Data sheet

SENSOTEC Sensor IPD (Input Device)

110088253	SENSOTEC Sensor PIR IPD
110088252	SENSOTEC Sensor HF2 IPD
110088245	SENSOTEC Sensor HB PIR 3360 IPD Intra
110088246	SENSOTEC Sensor HB PIR 3360 IPD Wire
110088247	SENSOTEC Sensor HB PIR 3360 IPD Zhaga
110088249	SENSOTEC Sensor HB PIR 345 IPD Intra
110088250	SENSOTEC Sensor HB PIR 345 IPD Wire
110088251	SENSOTEC Sensor HB PIR 345 IPD Zhaga

PIR IPD

The unobtrusive PIR presence detector with a detection area of 4x4m (movement 6x6m) is a compact and reliable recessed luminaire sensor for applications up to a maximum height of 5m.

HF2 IPD

The HF sensor module has a detection range of up to 8m and a max. height of 3.5m. The presence detection is carried out through glass and non-metallic materials and can therefore be used inside luminaires.

HB PIR 3360 IPD

A reliable motion detector with a long range, ideal for high ceilings in industrial buildings or commercial properties. For installation heights of up to 14m and a maximum detection area with a diameter of 36m, this high-precision PIR sensor enables monitoring of up to 1000 square metres.

HB PIR 345 IPD

The Highbay motion detector reliably monitors a rectangular detection area up to 30x4m and a mounting height of 14m. Ideal for detection from great heights in warehouses, high-bay warehouses, machine shops, check-in and waiting halls.

Connection variants

Intra

Wire

Zhaga

SENSOTEC IPD product family

As DALI-2 Input Devices, IPD sensors reliably detect presence, motion and ambient light. They can be integrated into building management systems and provide efficient control of modern lighting solutions.

The IPD product family includes the HF2, PIR, HB PIR 3360 and HB PIR 345 IPD sensors.

Advantages
- DALI-2 certified input device
- Power supply via the two DALI bus lines
- Compatible with DALI-2 Application Controller
- Integrated motion sensor, DALI instance type 3
- Integrated light sensor, DALI instance type 4
- Range and sensitivity adjustable via memory bank 2
- Normally deactivated feedback LED for device identification

Further information on the individual sensors

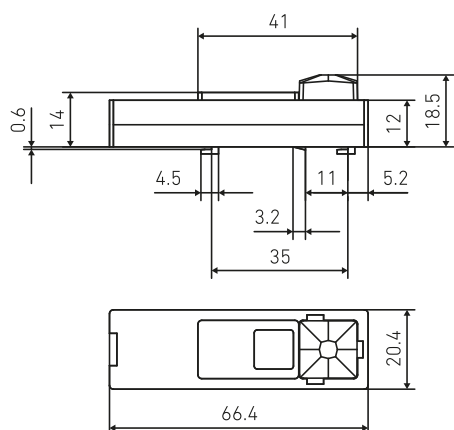**PIR IPD, HF2 IPD**

Sensor technical specifications

|	PIR IPD	HF2 IPD
Article number	110088253	110088252
GTIN	4007841085483	4007841085476
Type	9026	9025
Dimensions	66.4 × 20.4 × 18.5mm Fixing spacing 35mm 3D data available online	52 × 40.5 × 29.2mm Hole spacing 61mm 3D data available online
DALI instances	Occupancy sensor (type 3) Light sensor (type 4)	Occupancy sensor (type 3) Light sensor (type 4)
Sensor technology	Passive infrared technology	High-frequency technology
Transmitter power	-	1 - 2mW
Transmission frequency	-	5,8GHz
Light measurement range	4 - 1000lx	4 - 1000lx
Angle of coverage	-	360° with 160° angle of aperture
Mounting height	2.0 - 5.0m	2.5 - 3.5m
Optimum mounting height	2.8m	2.8m
Reach, radial	4 x 4m (16m^2)	Ø 8m (50m^2)
Reach, tangential	6 x 6m (36m^2)	Ø 8m (50m^2)
Connection	0.34 - 0.75mm^2	0.34 - 0.75mm^2
Supply voltage / current consumption	12 - 22.5VDC / max. 16mA	12 - 22.5VDC / max. 36mA
IP rating	IP20	IP20
Temperature range	-25°C to +55° (tc +55°)	-20°C to +60°C (tc +60°C)
Interfaces	DALI	DALI
Approval marks / Conformity	CE, DALI -2	CE, DALI -2
Standards	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304 EN 300-440

Dimensional drawings
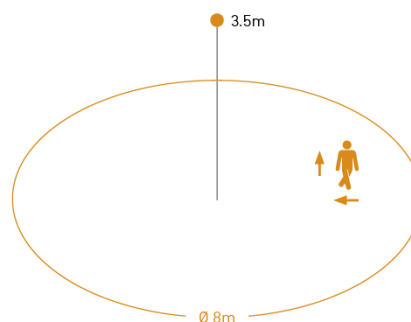
PIR IPD

HF2 IPD
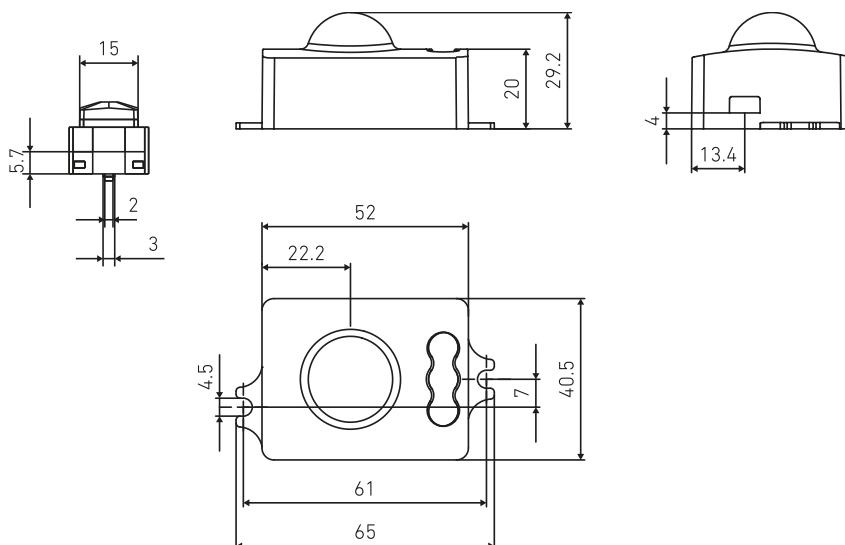
Sensor detection zones

PIR IPD

HF2 IPD
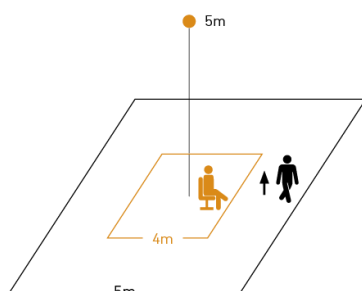
Possible mounting height 2m – 5m
Orange: presence
Black: tangential

Possible mounting height 2.5m – 3.5m
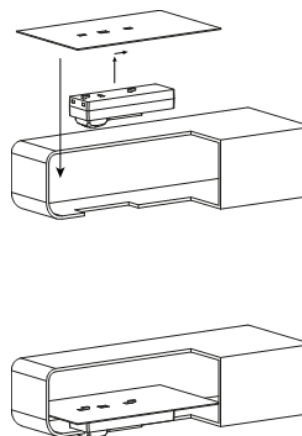Orange: radial und tangential

Installation advice PIR IPD

- Provide an aperture 15mm wide x 41mm long.
- Suitable for material thicknesses from 0.5 - 2mm.
- The sensor must have an unobstructed line of vision to the detection area.

Installation advice HF2 IPD

- The sensor is intended to be used indoors only.
- Design-in support from STEINEL specialists.
- It is highly recommended not to place the sensor in the immediate vicinity of radio transmitters and moving objects (i.e. WLAN routers).
- Ensure that the DALI wires are laid neatly and directly to the plug and not over, around, or next to the sensor.

HB PIR 3360 IPD Intra, Wire, Zhaga

Sensor technical specifications

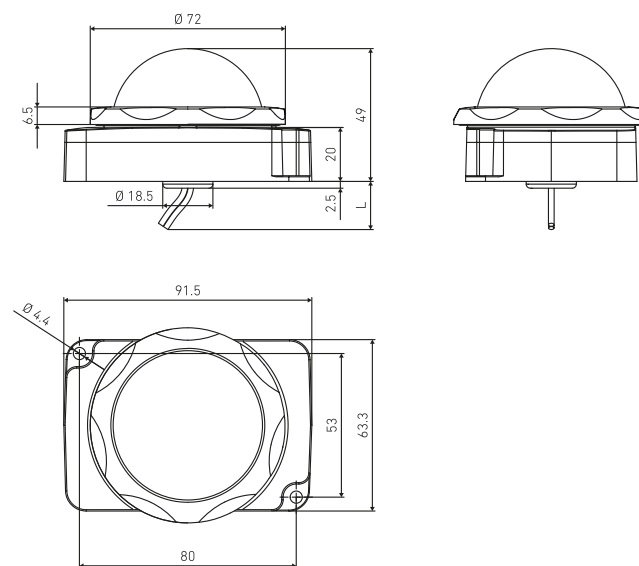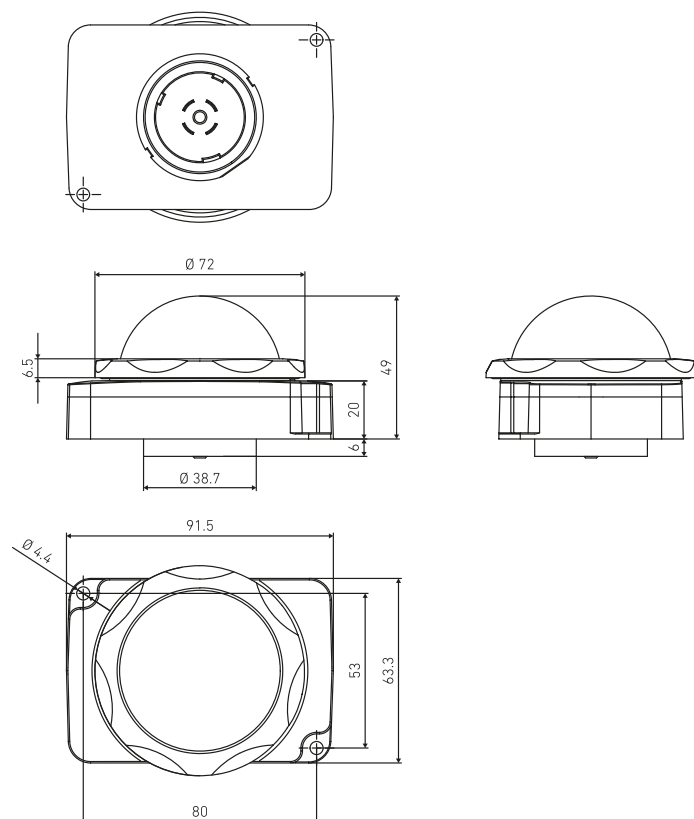|	HB PIR 3360 IPD Intra	HB PIR 3360 IPD Wire	HB PIR 3360 IPD Zhaga
Article number	110088245	110088246	110088247
GTIN	4007841085414	4007841085421	4007841085438
Type	9016	9022	9021
Dimensions	91.5 × 63.3 × 49mm 3D data available online	91.5 × 63.3 × 49mm 3D data available online	91.5 × 63.3 × 57mm 3D data available online
DALI instances	Occupancy sensor (type 3) Light sensor (type 4)	Occupancy sensor (type 3) Light sensor (type 4)	Occupancy sensor (type 3) Light sensor (type 4)
Sensor technology	Passive infrared technology	Passive infrared technology	Passive infrared technology
Light measurement range	4 - 1000lx	4 - 1000lx	4 - 1000lx
Mounting height	2.8 - 14.0m	2.8 - 14.0m	2.8 - 14.0m
Reach, radial	Ø 14m (154m^2)	Ø 14m (154m^2)	Ø 14m (154m^2)
Reach, tangential	Ø 36m (1018m^2)	Ø 36m (1018m^2)	Ø 36m (1018m^2)
Connection	0.34 - 0.75mm^2	Connection strands (0.5mm^2, L=250mm, white)	Zhaga Book 18
Supply voltage / current consumption	12 - 22.5VDC / max. 16mA	12 - 22.5VDC / max. 16mA	12 - 22.5VDC / max. 16mA
IP rating	IP20 / IP65* * sealed lens	IP65	IP65
Temperatur range	-20 to +50°C (tc +50°C)	-20 to +50°C (tc +50°C)	-20 to +50°C (tc +50°C)
Interfaces	DALI	DALI	DALI
Approval marks / Conformity	CE, DALI-2	CE, DALI-2	CE, DALI-2
Standards	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304

Dimensional drawings

HB PIR 3360 IPD Intra
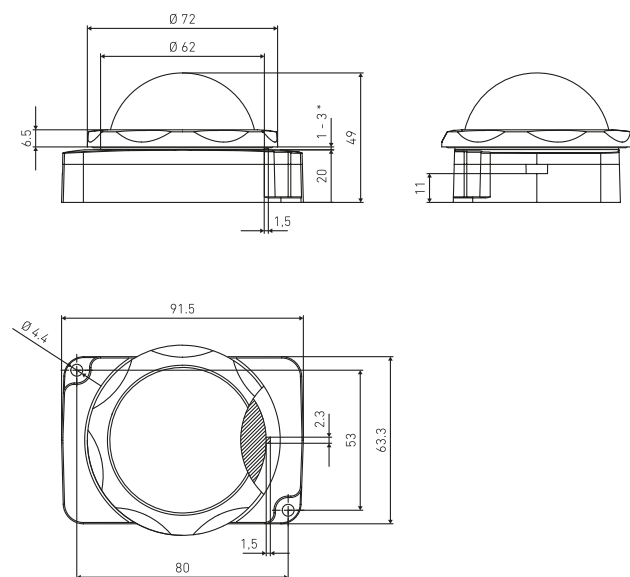
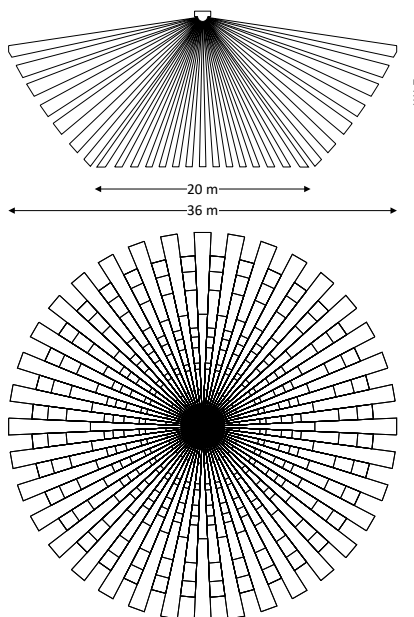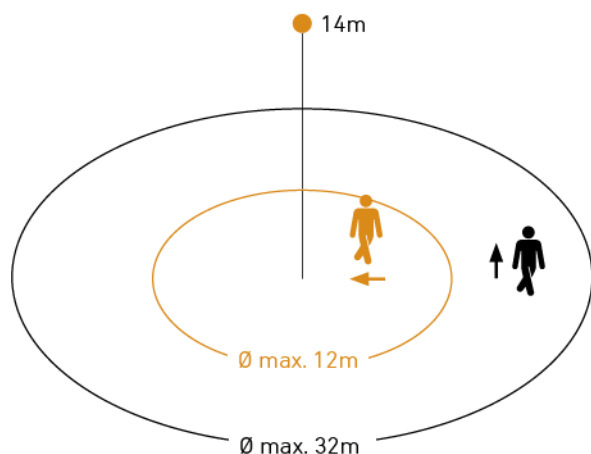### HB PIR 3360 IPD Wire

* wall thickness range

HB PIR 3360 IPD Zhaga
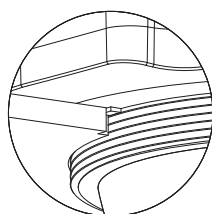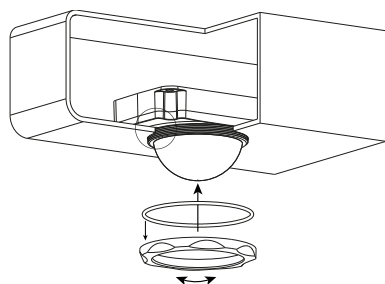
Sensor detection zones

HB PIR 3360 IPD

Possible mounting height 2.8m – 14m
Orange: radial / Black: tangential

Mounting height	Detection Area (tangential)
14m	ø 20m
9m	ø 28m
6m	ø 32m
2.8m	ø 36m

Installation advice HB PIR 3360 IPD

- Suitable for material thicknesses of 1 - 3mm.
- Hole diameter for lens 62,5 to 63mm.
- Alignment is done by mechanical positioning (see dimensional drawings).
- Clearance of Ø 106mm required for screwing the HB PIR 3360 IPD Zhaga onto the Zhaga base.

HB PIR 345 IPD Intra, Wire, Zhaga

Sensor technical specifications

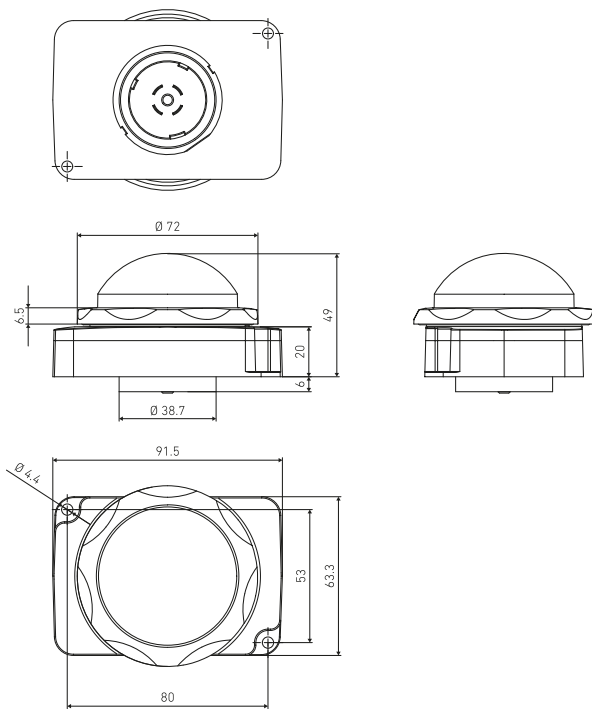|	HB PIR 345 IPD Intra	HB PIR 345 IPD Wire	HB PIR 345 IPD Zhaga
Article number	110088249	110088250	110088251
GTIN	4007841085445	4007841085452	4007841085469
Type	9015	9024	9023
Dimensions	91.5 × 63.3 × 49mm 3D data available online	91.5 × 63.3 × 49mm 3D data available online	91.5 × 63.3 × 57mm 3D data available online
DALI instances	Occupancy sensor (type 3) Light sensor (type 4)	Occupancy sensor (type 3) Light sensor (type 4)	Occupancy sensor (type 3) Light sensor (type 4)
Sensor technology	Passive infrared technology	Passive infrared technology	Passive infrared technology
Light measurement range	4 - 1000lx	4 - 1000lx	4 - 1000lx
Mounting height	4.0 - 14.0m	4.0 - 14.0m	4.0 - 14.0m
Reach, radial	30 x 4m (120m^2)	30 x 4m (120m^2)	30 x 4m (120m^2)
Reach, tangential	30 x 4m (120m^2)	30 x 4m (120m^2)	30 x 4m (120m^2)
Connection	0.34 – 0.75mm^2	Connection strands (0.5mm^2, L=250mm, weiss)	Zhaga Book 18
Supply voltage / current consumption	12 - 22.5VDC / max. 16mA	12 - 22.5VDC / max. 16mA	12 - 22.5VDC / max. 16mA
IP rating	IP20 / IP65* * sealed lens	IP65	IP65
Temperature range	–20 to +50°C (tc +50°C)	–20 to +50°C (tc +50°C)	–20 to +50°C (tc +50°C)
Interfaces	DALI	DALI	DALI
Approval marks / Conformity	CE, DALI-2	CE, DALI-2	CE, DALI-2
Standards	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304	EN 61347-1 EN 61347-2-11 EN 55015 EN 61547 EN 62386-101 EN 62386-103 EN 62386-303 EN 62386-304

Dimensional drawings
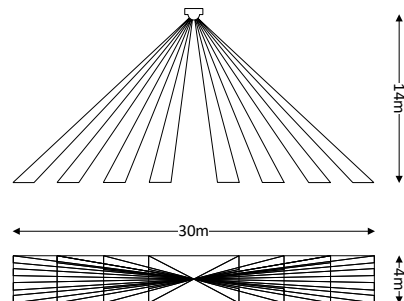
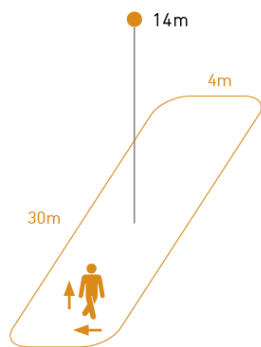HB PIR 345 IPD INTRA
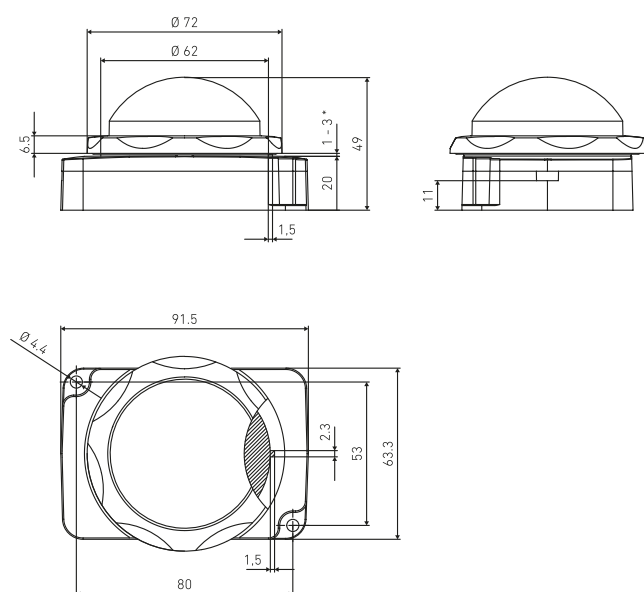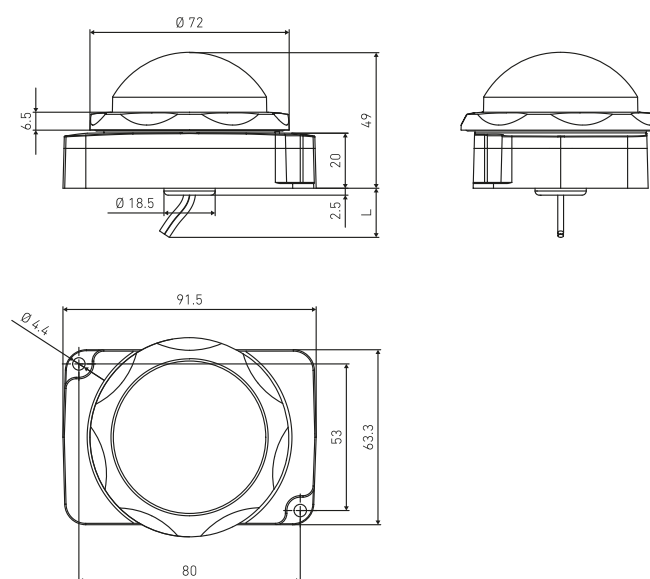
HB PIR 345 IPD WIRE

* wall thickness range

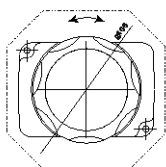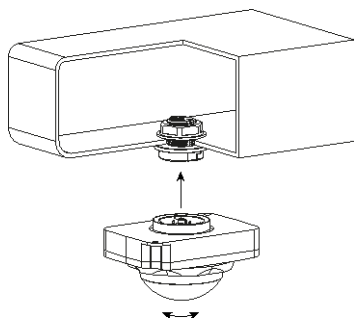HB PIR 345 IPD Zhaga

Sensor detection zones

HB PIR 345 IPD

Possible mounting height 4m – 14m
Orange: radial und tangential

| Mounting height	Detection Area
14m	30m x 4m
10m	25m x 4m
8m	20m x 4m
6m	15m x 4m
4m	10m x 4m

Installation advice HB PIR 345 IPD

- Suitable for material thicknesses of 1 - 3mm.
- Hole diameter for lens 62,5 to 63mm.
- Alignment is done by mechanical positioning (see dimensional drawings).
- Clearance of Ø 106mm required for screwing the HB PIR 345 IPD Zhaga onto the Zhaga base.

General information

Circuit diagram

The following is an example of wiring with a DALI ballast. Without an external DALI supply, the DALI ballast must support at least Part 250 (Integrated bus power supply) and optionally Part 252 (Energy reporting) and Part 253 (Diagnostics & maintenance).
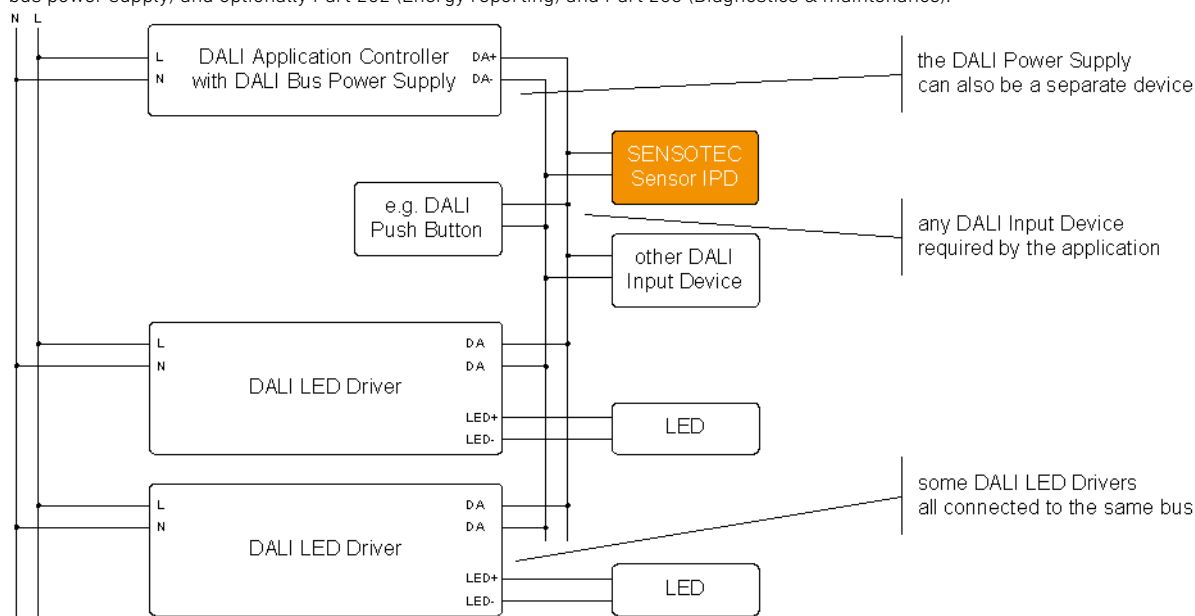
Operating instructions

The SENSOTEC IPD implement the behavior described in the DALI standard parts DIN EN 62386-101, -103, -303 and -304. The following sections therefore only provide a rough overview of the main features but go into detail on all manufacturer-specific device properties.

Sensor Instances 3 & 4

	Instance number	Instance type	Input value resolution
Light sensor	number 0	type 4	11 bits
Bewegungssensor	number 1	type 3	2 bits

Light sensor (Type 4)

	Factory / reset value	Valid range
Event filter	1 (= enabled)	[0,1]
Dead time	30 (= 1,5s)	[0,255]

Occupancy sensor (Type 3)

	Factory / reset value	Valid range
Event filter	3 (= occupied & vacant)	[0,31]
Dead time	2 (= 100ms)	[0,255]

Report time	30 (= 30s)	[0,255]
Hysteresis %	5 (= 5%)	[0,25]

Report time	20 (= 20s)	[0,255]
Hold time	90 (= 900s)	[0,254]

The illuminance value is a relative value and is not representing an absolute lux value. See DALI specification IEC 62386-304 / 9.3

Further documentation about DALI instance / device variables and commands: See DALI specification parts -103, -303, -304

Memory bank 2

Address	Description	Factory / reset value	Lockable	Memory type
0x00	Address of last accessible memory location	0x05	n/a	ROM
0x01	Reserved - not implemented	answer NO	n/a	n/a
0x02	Memory bank lock byte [1]	0xFF	NO	RAM
0x03	Sensor type [2]	Sensor specific	n/a	ROM
0x04	Sensor sensitivity	0xFF	YES	NVM
0x05	Detection range [3]	0xFF	YES	NVM

Memory bank 0 is standardized and implemented according to the DALI specification. For memory bank read access, use READ MEMORY LOCATION. For memory bank write access, make sure that the memory write of the target device is enabled with ENABLE WRITE MEMORY and the desired memory bank is unlocked prior to a write using WRITE MEMORY LOCATION or DIRECT WRITE MEMORY according to spec.

Sensor sensitivity (Address 0x04)
This parameter is used to change the sensor sensitivity. If "high" sensitivity is selected, the sensor will respond to any movement immediately. If "low" sensitivity is selected, the sensor will respond after detecting several movements. The default value is "0xFF" (highest sensitivity).

0x00	→	0%	lowest possible sensitivity
…	→	…	
0xFF	→	100%	highest sensitivity

Detection range (Address 0x05)
This parameter is used to adjust how strong a motion signal must be in order to recognize it as motion. This setting is only applicable for HF sensor technology.

0x00	→	0%	only very large movements are detected
…	→	…	
0xFF	→	100%	minor movements are detected

Device startup behavior
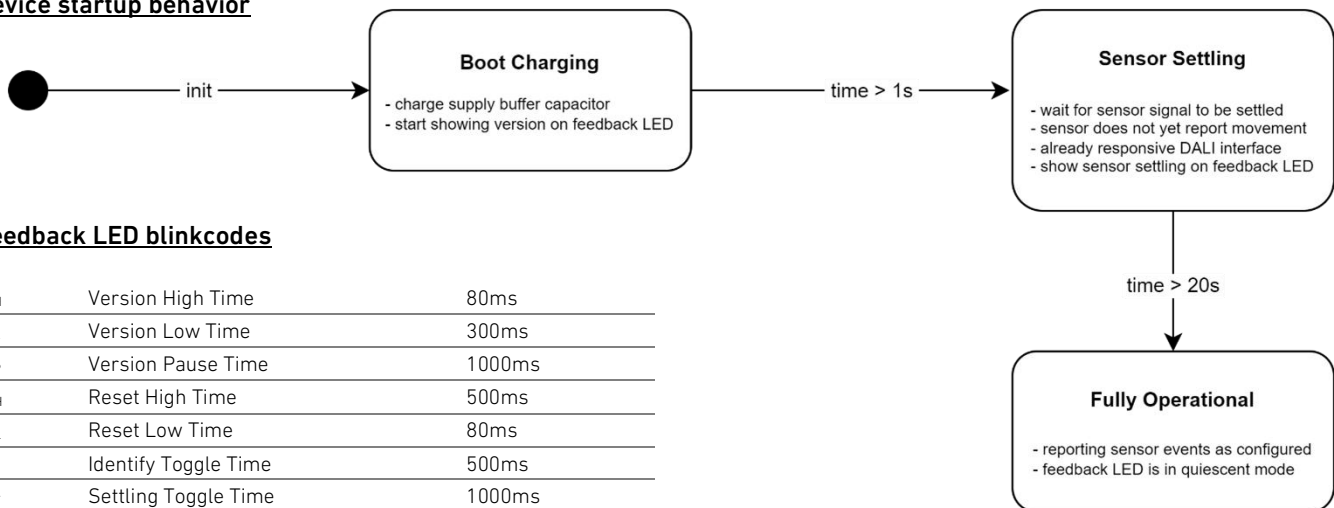
Feedback LED blinkcodes

T_{VH}	Version High Time	80ms
T_{VL}	Version Low Time	300ms
T_{VP}	Version Pause Time	1000ms
T_{RH}	Reset High Time	500ms
T_{RL}	Reset Low Time	80ms
T_{IT}	Identify Toggle Time	500ms
T_{ST}	Settling Toggle Time	1000ms

Firmware version report
The firmware version is displayed on device startup in three blink groups which report each single number (major/minor/patch) of the semantic version number. Zeroes are indicated using a very short flashing with a pulse duration of only 10ms.


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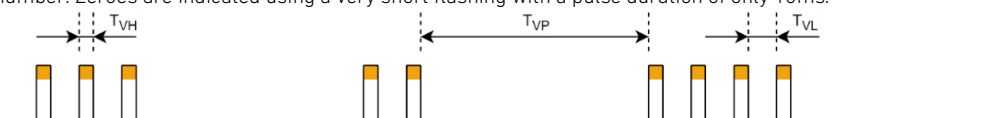
1 Lockable bytes in the memory are read only while the lock byte has a value different from 0x55.
2 The Sensor type is used internally at Steinel.
3 Only available at SENSOTEC Sensor HF2 IPD.

Reset command confirmation

When receiving a valid RESET MEMORY BANK or a RESET command for resetting the device, processing of the command is shown with 5 long blink pulses which are separated by short pauses.
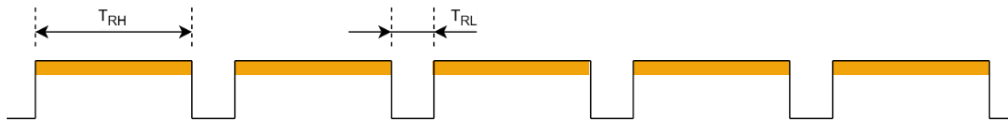
Scanning state indication

During DALI device discovery started with the INITIALISE command, devices which are not uncovered yet are being scanned. This state is indicated with the feedback led switched ON continuously. The period T_{SH} is unknown, as it depends on the random address and the discovery algorithm of the DALI application controller.
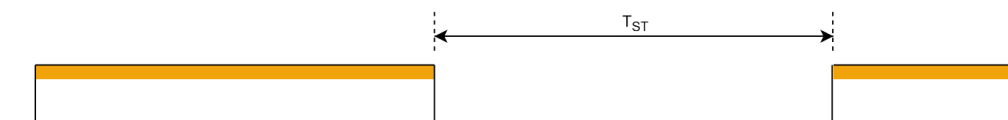

Device identification blinking

On reception of an IDENTIFY command, the input device has to call attention to itself. This is indicated with the feedback LED toggling with 1Hz.

Sensor settling notification

To wait the sensor signal being stable, a startup delay exists. The feedback LED reports a not yet ready motion sensor by toggling with 0.5 Hz.

General installation advantages

- Easily clips onto the enclosure (PIR IPD). Contact us if plastic holders are required.
- Easy to install by means of Zhaga connector system (Zhaga Book 18).
- Easily screws into enclosure.
- Connection via a 2-core terminal (except HB Zhaga and Wire).
- Extremely compact size.
- The sensor is supplied with power via the two-core DALI bus line.
- No plug polarity to be observed.

Safety precautions

- Electrical devices must only be assembled and installed by qualified electricians.
- Fire hazard. The maximum permissible load must not be exceeded.
- Risk of electric shock. Before installing the sensor, check the enclosure to make sure it is not damaged. Never open the enclosure.
- The sensor is not suitable for use in burglar alarm systems or other alarm equipment.

Conformity / marks of conformity

Link:

Note

As attenuation and reflections can cause a high-frequency sensor to behave differently in any luminaire, we cannot accept any liability for the sensor not working as expected in the particular luminaire it is being used in. Accreditation can be provided by STEINEL. Please contact your contact person find out what assistance we can give you in designing the sensor module into a luminaire. The customer must also guarantee and take responsibility for the way in which the other components behave in the luminaire (lamp, ECG etc.).
The product is sold under the brand name STEINEL Solutions AG.

This product data sheet provides no guarantee of qualities within the meaning of the statutory warranty provisions for the product described.