



# WL24-2B440

W24

PHOTOELECTRIC SENSORS

**SICK**  
Sensor Intelligence.

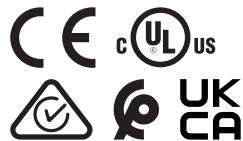


## Ordering information

| Type       | part no. |
|------------|----------|
| WL24-2B440 | 1017879  |

Other models and accessories → [www.sick.com/W24](http://www.sick.com/W24)

Illustration may differ



## 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>          | 27 mm x 87.5 mm x 65 mm                               |
| <b>Housing design (light emission)</b> | Rectangular                                           |
| <b>Sensing range max.</b>              | 0 m ... 22 m <sup>1)</sup>                            |
| <b>Sensing range</b>                   | 0 m ... 15 m <sup>1)</sup>                            |
| <b>Type of light</b>                   | Visible red light                                     |
| <b>Light source</b>                    | LED <sup>2)</sup>                                     |
| <b>Light spot size (distance)</b>      | Ø 250 mm (15 m)                                       |
| <b>Adjustment</b>                      | Potentiometer                                         |

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

<sup>2)</sup> Average service life: 100,000 h at  $T_U = +25^\circ\text{C}$ .

### Mechanics/electronics

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| <b>Supply voltage <math>U_B</math></b> | 10 V DC ... 30 V DC <sup>1)</sup>         |
| <b>Ripple</b>                          | $< 5 \text{ V}_{\text{pp}}$ <sup>2)</sup> |

<sup>1)</sup> Limit values when operated in short-circuit protected network: max. 8 A.

<sup>2)</sup> May not fall below or exceed  $U_V$  tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> Signal transit time with resistive load.

<sup>5)</sup> With light/dark ratio 1:1.

<sup>6)</sup>  $A = V_S$  connections reverse-polarity protected.

<sup>7)</sup> C = interference suppression.

<sup>8)</sup> D = outputs overcurrent and short-circuit protected.

<sup>9)</sup> Reference voltage: 50 V DC.

<sup>10)</sup> Static, low heat output, use in  $+5^\circ\text{C} \dots +15^\circ\text{C}$ .

|                                            |                                                                     |
|--------------------------------------------|---------------------------------------------------------------------|
| <b>Current consumption</b>                 | 50 mA <sup>3)</sup>                                                 |
| <b>Switching output</b>                    | NPN, PNP                                                            |
| <b>Switching mode</b>                      | Light/dark switching                                                |
| <b>Switching mode selector</b>             | Selectable via PNP/NPN selector, selectable via light/dark selector |
| <b>Output current <math>I_{max}</math></b> | $\leq 100$ mA                                                       |
| <b>Response time</b>                       | $\leq 500$ $\mu$ s <sup>4)</sup>                                    |
| <b>Switching frequency</b>                 | 1,000 Hz <sup>5)</sup>                                              |
| <b>Time functions</b>                      | Switch-on delay<br>Off delay                                        |
| <b>Delay time</b>                          | Adjustable via time delay selector switch, 0.5 s ... 10 s           |
| <b>Connection type</b>                     | Male connector M12, 4-pin                                           |
| <b>Circuit protection</b>                  | A <sup>6)</sup><br>C <sup>7)</sup><br>D <sup>8)</sup>               |
| <b>Protection class</b>                    | II <sup>9)</sup>                                                    |
| <b>Weight</b>                              | 330 g                                                               |
| <b>Polarisation filter</b>                 | ✓                                                                   |
| <b>Front screen heating</b>                | ✓ <sup>10)</sup>                                                    |
| <b>Housing material</b>                    | Metal, zinc diecast                                                 |
| <b>Optics material</b>                     | Plastic, PMMA                                                       |
| <b>Enclosure rating</b>                    | IP69K                                                               |
| <b>Test input sender off</b>               | TE to 0 V                                                           |
| <b>Ambient operating temperature</b>       | -40 °C ... +60 °C                                                   |
| <b>Ambient temperature, storage</b>        | -40 °C ... +75 °C                                                   |
| <b>UL File No.</b>                         | NRKH.E181493 & NRKH7.E181493                                        |

1) Limit values when operated in short-circuit protected network: max. 8 A.

2) May not fall below or exceed U<sub>y</sub> tolerances.

3) Without load.

4) Signal transit time with resistive load.

5) With light/dark ratio 1:1.

6) A = V<sub>S</sub> connections reverse-polarity protected.

7) C = interference suppression.

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

9) Reference voltage: 50 V DC.

10) Static, low heat output, use in +5° C ... +15° C.

### Safety-related parameters

|                                     |           |
|-------------------------------------|-----------|
| <b>MTTF<sub>D</sub></b>             | 588 years |
| <b>DC<sub>avg</sub></b>             | 0 %       |
| <b>T<sub>M</sub> (mission time)</b> | 20 years  |

### Certificates

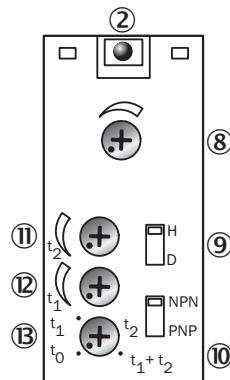
|                                       |   |
|---------------------------------------|---|
| <b>EU declaration of conformity</b>   | ✓ |
| <b>UK declaration of conformity</b>   | ✓ |
| <b>ACMA declaration of conformity</b> | ✓ |

|                                                          |   |
|----------------------------------------------------------|---|
| <b>Moroccan declaration of conformity</b>                | ✓ |
| <b>China-RoHS</b>                                        | ✓ |
| <b>cULus certificate</b>                                 | ✓ |
| <b>Photobiological safety (DIN EN 62471) 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 |

### Adjustments WT24-2, WL24-2, WS/WE24-2, DC, with time functions

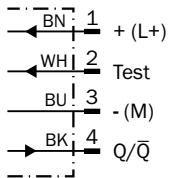


- ② LED signal strength indicator
- ③ sensitivity control
- ④ Light/dark selector
- ⑤ NPN/PNP changeover switch
- ⑪ time control  $t_2$ = OFF delay
- ⑫ time control  $t_1$ = ON delay
- ⑬ time delay selector switch

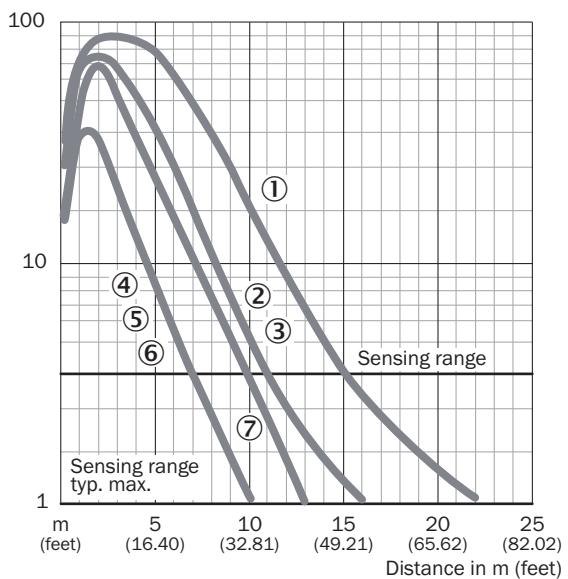
## Connection type



## Connection diagram Cd-117

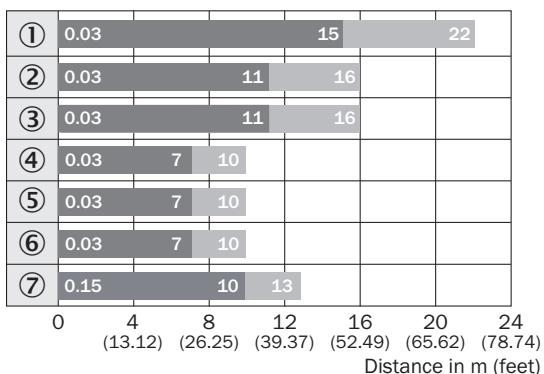


## Characteristic curve



- ① Reflector PL80A
- ② Reflector PL50A
- ③ Reflector PL40A
- ④ Reflector PL30A
- ⑤ Reflector PL20A
- ⑥ Reflective tape Diamond Grade
- ⑦ Reflector C110A

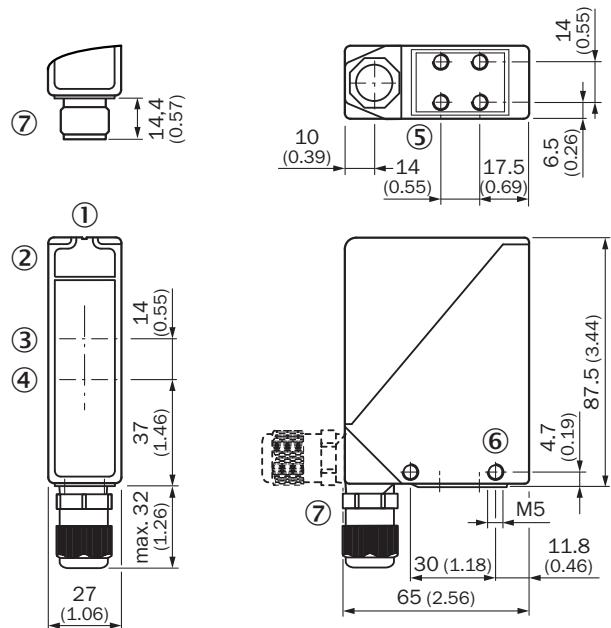
Sensing range diagram



■ Sensing range      ■ Sensing range max.

- ① Reflector PL80A
- ② Reflector PL50A
- ③ Reflector PL40A
- ④ Reflector PL30A
- ⑤ Reflector PL20A
- ⑥ Reflective tape Diamond Grade
- ⑦ Reflector C110A

Dimensional drawing WL24-2



Dimensions in mm (inch)

- ① Alignment sight
- ② LED signal strength indicator
- ③ Center of optical axis, sender
- ④ Center of optical axis, receiver
- ⑤ M5 threaded mounting hole, 6 mm deep
- ⑥ M5 threaded mounting hole, through-hole
- ⑦ M16 screw fixing and plug rotatable by 90°

## Recommended accessories

Other models and accessories → [www.sick.com/W24](http://www.sick.com/W24)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                | Type               | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |          |
|    | <ul style="list-style-type: none"><li><b>Description:</b> Mounting bracket, large</li><li><b>Material:</b> Stainless steel</li><li><b>Details:</b> Stainless steel</li><li><b>Items supplied:</b> Without mounting hardware for the sensor</li><li><b>Suitable for:</b> W24-2</li></ul>                                                                                                                          | BEF-WG-W24         | 4026324  |
|    | <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> Rectangular, screw connection</li><li><b>Dimensions:</b> 84 mm 84 mm</li><li><b>Ambient operating temperature:</b> -30 °C ... +65 °C</li></ul>                                                                                                                                                                                                         | PL80A              | 1003865  |
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |          |
|   | <ul style="list-style-type: none"><li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li><li><b>Connection type head B:</b> Flying leads</li><li><b>Signal type:</b> Sensor/actuator cable</li><li><b>Cable:</b> 5 m, 4-wire, PVC</li><li><b>Description:</b> Sensor/actuator cable, unshielded</li><li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li></ul> | YF2A14-050VB3XLEAX | 2096235  |
|  | <ul style="list-style-type: none"><li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, A-coded</li><li><b>Description:</b> Unshielded</li><li><b>Connection systems:</b> Screw-type terminals</li><li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li></ul>                                                                                                                        | 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](http://www.sick.com)