thebenHTS

EN Presence detector

thePrema S360-101 UP WH
2070505
thePrema S360-101 UP GR
2070506

1. Product characteristics

- Passive infrared presence detector for ceiling mounting
- Square detection area 360° (up to 64 m^2) for reliable and easy planning
- Automatic presence- and brightness-dependent control for lighting and HVAC
- Mixed light measurement suitable for fluorescent lamps (FL/PL/ESL), halogen/incandescent lamps and LEDs
- A channel light: relay, 230 V
- Choice of fully or semi-automatic operation
- Adjustable brightness switching value, teach-in function
- Self-learning time delay
- Reduction of switch-off delay time in the event of short presence (brief-presence)
- Connection option for sensors or switches for manual switching with automatic recognition of sensor/switch
- Pulse function for staircase light time switch
- Channel H, presence: relay, floating e.g. for HVAC control
- Switch-on delay and switch-off delay configurable
- Room monitoring with selective movement detection
- Ready for immediate use due to factory preset

- Exceptionally easy configuration of the energy-saving behaviour with the new «eco plus» function
- Test mode for checking function and detection area
- Extension of detection area via Master/Slave or Master/Master switching, a maximum of 10 detectors can be switched in parallel with each other
- Ceiling installation in flush-mounted socket
- Ceiling installation also possible with surface-mounted frame
- User remote control theSenda S, management remote control SendoPro (optional)

2. Safety

> ⚠️ **WARNING**
>
> **Danger of death through electric shock or fire!**
> ➢ Installation should only be carried out by a professional electrician!

- Installation should only be carried out by a qualified electrician! Work on electrical systems may only be carried out by electricians or by instructed persons under the leadership and supervision of an electrician in accordance with the technical regulations applying to electricity
- Comply with the country-specific safety regulations for work on electrical systems! De-energise cable before installation!
- The device is maintenance-free. If the device is opened or penetrated with any objects the guarantee expires.
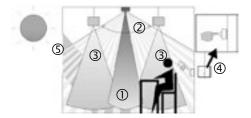
3. Intended use

The presence detector is intended for interior installation. The presence detector is exclusively intended for the use as contractually agreed between the manufacturer and the user. Any other use is considered to be unacceptable. The manufacturer does not accept liability for any resulting damages.
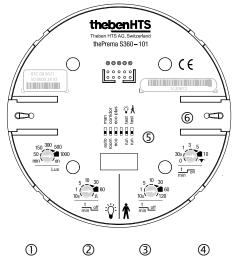
4. Function

The presence detector is primarily used in offices and schools, as well as in homes, for easy and energy-efficient control of lighting plus HVAC and shading. The switch contact „light" switches lighting on with presence and insufficient brightness, and off with absence or sufficient brightness. The light can also be switched on/off manually using push buttons or switches.

The „presence" switch contact controls heating, ventilation and air conditioning systems. The contact closes when someone is present. A switch-on delay allows delayed switching on. The contact can also be used for room monitoring. In this it acts with reduced sensitivity only to significant movement.

Functional description

① Mixed light measurement

② Presence detection

③ Artificial light

④ Push button for manual lighting control

⑤ Incident daylight

Settings on thePrema S360-101

①   Brightness set point value (lux)

②   Lighting time delay

③   Presence time delay

④   Presence switch-on delay

⑤   DIP-Switch:
   - DIP1   Fully automatic / semi-automatic
   - DIP2   Staircase light function: room / corridor
   - DIP3   eco / eco plus
   - DIP5   Light test: normal operation / test
   - DIP6   Presence test: normal operation / Walking test

⑥   Mechanical safety lock

Light ☼ channel

Switching response is controlled by presence and brightness. The switch contact closes during darkness and when someone is present. It opens with a delay when there is brightness or when no one is present.

Time delay

The minimum switch-off delay (10 s - 60 min) is adjustable. It adjusts automatically to the user's behaviour and can increase independently to 30 minutes or reduce back to the set minimum time. With settings ≤ 2 mins or ≥ 30 mins the time delay remains unchanged at the set value. If someone goes into an unoccupied room only briefly and leaves it within 30 seconds, then the light shuts off prematurely after 2 minutes (brief-presence).

Push button control

The lighting can be manually switched at any time via a push button or switch. If the light is switched on manually, the light will remain on for at least 30 minutes providing people are present. It then switches off when the brightness is adequate. The light will go off after a preset time delay if the room is vacated. If artificial lighting is switched off manually. the lighting remains switched off as long as the room is occupied. The lighting switches on again automatically after the switch-off delay has expired.

Fully or semi-automatic

Lighting control via the presence detector operates fully automatically for increased comfort or semi-automatically for greater energy savings. In «fully automatic» the lights switch on and off automatically. Light switching has to be completed manually in «semi-automatic mode». The lighting is switched off automatically.

Staircase light function

The staircase light function can be set to „room" or „corridor" using the DIP switch or the SendoPro management remote control. Lighting can be switched on and off manually at any time in the ‚room' position. The detector operates as a staircase light control in the ‚corridor' setting. Manual switch off is no longer possible.

Exceptionally easy configuration of the energy-saving behaviour

By selecting "eco" for optimal switching behaviour or "eco plus" for maximum energy saving, users can adjust the presence detector to their requirements very easily.

Pulse function

Time delay can be set to pulse for controlling existing staircase light time switches. In this every 10 seconds the light output produces a pulse of 0.5 seconds duration if people are present or it is dark.

Presence 👤, channel

Channel H, presence, is used for HVAC control or room monitoring. The switching behaviour of the floating contact is only influenced by presence and not by brightness. If the contact is closed, the run-on time will be restarted at every movement. Sensors or switches do not influence the contact.

Switch-on delay

The switch-on delay prevents instantaneous switch on. The contact closes only on expiry of the switch-on delay, providing people are constantly present.

Time delay

Switch-off delay enables delayed switching off of HVAC devices and system after the room is vacated.

Room monitoring

If the switch-on delay is set to monitoring this reduces the sensitivity of the presence switching output. The contact closes with significant movement and indicates the presence of people with a high degree of certainty. The switch-off delay remains active. The switch-on delay is inactive.
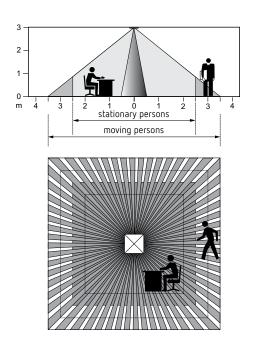
5. Detection area

The square detection area of the presence detector guarantees accurate and simple planning. Square detection areas make it possible to cover a whole room with parallel switching. Note that seated and moving persons can be detected in differently-sized areas. The recommended installation height is 2.0 m − 3.0 m. The sensitivity of the presence detector decreases with higher installation heights. Walking motions are necessary from installation heights of 3.0 m and the detection areas of several detectors should overlap in the marginal zones.

Seated persons:

The presence detector reacts very sensitively to the slightest movements. The details relate to the reduced detection area for movements at table height (approx. 0.80 m). The detection sensitivity is reduced from an installation height of > 3.0 m. More pronounced movements are required for clear detection.

Moving persons:

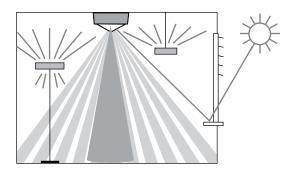Use of the whole detection area with low tolerance in marginal area (+/- 0.5 m).

stationary persons

moving persons

Installation height	stationary persons		moving persons	
2,0 m	9 m^2	3,0m x 3,0m	20 m^2	4,5m x 4,5m ± 0,5m
2,5 m	16 m^2	4,0m x 4,0m	36 m^2	6,0m x 6,0m ± 0,5m
3,0 m	25 m^2	5,0m x 5,0m	49 m^2	7,0m x 7,0m ± 1,0m
3,5 m		---	64 m^2	8,0m x 8,0m ± 1,0m

Brightness measurement

The presence detector measures artificial light and daylight that is reflected directly below the detector (opening angle approx. ± 25°). The installation site is a reference point for the lighting level. Brightness measurement can be adapted to the conditions in a room with the room correction factor. Direct light influences the light measurement. The placement of the floor lamps or suspended lighting directly below the detector is to be avoided. If the brightness measurement is deactivated, the light channels only switch depending on the presence (brightness threshold value set to „lux on" via potentiometer or set to „measurement on" via the remote control).
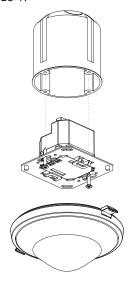
Suitable lamps

The presence detector is designed for the operation for fluorescent lamps, compact fluorescent lamps, halogen/incandescent lamps and LEDs. The maximum number of switchable lights is restricted due to the high switch-on peaks of the EBs and LED drivers. The use of an external contactor helps with large loads. Parallel switching enables allocation of load to several Masters. All switched loads must be properly suppressed.
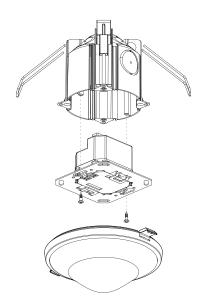
6. Installation

Flush-mounted installation

The flush-mount installation of the presence detector is done using a standard UP (flush-mount) installation socket Size 1.
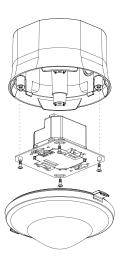

Ceiling installation

A ceiling installation unit is available for a simplified ceiling installation of the presence detector (see accessories). This ensures strain relief and contact protection at the same time. The installation diameter is 72 mm (drill diameter 73 mm).

Surface-mount installation

A suitable surface-mount frame is available for surface installation (see accessories).
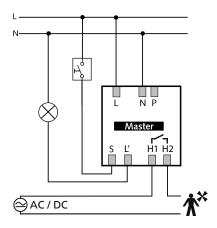
7. Switching

The presence detectors can be combined as master and slave: master in individual switching, master in parallel switching, master-slave parallel switching.
Several push buttons can connected to one control input. Illuminated push button switches can only be used with neutral conductor connection.
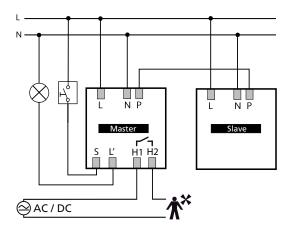
Single unit operation

In individual switching, the presence detector as master detects presence and brightness and controls lighting.

Master/slave parallel connection

If the detection area covered by one presence detector is insufficient (larger rooms), then up to 10 detectors can be operated in parallel by connecting P terminals. In the process presence detection is performed by all detectors together. The master measures the brightness, operates the push buttons and controls the lighting. All other detectors are used as slaves. They only provide presence information.
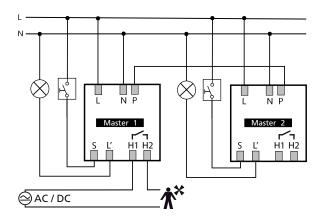
- Light measurement only with the master.
- Parameters are only set on the master.
- Switch up to 10 detectors in parallel.
- Use the phase conductor with the same phase for all detectors.

Master: thePrema S360 -101
Slave: thePrema P360 Slave, thePrema S360 Slave

Master-Master parallel switching (for several lighting groups)

Several Masters can be used in parallel switching setup. Each Master controls its lighting group according to its own brightness measurements. Delay times and brightness switching values are set individually on each Master. Presence continues to be detected by all the detectors.
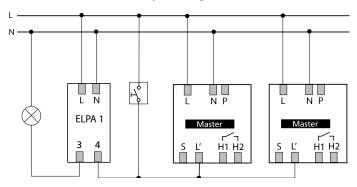
- One Master with individual brightness measurement per lighting group
- Set parameters and DIP switch individually for each Master
- Switch up to 10 detectors in parallel.
- Use the phase conductor with the same phase for all detectors.
- The presence switch contact can be read by any master.

Parallel switching to external staircase light time switch

One or several presence detectors control a staircase time switch as master. Their time delay is set to short pulse. When people are present and there is insufficient brightness their switch contacts close every 10 seconds for a period of 0.5 seconds and thus restart the time delay of the staircase light
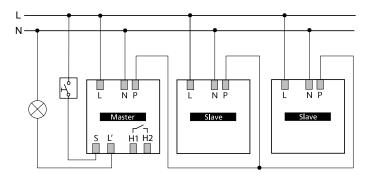
time switch.

- Switch light switch contacts of several detectors directly in parallel.
- Set light time delay in all detectors to short pulse.
- Use the phase conductor with the same phase for all detectors.
- Staircase automatic system e.g. Theben ELPA 1

Presence detectors functioning as staircase light time switches

As master a presence detector assumes the function of the staircase light time switch. With the master the DIP switch is set to «corridor». With every detected movement or push button activation the time delay is restarted. However the lights cannot be switched off with the push button. If the detection area covered by one presence detector is insufficient (larger rooms), then up to 10 presence detectors can be operated in parallel as slaves by connecting P terminals.

- Master switches lighting directly.
- Push button starts the time delay of the master.
- DIP switch to «corridor» prevents switching off with the push button.
- If needed switch additional slaves in parallel via P terminals.
- Use the phase conductor with the same phase for all detectors.
- Potentiometers and DIP switches are only set on the master.

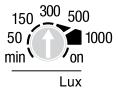Master: thePrema S360 -101
Slave: thePrema S360 Slave

8. Settings

The presence detectors were supplied with basic settings ready for operation. The specifications are guidance values. Management remote controls are optionally available for start-up. They enable remote setting of all potentiometer values and DIP switch settings from a distance.

Switch contact light settings ☀️

Potentiometer brightness threshold value „Lux"

The brightness setting is made in lux. According to EN 12464 the following values can be set:

- Transit zones (no work area)   150 lux
- Classroom   300 lux
- Work areas (office, living room)   500 lux
- Visually-intensive work (laboratory, drawing, etc.) 750 lux
- Deactivation of the brightness measurement   "on"

Lux

Brightness switch-on values from 5 to 3000 lux can be set with the management remote control.

Teach-In: the currently measured brightness value can be applied as the brightness threshold value with the management remote control.

The lux scale applies for rooms with average room design. It is recommended that the room correction factor be adjusted with the management remote control according to the place of installation, light incidence, reflection characteristics of the room and the furniture.

Potentiometer lighting time delay

The following guidance values have proved themselves in practice and are recommended as settings:

- Transit zones (no work area   approx. 5 min.
- Classroom   approx. 10 min.
- Work areas (office, living room)   approx. 10 min
- When settings are between 2 - 30 mins the time delay varies within this range in a self-learning way.
  Setting values ≤ 2 mins. or ≥ 30 mins are remain fixed.
  Only active with the setting „eco".
- $\text{\Large \unicode{x238D}}$ „Pulse" : Control staircase light time switch (0.5 s „on" / 10 s „off")

DIP switch fully/semi-automatic (auto / man)

auto ▭▬▭ man

Description of the function semi-automatic or fully automatic see functional description:

- "auto": fully automatic: the lighting switches on and off automatically.
- "man": semi-automatic: switching always has to be completed manually. Switch off occurs automatically.

DIP switch staircase light function (room / corridor)

room ▭ corridor

For description of the staircase light function see functional description:
- "room" : manual switching on and off possible
- "corridor": detector is used as staircase light switch. Manual switch off is no longer possible

DIP switch energy saving behaviour (eco / eco plus)

eco ▭ eco plus

Selection of "eco" for optimal switching behaviour or "eco plus" for maximum energy saving.
- "eco" : The time delay adapts to the user behaviour in a self-learning way.
  It will not fall below the set value. Short-term presence can be switched on or off.
- "eco plus" : The set time delay remains unchanged (no self-learning effect). Short-term presence is always active.

Switch contact settings presence 🕴

Potentiometer presence time delay

The contact closes if people are present and opens when the room is vacated after the time delay expires.
The set values remain unchanged (no self-learning effect)

Potentiometer switch-on delay time presence

- The contact only closes when someone is present after expiry of the switch-on delay
- 0 = contact closes immediately if people are present
- ☂ „Room monitoring" : contact closes only when a significant movement occurs (high false alarm safety) The switch-on delay is deactivated.

9. Start-up

Switching behaviour

Every time the sensor unit is inserted into the power unit or every time the power supply is switched on the presence detector runs through two phases that are shown on an LED:

1. Start-up phase (30 seconds)

- The red LED flashes every second, both switch contacts are closed (light and presence on).
- The detector does not react to push button commands and remote control commands.
- When no one is present both contacts open after 30 seconds.

2. Operation

The detector is ready for operation (LED off).

Test presence 🚶

run ▭■▭ test 🚶

The presence test mode is used to test presence detection and the wiring (parallel switching master-slave). The presence test mode can be activated directly on the presence detector via DIP switch or with the management remote control.

Setting the presence test mode via DIP switch

Set DIP switch to "Test 🚶" (in parallel switching with all detectors).

1. Start-up phase (30 seconds)

The contact is closed for 30 seconds. Every movement is indicated by the LED.
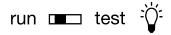
2. Operation

- Every movement is indicated by the LED.
- When movement occurs the light and presence switch contacts close.
- When no one is present the light switch contact opens after 10 seconds.
- Brightness measurement deactivates, detector does not react to brightness.
- The detector reacts as in fully automatic function mode even if semi-automatic is set.
- Detector stays permanently in the test phase.

Setting the presence test mode via remote control

- The detector goes directly into test mode without the start-up phase when setting the test mode with the remote control.
- Test mode ends automatically after 10 mins. The detector performs a new start (see switch-on behaviour).

Light test ☀

run ▭ test ☀

The light test mode is used to check the brightness threshold and the adaptive behaviour.

Setting the light test mode via DIP switch

Setting DIP switch to "Test ☀" with the master.

1. Start-up phase (30 seconds)

The contact is closed for 30 seconds. The LED flashes the light test mode on (3 seconds on, 0.3 seconds off).

2. Operation

- The LED flashes the light test mode on (3 seconds on, 0.3 seconds off).
- The presence detector responds 100 % as in normal operating mode, only the reaction to bright/dark is faster.
- In order to simulate this behaviour, either the area below the presence detector can be illuminated or the blinds operated.
- Note: Do not use a table lamp to switch the presence detector! The adaptive light switching thresholds will be distorted!
- Detector stays permanently in the test phase.

Setting the light test mode via remote control

- The detector goes directly into test mode without the start-up phase when setting the test mode with the remote control.
- Test mode ends automatically after 10 mins. The detector performs a new start (see switch-on behaviour).

10. Technical data

Operating voltage	230 V AC ± 10 %
Frequency	50 Hz
Upstream protection device	13 A (LS)
Power consumption	approx. 0.5 W
Installation type	Ceiling installation; Flush/surface mounted or ceiling installation.
Recommended installation height	2.0 − 3.0 m
Minimum height	> 1,7 m
Detection area horizontal Vertical	360° 120°
Maximum range	5 x 5 m (Mh. 3 m) / 25 m² seated 8 x 8 m (Mh. 3,5 m) / 64 m² moving
Setting range brightness switching value	approx. 5 − 3000 Lux
Switch-off delay time	10 s − 60 min
Presence time delay	10 s - 120 min.
Switch-on delay presence	0 s - 10 mins. / room monitoring
Channel A light	Relay 230 V / 10 A, µ-contact
Max. switching capacity cos φ 1 ohmic	2300 W ☼
Max. switching capacity cos φ 0.5 Power factor 0,5	1150 VA ▭ ▯◉ ▮◉

Max switching capacity LED	see manufacturer concerning cos φ
Guidance value max. switch-on peak	400 A / 200 µs
Maximum number EBs T5/ T8	16 x 54/58 W, 24 x 35/36 W 8 x 2 x 54/58 W 12x 2x 35/36 W
Channel H, presence	Relay, floating
Maximum voltage	220 V DC / 250 V AC

Maximum switching capacity	50 W / 50 VA (max. 2 A)
Recommended minimum load	0.5 mV / 10 mA
Connection type	Terminals screws
Max. cable cross-section	max. 2 x 2.5 mm²
Flush-mounted socket size	Siz. 1, Ø 55 mm (NIS, PMI)
Protection rating	IP 20 (installed IP 40)
Ambient temperature	0 °C − 50 °C
CE Declaration of Conformity	This device conforms to the safety regulations of the EMC directive 2004/108/EC and of NSR 2006/95/EC. $C \in$

Product overview

Installation type	Channel	Operating voltage	Colour	Type	Item No.
Ceiling installation	Light | HVAC	230 V AC	White	thePrema S360 -101	2070505
Ceiling installation	Light | HVAC	230 V AC	Grey	thePrema S360 -101	2070506
Ceiling installation	Light | HVAC	230 V AC	Special colour in accordance with customer information	thePrema S360 -101	2070508

Troubleshooting

Fault	Cause
Light does not switch on and/or switches off if presence is detected and in darkness	Lux value is set too low; detector set on semi-automatic; light was switched off manually via push button or SendoClic; person not within detection range; obstruction(s) interfere with detection; time delay set too short
Light stays on with detection of presence despite sufficient brightness	Lux value is set too high; light was switched on manually via push button or with SendoClic (wait 30 min.); detector is in testing mode
Light does not switch off and/or light switches on spontaneously when no one is present	Wait for switch-off delay (self-learning); thermal sources of interference in the detection area: fan heaters, incandescent lamps / halogen spotlights, moving objects (e.g. curtains hanging in an open windows); Load (EBs, relays) not cleared
Push button does not function	Device still in the start-up phase; illuminated push button was used without neutral conductor; Push button not led to the master
Light cannot be switched off with the push button	DIP switch to "corridor" position
Device does not respond	Short circuit or several phases in parallel switching! Disconnect detector from the power supply for 5 mins. (thermal fuse)
Error flashing (4 x per second)	Error in self-test; Device not properly functional!

Guarantee

Theben HTS presence detectors are manufactured with the utmost care and using state-of-the-art technology and are quality-certified. Theben HTS AG therefore guarantees perfect

operation when used correctly. Should a fault occur, however, Theben HTS AG will fulfil the guarantee within the scope of the general terms and conditions.

Please note in particular:
- that the guarantee period lasts 24 months from the date of manufacture.
- that the guarantee is invalidated if you, or a third party, make changes or undertake repairs to the devices.
- that, insofar as the presence detectors are connected to a software-controlled system, the guarantee for this connection is only valid when the indicated interface specification is complied with.

We undertake to repair or place as quickly as possible all components of the delivered device that have become defective or unusable through demonstrably poor material, faulty construction or incomplete delivery up to the end of the guarantee period.
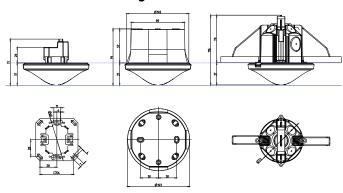
Returns

In the event of a guarantee claim, please return the device to the relevant dealer together with the delivery note and a brief description of the fault.

Industrial property rights

The design as well as hardware and software of these devices are protected by copyright.

Dimensional drawings

Mass	thePrema P360 Slave	thePrema S360 Slave
H	97 mm	92 mm
h	42 mm	37 mm

Surface-mounted frames 110A
Item no.: 9070912
Details > www.theben.de

SendoPro 868-A
Item no.: 9070675
Details > www.theben.de

Ceiling installation set 73A
Item No.: 9070917
Details > www.theben.de

theSenda S
Item no.: 9070911
Details > www.theben.de

theSenda P
Item No.: 9070910
Details > www.theben.de

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