

# HTB18-P4A2AB

SureSense

**HYBRID PHOTOELECTRIC SENSORS** 





#### Ordering information

Туре	Part no.
HTB18-P4A2AB	1070986

Other models and accessories → www.sick.com/SureSense

Illustration may differ



#### Detailed technical data

#### **Features**

Device version	Standard
Sensor/ detection principle	Photoelectric proximity sensor, Background suppression
Dimensions (W x H x D)	16.2 mm x 48.5 mm x 31.8 mm
Housing design (light emission)	Hybrid
Thread diameter (housing)	M18
Mounting system type	M18, nose / side (24.1 25.4 mm)
Housing color	Blue
Sensing range max.	5 mm 300 mm <sup>1)</sup>
Sensing range	5 mm 150 mm <sup>2)</sup>
Type of light	Visible red light
Light source	PinPoint LED <sup>3)</sup>
Light spot size (distance)	7 mm (300 mm)
Wave length	631 nm
Adjustment	
Potentiometer, right	Sensing range
Potentiometer, left	None
Special features	-

 $<sup>^{1)}</sup>$  Object with 90 % reflectance (referred to standard white, DIN 5033).

 $<sup>^{2)}</sup>$  Object with 6 % reflectance (referred to standard black, DIN 5033).

 $<sup>^{3)}</sup>$  Average service life: 100,000 h at  $\rm T_U$  = +25 °C.

#### Mechanics/electronics

50 up by votage         10 V DC 30 V DC.           Ripple         50 mA <sup>2)</sup> Current consumption         50 mA <sup>2)</sup> Switching output         Complementary           Switching output Qtall         Light/dark switching           Switching output Qtall         PNP. Light switching           Switching output Qtall         PNP. Dark switching           Switching frequency         50.5 ms <sup>3)</sup> Switching frequency         50.5 ms <sup>3)</sup> Connection type         Male connector M12, 4-pin           Circuit protection         A <sup>5</sup> / <sub>9</sub> B ill           Weight         188           Housing material         188           Housing material         Plastic, VISTAL®           Optics material         Plastic, VISTAL®           Light, Switching           Protection class         Ill           Weight         189           Housing material         Plastic, VISTAL®		
Current consumption         20 mA ²¹           Switching output         PNP           Output function         Complementary           Switching mode         Light/dark switching           Switching output detail         Switching output Q1           PNP, Dark switching         PNP, Dark switching           Output current I <sub>max</sub> \$ 100 mA           Response time         \$ 0.5 ms³¹           Switching frequency         1,000 Hz⁴¹           Connection type         Male connector M12, 4-pin           Circuit protection         A ⁵¹           B 6¹         D ⁻¹)           Protection class         III           Weight         18 g           Housing material         Plastic, VISTAL®           Optics material         Plastic, PMMA           Enclosure rating         IP67 IP69K           Items supplied         Mounting nut (1x), M18, plastic, black, flat           Electromagnetic compatibility (EMC)         EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)           Ambient operating temperature         -40 °C +65 °C           Ambient storage temperature         -40 °C +75 °C	Supply voltage	10 V DC 30 V DC
Switching output function  Switching mode Switching output detail Switching output Q1 Switching output Q2 Switching frequency Switching	Ripple	< 5 V <sub>pp</sub> <sup>1)</sup>
Output function Switching mode Switching output detail Switching output Q1 Switching output Q2 PNP, Light switching PNP, Dark switching PNP, Dark switching Switching output Q2 Output current I <sub>max</sub> . Switching output Q2 Output current I <sub>max</sub> . Switching frequency Switching frequency Connection type Male connector M12, 4-pin Circuit protection A5 B8 D7 Protection class III Weight I8 g Housing material Optics material Optics material Plastic, PMMA Enclosure rating IP67 IP69K Items supplied Mounting nut (1x), M18, plastic, black, flat Electromagnetic compatibility (EMC) Electromagnetic compatible (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.) Ambient operating temperature 4-0 ° C +55 ° C Ambient storage temperature 4-0 ° C +75 ° C	Current consumption	20 mA <sup>2)</sup>
Switching output detail  Switching output Q1 Switching output Q2 PNP, Light switching PNP, Dark switching Switching output Q2 PNP, Dark switching Switching output Q2 Output current I <sub>max</sub> .  \$100 mA  Response time \$0.5 ms³) Switching frequency 1,000 Hz⁴) Connection type Male connector M12, 4-pin Circuit protection B8 B8 B7 D7  Protection class III  Weight 18 g Housing material Optics material Plastic, VISTAL® Optics material Plastic, PMMA  Enclosure rating IP67 IP69K Items supplied Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC) Switching switching Switching witching Switching switching PNP, Light switching NPN, Dark switching NPN, Light switching NPN, Light switching NPN, Dark switching NPN, Light switching NPN, Light switching NPN, Light switching NPN, Dark switching NPN, Dark switching NPN, Light switching NPN, Dark switching NPN, Dark switching NPN, Light switching NPN, Dark sw	Switching output	PNP
Switching output detail  Switching output Q1  PNP, Light switching  PNP, Dark switching  PNP, Dark switching  PNP, Dark switching  PNP, Dark switching  Switching output Q2  PNP, Dark switching  Summan  Summan  Summan  Summan  Switching frequency  Connection type  Male connector M12, 4-pin  A 5   B 6   D 7 7)  Protection class  III  Weight  Housing material  Optics material  Plastic, PMMA  Enclosure rating  IP67   IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  Ambient storage temperature	Output function	Complementary
Switching output Q1 Switching output Q2 PNP, Light switching PNP, Dark switching  Output current I <sub>max</sub> . ≤ 100 mA  Response time ≤ 0.5 ms ³)  Switching frequency 1,000 Hz ⁴)  Connection type Male connector M12, 4-pin  Circuit protection A 5 B 6 B C P P C P C P C P C P C P C P C P C P	Switching mode	Light/dark switching
Switching output Q2       PNP, Dark switching         Output current I <sub>max.</sub> ≤ 100 mA         Response time       ≤ 0.5 ms ³)         Switching frequency       1,000 Hz ⁴)         Connection type       Male connector M12, 4-pin         Circuit protection       A ⁵)	Switching output detail	
Output current I <sub>max.</sub> ≤ 100 mA         Response time       ≤ 0.5 ms ³)         Switching frequency       1,000 Hz ⁴)         Connection type       Male connector M12, 4-pin         Circuit protection       A ⁵ B € D D 7)         Protection class       III         Weight       18 g         Housing material       Plastic, VISTAL ®         Optics material       Plastic, PMMA         Enclosure rating       IP67 IP69K         Items supplied       Mounting nut (1x), M18, plastic, black, flat         Electromagnetic compatibility (EMC)       EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)         Ambient operating temperature       -40 °C +65 °C         Ambient storage temperature       -40 °C +75 °C	Switching output Q1	PNP, Light switching
Response time   Switching frequency 1,000 Hz <sup>4)</sup> Connection type Male connector M12, 4-pin  Circuit protection A 5 B 6 D 7 D 7 D 7 D 7 D 7 D 7 D 7 D 7 D 7 D	Switching output Q2	PNP, Dark switching
Switching frequency  1,000 Hz <sup>4)</sup> Connection type  Male connector M12, 4-pin  Circuit protection  A <sup>5)</sup> B <sup>6)</sup> D <sup>7)</sup> Protection class  Weight  18 g  Housing material  Plastic, VISTAL®  Optics material  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  Ambient storage temperature  -40 °C +75 °C	Output current I <sub>max.</sub>	≤ 100 mA
Connection type  Male connector M12, 4-pin  A 5 B 6 D 7 D 7 D Protection  Protection class  III  Weight  Housing material  Plastic, VISTAL®  Optics material  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  Ambient storage temperature	Response time	$\leq$ 0.5 ms $^{3)}$
Circuit protection  A 5 B 6 D 7 D 7 Protection class  III  Weight  18 g  Housing material  Optics material  Plastic, VISTAL®  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  Ambient storage temperature  -40 °C +75 °C	Switching frequency	1,000 Hz <sup>4)</sup>
B 6 D 7)  Protection class  III  Weight  18 g  Housing material  Plastic, VISTAL®  Optics material  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Connection type	Male connector M12, 4-pin
Weight  Housing material  Plastic, VISTAL®  Optics material  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Circuit protection	B <sup>6)</sup>
Housing material  Plastic, VISTAL®  Plastic, PMMA  Enclosure rating  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Protection class	III
Optics material  Plastic, PMMA  IP67 IP69K  Items supplied  Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Weight	18 g
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IP69K  Items supplied Mounting nut (1x), M18, plastic, black, flat  Electromagnetic compatibility (EMC) EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature -40 °C +65 °C  Ambient storage temperature -40 °C +75 °C	Optics material	Plastic, PMMA
Electromagnetic compatibility (EMC)  EN 60947-5-2 (The sensor complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Enclosure rating	
trial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.)  Ambient operating temperature  -40 °C +65 °C  -40 °C +75 °C	Items supplied	Mounting nut (1x), M18, plastic, black, flat
Ambient storage temperature -40 °C +75 °C	Electromagnetic compatibility (EMC)	
	Ambient operating temperature	-40 °C +65 °C
<b>UL File No.</b> E189383	Ambient storage temperature	-40 °C +75 °C
	UL File No.	E189383

 $<sup>^{1)}\,\</sup>mbox{May}$  not exceed or fall below  $\mbox{U}_{\mbox{\scriptsize V}}$  tolerances.

#### Safety-related parameters

MTTF <sub>D</sub>	622.2 years
<b>DC</b> <sub>avg</sub>	0%

#### Classifications

ECI@ss 5.0	27270904
ECI@ss 5.1.4	27270904
ECI@ss 6.0	27270904

<sup>2)</sup> Without signal strength light bar and load.

<sup>3)</sup> Signal transit time with resistive load.

<sup>4)</sup> With light/dark ratio 1:1.

 $<sup>^{5)}</sup>$  A = V<sub>S</sub> connections reverse-polarity protected.

<sup>&</sup>lt;sup>6)</sup> B = inputs and output reverse-polarity protected.

<sup>7)</sup> D = outputs overcurrent and short-circuit protected.

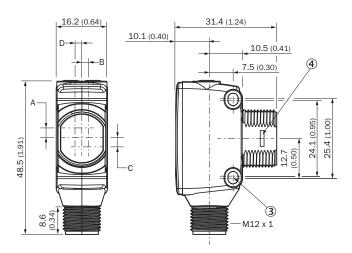
#### HYBRID PHOTOELECTRIC SENSORS

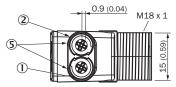
ECI@ss 6.2	27270904
ECI@ss 7.0	27270904
ECI@ss 8.0	27270904
ECI@ss 8.1	27270904
ECI@ss 9.0	27270904
ECI@ss 10.0	27270904
ECI@ss 11.0	27270904
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719
UNSPSC 16.0901	39121528

### Connection/pin assignment

Connection type	Male connector M12, 4-pin
PIN assignment	
BN 1	+ (L+)
WH 2	$Q_2$
BU 3	- (M)
BK 4	$Q_1$

#### Dimensional drawing (Dimensions in mm (inch))





- 1 LED indicator yellow: Status of received light beam
- ② LED indicator green: power on
- 3 M3 mounting hole
- Snap Connection for flush ring (sold seperatly)
- ⑤ Potentiometer (if selected) or LED Indicators

Dimensions in mm (inch)	Receiver		Sender	
	A	В	C	D
HTB18 / HTF18	- 1.1 (0.04)	1.1 (0.04)	4.7 (0.19)	0.6 (0.02)
HTE18 / HL18 / HSE18	2.5 (0.1)	0.0 (0.0)	4.0 (0.16)	0.0 (0.0)
HTB18L / HTF18L / HL18L / HSE18L	2.5 (0.1)	0.0 (0.0)	3.5 (0.14)	0.0 (0.0)

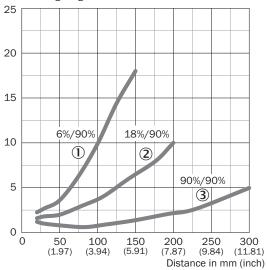
#### Connection type

See table: Connection/Pin assignment



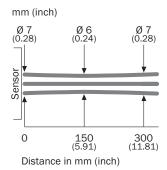
#### Characteristic curve

% of sensing range

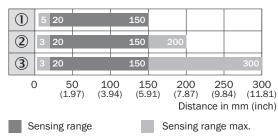


- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18 % remission③ Sensing range on white, 90% remission

#### Light spot size

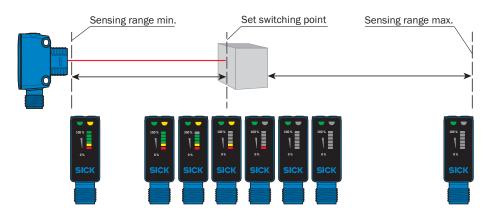


#### Sensing range diagram



- ① Sensing range on black, 6% remission
- ③ Sensing range on white, 90% remission

#### **Functions**



#### Recommended accessories

Other models and accessories → www.sick.com/SureSense

	Brief description	Туре	Part no.		
Plug connecto	Plug connectors and cables				
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14- 050VB3XLEAX	2096235		
	Head A: male connector, M12, 4-pin, straight Head B: - Cable: unshielded	STE-1204-G	6009932		

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

# **WORLDWIDE PRESENCE:**

Contacts and other locations -www.sick.com

