

- Prior to commissioning, it must be made certain that the wiring is in compliance with the plant diagram.
- The switch on and switch off delays for the control output must be set with the respective potentiometers at the rear of the unit, as specified.
- The detector should be fitted to the power part without applying any force! When fitting, the bar, terminal block and inscription can be used as orientation aids. To avoid damage when fitting the detector, the bar on the detector and the terminal block on the power part must face one another, with the inscriptions on both unit sections mirror-inverted. Caution: Do not exert any pressure on the pyramid-shaped plastic insert (optics) of the unit!
- After applying operating voltage or after fitting the detector, the unit will be switched on for 1.5 min (initialization phase). This means that the contact of control output Q23/Q24 will be closed.
- The switch on delay starts when the first movement is detected.
- The switch off delay starts after the last movement is detected.
- If the unit's detection zone shall be confined, the part of the detector that should not monitor the space can be covered with adhesive tape that is impervious to light.

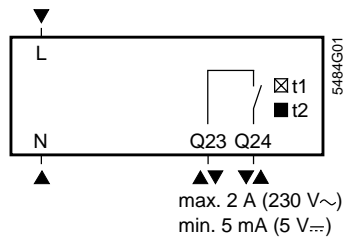
Technical data

Operating voltage	AC 230 V \pm 10 %
Frequency	50 or 60 Hz
Power consumption	
Idle state	0.5 VA
Contact closed	1.5 VA
Control output	
Relay contact (N.O.)	potential-free
Rating	2 A max. at AC 230 V 5 mA min. at DC 5 V 3.75 kV isolated against mains
Switch on delay (adjustable)	0...300 s
Switch off delay (adjustable)	0.5 30 min
Detection of movements	
Optics	Fresnel lens
Sensing elements	4 pyroelectric sensors
Sensitivity	typically 50 cm physical movements
Surveillance angle	360° volumetric
Detection zone with typical physical movements	5 x 5 m (installation height 2.5 m) 7 x 7 m (installation height 3 m)
Ambient conditions	
Operation	to IEC 721-3-3
Climatic conditions	class 3K5
Temperature	0...50 °C
Humidity	<95 % r.h.
Transport	to IEC 721-3-2
Climatic conditions	class 2K3
Temperature	-25...+70 °C
Humidity	<95 % r.h.
Mechanical conditions	class 2M2

Electromagnetic compatibility	
Emissions	EN 50 081-1
Immunity	EN 50 082-1
CE conformance to	
EMC directive	89/336/EEC
Low voltage directive	73/23/EEC
Product standards	
Switches for household and similar fixed electrical installations	EN 60 669-1
Degree of protection	IP 50 to EN 60 529
Connecting terminals (screwless)	2.5 mm ² max.
Weight	0.228 kg

Diagrams

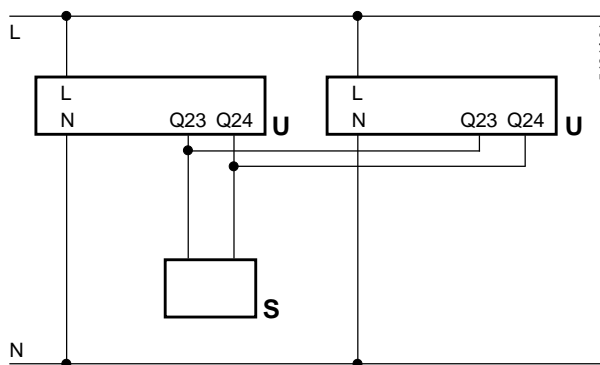
Connecting terminals



L, N	Operating voltage AC 230 V
t1	Switch on delay (adjustable from 0 to 300 s)
t2	Switch off delay (adjustable from 0.5 to 30 min)
Q23, Q24	Control output

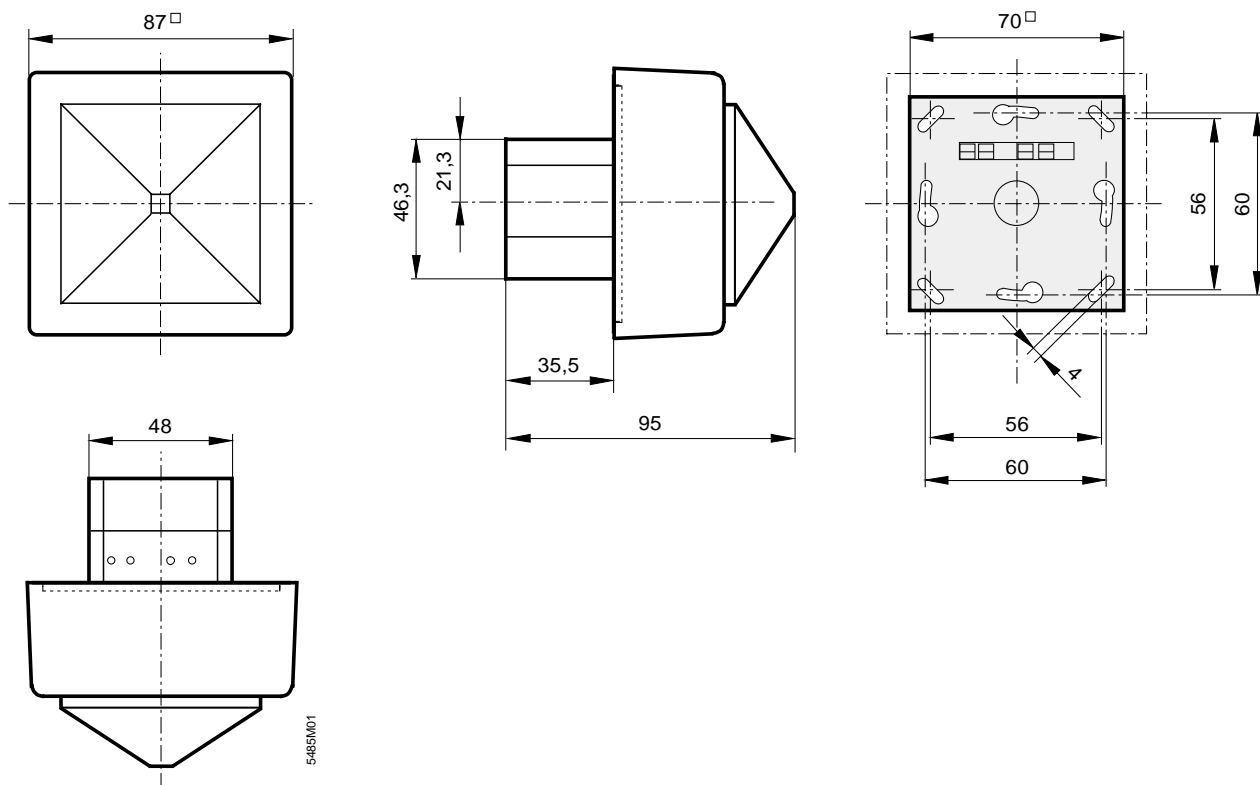
Connection diagram

Parallel connection of several presence detectors



S	HVAC control unit
U	Presence detector QPA83...

Dimensions



Dimensions in mm

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