



DATA SHEET

HL18L-F4A5AE

H18 Sure Sense
Photoelectric sensors

SICK

Sensor Intelligence



Illustration may differ

PHOTOELECTRIC SENSORS

HL18L-F4A5AE

ORDERING INFORMATION

Type	part no.
HL18L-F4A5AE	1121965

Further device versions and accessories at www.sick.com/H18_Sure_Sense



DETAILED TECHNICAL DATA

FEATURES

Functional principle	Photoelectric retro-reflective sensor
Functional principle detail	With minimum distance to reflector (dual lens system)
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, head/side (24.1 ... 25.4 mm)
Housing color	Blue
Sensing range max.	0.1 m ... 12 m ¹⁾
Sensing range	0.1 m ... 10 m ¹⁾
Type of light	Visible red light
Light source	Laser ²⁾ ³⁾
Light spot size (distance)	2 mm (2 m)
Wave length	655 nm

¹⁾ Reflector PL80A.

²⁾ Average service life: 50,000 h at T_u = +25 °C.

³⁾ CLASS 1 LASER PRODUCT EN60825-1:2014, IEC60825-1:2014, Maximum pulse power < 2,5 mW, Pulse length: 4 µs, Wavelength: 650 ... 670 nm, Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

⁴⁾ Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

Laser class	1 ⁴⁾
Adjustment	Potentiometer, right Potentiometer, left
	Light/dark switching None
Special applications	Detecting small objects
Special features	-

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MECHANICS/ELECTRONICS

Supply voltage	10 V DC ... 30 V DC
Ripple	< 5 V _{pp} ¹⁾
Current consumption	≤ 20 mA ²⁾
Switching output	Push-pull: PNP/NPN
Output function	Complementary
Switching mode	Light/dark switching
Switching output detail	Switching output Q1 Switching output Q2
	Push-pull: PNP/NPN, Light switching ³⁾ Push-pull: PNP/NPN, Dark switching ³⁾
Output current I_{max}	≤ 100 mA
Response time	≤ 0.5 ms ⁴⁾
Switching frequency	1,000 Hz ⁵⁾
Connection type	Male connector M12, 4-pin
Cable material	Plastic, PVC
Circuit protection	A ⁶⁾ B ⁷⁾ D ⁸⁾
Protection class	III
Weight	18 g
Polarizing filter	✓
Housing material	Plastic, VISTAL®
Optics material	Plastic, PMMA
Enclosure rating	IP67 IP69K
Items supplied	Fastening 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.)

¹⁾ May not fall below or exceed U_v tolerances.

²⁾ Without signal strength light bar and load.

³⁾ Pin 4 and pin 2: This switching output must not be connected to another output.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ A = V_s connections reverse-polarity protected.

⁷⁾ B = Inputs and output reverse-polarity protected.

⁸⁾ D = outputs overcurrent and short-circuit protected.

⁹⁾ Below $T_a = -10^\circ\text{C}$, sensor must be turned on at $T_a > -10^\circ\text{C}$. Sensor cannot be turned on below $T_a = -10^\circ\text{C}$.

Ambient operating temperature	-30 °C ... +55 °C ⁹⁾
Ambient temperature, storage	-40 °C ... +70 °C
UL File No.	E189383

¹⁾ May not fall below or exceed U_v tolerances.

²⁾ Without signal strength light bar and load.

³⁾ Pin 4 and pin 2: This switching output must not be connected to another output.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ A = V_s connections reverse-polarity protected.

⁷⁾ B = inputs and output reverse-polarity protected.

⁸⁾ D = outputs overcurrent and short-circuit protected.

⁹⁾ Below Ta = -10 °C, sensor must be turned on at Ta > -10 °C. Sensor cannot be turned on below Ta= -10 °C.

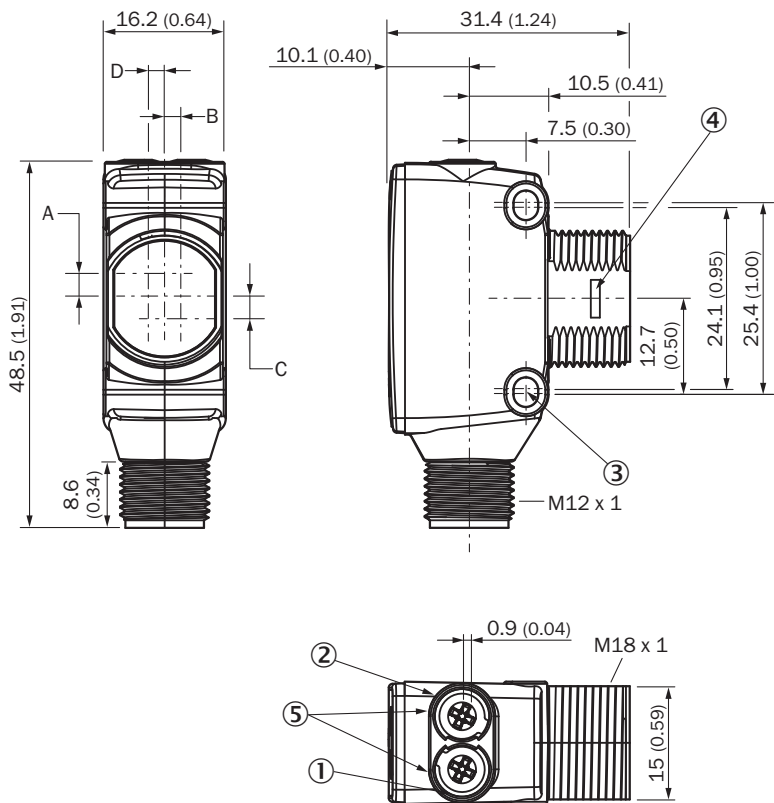
CONNECTION TYPE/PINOUTS

Connection type	Male connector M12, 4-pin	
Connection type Detail	Cable material	Plastic
Pinouts	BN 1	+ (L+)
	WH 2	Q ₂
	BU 3	- (M)
	BK 4	Q ₁

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓

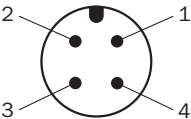
DIMENSIONAL DRAWING



- Dimensions in mm (inch)
- ① LED indicator yellow: Status of received light beam
 - ② LED indicator green: power on
 - ③ M3 mounting hole
 - ④ Snap Connection for flush ring (sold seperatly)
 - ⑤ Potentiometer (if selected) or LED Indicators

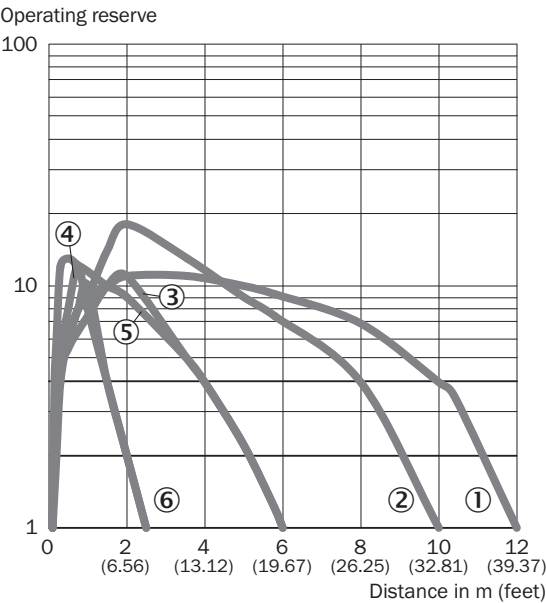
Dimensions in mm (inch)	Receiver		Sender	
-	A	B	C	D
HTB18 / HTF18	-1.1 (0.04)	1.1 (0.04)	4.7 (0.19)	0.6 (0.02)
HTE18 / HL18 / HSE18	2.5 (0.1)	0.0 (0.0)	4.0 (0.16)	0.0 (0.0)
HTB18L / HTF18L / HL18L / HSE18L	2.5 (0.1)	0.0 (0.0)	3.5 (0.14)	0.0 (0.0)

PINOUTS, SEE TABLE TECHNICAL DATA: CONNECTION TYPE/PINOUTS



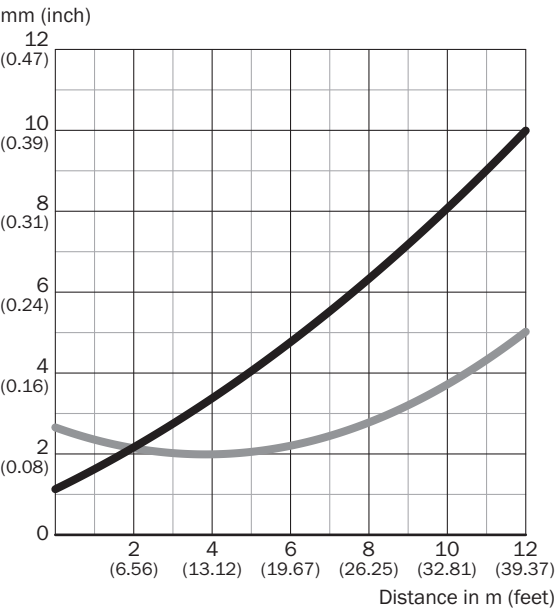
M12 male connector, 4-pin, A-coding

CHARACTERISTIC CURVE



- ① Reflector PL80A
- ② Reflector P250F
- ③ PL10F reflector
- ④ Reflector PL23 FT
- ⑤ Reflective tape REF-AC1000
- ⑥ Reflective tape IREF6000 (REF-IRF-56)

LIGHT SPOT SIZE

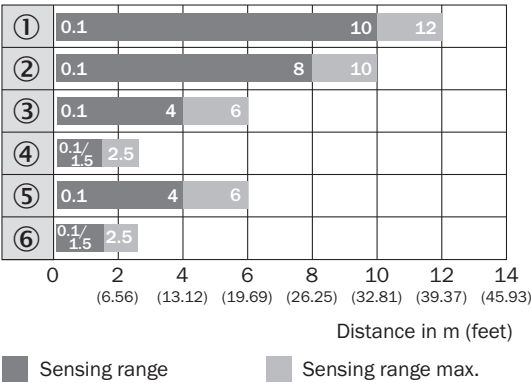


Dimensions in mm (inch)

Sensing range	Vertical	Horizontal
0.2 m (0.57 feet)	1.2 (0.05)	2.65 (0.10)
0.75 m (2.46 feet)	1.8 (0.07)	2.3 (0.09)
5 m (16.40 feet)	4.0 (0.16)	2.2 (0.09)
12 m (39.37 feet)	10.0 (0.39)	5.0 (0.20)

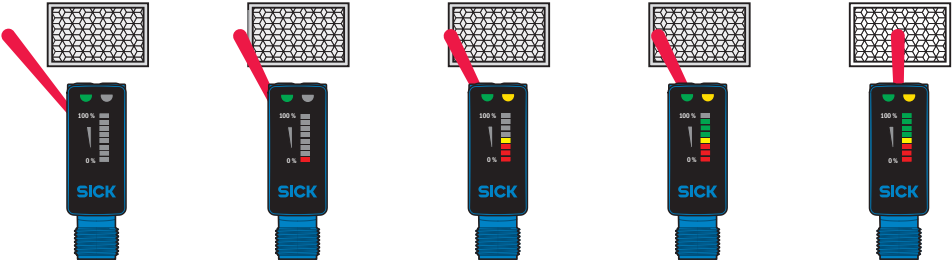
- Vertical
- Horizontal

SENSING RANGE DIAGRAM



- ① Reflector PL80A
- ② Reflector P250F
- ③ PL10F reflector
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- ⑤ Reflective tape REF-AC1000
- ⑥ Reflective tape IREF6000 (REF-IRF-56)

FUNCTIONS



Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1121965

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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