



# HL18L-P1G5BA

H18 Sure Sense

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type         | part no. |
|--------------|----------|
| HL18L-P1G5BA | 1071027  |

Other models and accessories → [www.sick.com/H18\\_Sure\\_Sense](http://www.sick.com/H18_Sure_Sense)

### Detailed technical data

#### Features

|                                        |                                                       |
|----------------------------------------|-------------------------------------------------------|
| <b>Functional principle</b>            | Photoelectric retro-reflective sensor                 |
| <b>Functional principle detail</b>     | With minimum distance to reflector (dual lens system) |
| <b>Dimensions (W x H x D)</b>          | 16.2 mm x 45.5 mm x 31.8 mm                           |
| <b>Housing design (light emission)</b> | Hybrid                                                |
| <b>Thread diameter (housing)</b>       | M18                                                   |
| <b>Mounting system type</b>            | M18, head/side (24.1 ... 25.4 mm)                     |
| <b>Housing color</b>                   | Blue                                                  |
| <b>Sensing range max.</b>              | 0.1 m ... 12 m <sup>1)</sup>                          |
| <b>Sensing range</b>                   | 0.1 m ... 10 m <sup>1)</sup>                          |
| <b>Type of light</b>                   | Visible red light                                     |
| <b>Light source</b>                    | Laser <sup>2)</sup><br><sup>3)</sup>                  |
| <b>Light spot size (distance)</b>      | 2 mm (2 m)                                            |
| <b>Wave length</b>                     | 655 nm                                                |
| <b>Laser class</b>                     | 1                                                     |
| <b>Adjustment</b>                      |                                                       |
| Potentiometer, right                   | None                                                  |
| Potentiometer, left                    | None                                                  |
| <b>Special applications</b>            | Detecting small objects                               |
| <b>Special features</b>                | Signal strength light bar                             |

<sup>1)</sup> Reflector PL80A.

<sup>2)</sup> Average service life: 50,000 h at T<sub>U</sub> = +25 °C.

<sup>3)</sup> 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.

## Mechanics/electronics

|                                             |                                                                                                                                                                                              |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supply voltage</b>                       | 10 V DC ... 30 V DC                                                                                                                                                                          |
| <b>Ripple</b>                               | $< 5 V_{pp}^{1)}$                                                                                                                                                                            |
| <b>Current consumption</b>                  | $\leq 20 \text{ mA}^{2)}$                                                                                                                                                                    |
| <b>Switching output</b>                     | PNP                                                                                                                                                                                          |
| <b>Output function</b>                      | Complementary                                                                                                                                                                                |
| <b>Switching mode</b>                       | Light/dark switching                                                                                                                                                                         |
| <b>Switching output detail</b>              |                                                                                                                                                                                              |
| Switching output Q1                         | PNP, Light switching                                                                                                                                                                         |
| Switching output Q2                         | PNP, Dark switching                                                                                                                                                                          |
| <b>Output current <math>I_{max.}</math></b> | $\leq 100 \text{ mA}$                                                                                                                                                                        |
| <b>Response time</b>                        | $\leq 0.5 \text{ ms}^{3)}$                                                                                                                                                                   |
| <b>Switching frequency</b>                  | $1,000 \text{ Hz}^{4)}$                                                                                                                                                                      |
| <b>Connection type</b>                      | Cable open end, 2 m                                                                                                                                                                          |
| <b>Cable material</b>                       | Plastic, PVC                                                                                                                                                                                 |
| <b>Conductor cross section</b>              | $0.2 \text{ mm}^2$                                                                                                                                                                           |
| <b>Circuit protection</b>                   | A <sup>5)</sup><br>B <sup>6)</sup><br>D <sup>7)</sup>                                                                                                                                        |
| <b>Protection class</b>                     | III                                                                                                                                                                                          |
| <b>Weight</b>                               | 18 g                                                                                                                                                                                         |
| <b>Polarisation filter</b>                  | ✓                                                                                                                                                                                            |
| <b>Housing material</b>                     | Plastic, VISTAL®                                                                                                                                                                             |
| <b>Optics material</b>                      | Plastic, PMMA                                                                                                                                                                                |
| <b>Enclosure rating</b>                     | IP67<br>IP69K                                                                                                                                                                                |
| <b>Items supplied</b>                       | Fastening nut (1x), M18, plastic, black, flat                                                                                                                                                |
| <b>Electromagnetic compatibility (EMC)</b>  | 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.) |
| <b>Ambient operating temperature</b>        | $-30 \text{ °C} \dots +55 \text{ °C}^{8)}$                                                                                                                                                   |
| <b>Ambient temperature, storage</b>         | $-40 \text{ °C} \dots +70 \text{ °C}$                                                                                                                                                        |
| <b>UL File No.</b>                          | E189383                                                                                                                                                                                      |

<sup>1)</sup> May not fall below or exceed  $U_V$  tolerances.

<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 =  $V_S$  connections reverse-polarity protected.

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

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

<sup>8)</sup> Below  $T_a = -10 \text{ °C}$ , sensor must be turned on at  $T_a > -10 \text{ °C}$ . Sensor cannot be turned on below  $T_a = -10 \text{ °C}$ .

## Safety-related parameters

|                         |             |
|-------------------------|-------------|
| <b>MTTF<sub>D</sub></b> | 417.2 years |
| <b>DC<sub>avg</sub></b> | 0 %         |

### Connection type/pinouts

|                               |                     |
|-------------------------------|---------------------|
| <b>Connection type</b>        | Cable open end, 2 m |
| <b>Connection type Detail</b> |                     |
| Conductor cross section       | 0.2 mm <sup>2</sup> |
| Cable material                | Plastic             |
| <b>Pinouts</b>                |                     |
| BN                            | + (L+)              |
| WH                            | Q <sub>2</sub>      |
| BU                            | - (M)               |
| BK                            | Q <sub>1</sub>      |

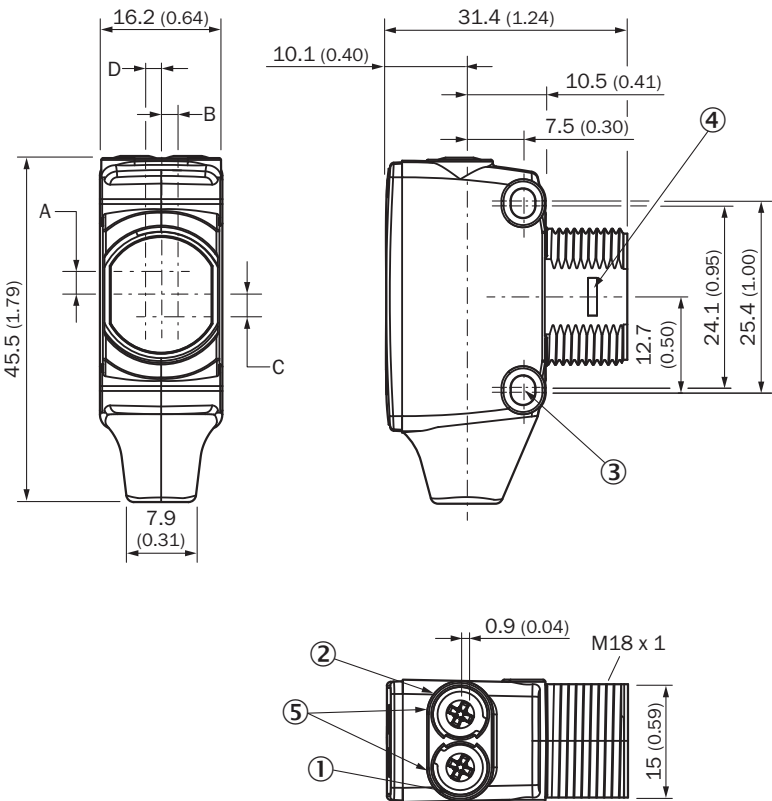
### Certificates

|                                           |   |
|-------------------------------------------|---|
| <b>EU declaration of conformity</b>       | ✓ |
| <b>UK declaration of conformity</b>       | ✓ |
| <b>ACMA declaration of conformity</b>     | ✓ |
| <b>Moroccan declaration of conformity</b> | ✓ |
| <b>China-RoHS</b>                         | ✓ |
| <b>cULus certificate</b>                  | ✓ |

### Classifications

|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270902 |
| <b>ECLASS 5.1.4</b>   | 27270902 |
| <b>ECLASS 6.0</b>     | 27270902 |
| <b>ECLASS 6.2</b>     | 27270902 |
| <b>ECLASS 7.0</b>     | 27270902 |
| <b>ECLASS 8.0</b>     | 27270902 |
| <b>ECLASS 8.1</b>     | 27270902 |
| <b>ECLASS 9.0</b>     | 27270902 |
| <b>ECLASS 10.0</b>    | 27270902 |
| <b>ECLASS 11.0</b>    | 27270902 |
| <b>ECLASS 12.0</b>    | 27270902 |
| <b>ETIM 5.0</b>       | EC002717 |
| <b>ETIM 6.0</b>       | EC002717 |
| <b>ETIM 7.0</b>       | EC002717 |
| <b>ETIM 8.0</b>       | EC002717 |
| <b>UNSPSC 16.0901</b> | 39121528 |

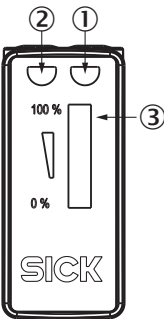
Dimensional drawing



- 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

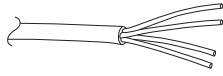
| Dimensions in mm (inch)             | Receiver     |            | Sender     |            |
|-------------------------------------|--------------|------------|------------|------------|
|                                     | A            | B          | C          | D          |
| HTB18 / HTF18                       | - 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 /<br>HL18L / HSE18L | 2.5 (0.1)    | 0.0 (0.0)  | 3.5 (0.14) | 0.0 (0.0)  |

Adjustments



- ① LED indicator yellow: Status of received light beam
- ② LED indicator green: power on
- ③ Signal strength light bar

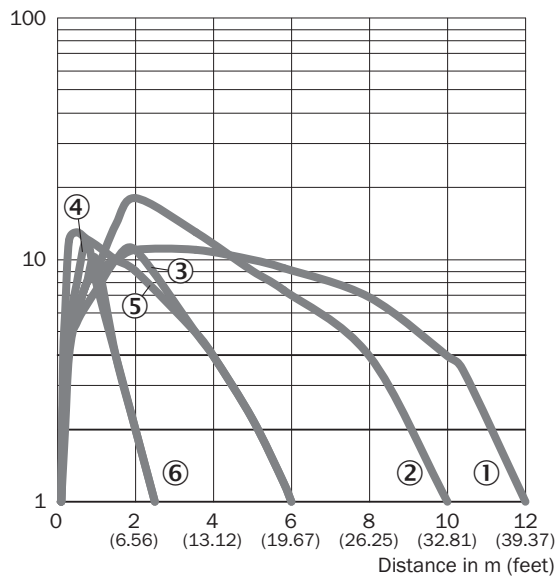
Pinouts, see table Technical data: **Connection type/pinouts**



Cable with flying leads, 4-wire, AWG26 0.15 mm<sup>2</sup>

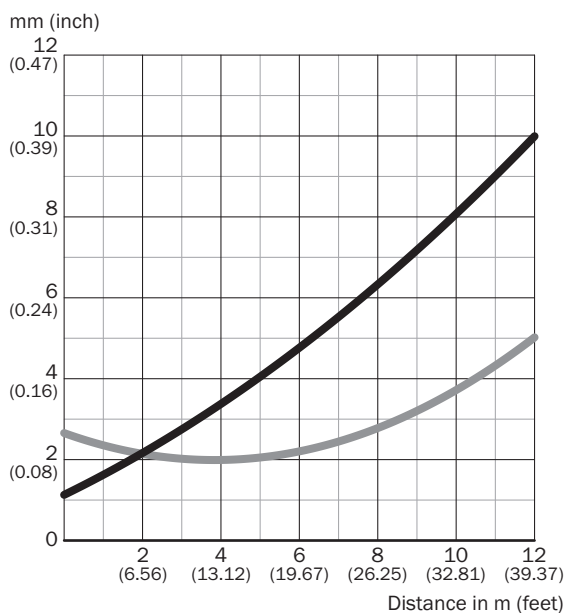
### Characteristic curve

Operating reserve



- 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

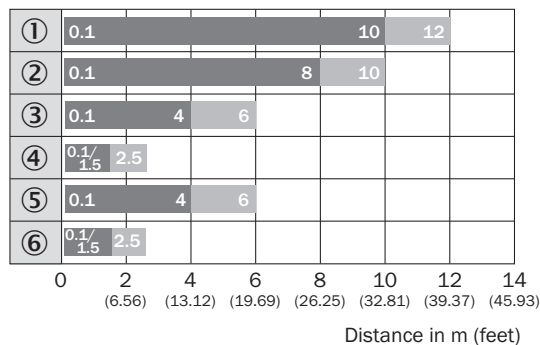


Dimensions in mm (inch)

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

— Vertical  
— Horizontal

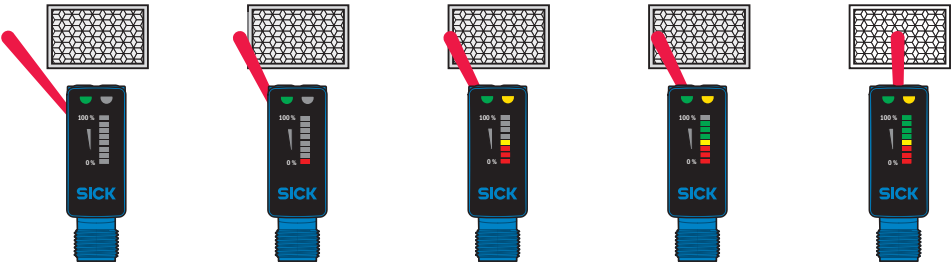
## Sensing range diagram



■ Sensing range      ■ Sensing range max.

- 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)

Functions



Recommended accessories

Other models and accessories → [www.sick.com/H18\\_Sure\\_Sense](http://www.sick.com/H18_Sure_Sense)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                  | Type        | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                    |             |          |
|    | <ul style="list-style-type: none"><li>• <b>Description:</b> Universal mounting bracket for reflectors</li><li>• <b>Dimensions (W x H x L):</b> 85 mm x 90 mm x 35 mm</li><li>• <b>Material:</b> Steel</li><li>• <b>Details:</b> Steel, zinc coated</li><li>• <b>Suitable for:</b> C110A, P250, PL20, PL30A, PL40A, PL80A</li></ul> | BEF-WN-REFX | 2064574  |
| reflectors and optics                                                               |                                                                                                                                                                                                                                                                                                                                    |             |          |
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> Fine triple reflector, screw connection, suitable for laser sensors</li><li>• <b>Dimensions:</b> 52 mm 62 mm</li><li>• <b>Ambient operating temperature:</b> -30 °C ... +65 °C</li></ul>                                                                               | P250F       | 5308843  |



## 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](http://www.sick.com)