



## Color sensors CS8, CS8-4

CS84-P1112



**Model Name** > CS84-P1112  
**Part No.** > 1028226



#### At a glance

- One (CS8-1) or four (CS8-4) colors can be saved
- 12.5 mm or 60 mm sensing distance
- Fast response time up to 85 µs
- High resolution color
- Bar graph display shows the correlation of the colors
- Extremely precise light spot and high resolution
- Metal housing with two light exits (interchangeable)

#### Your benefits

- Identify and store up to four colors. No need to reprogram the sensor for changeovers, reducing downtime.
- High resolution colors can be matched exactly for better process reliability
- Maintains the extreme precision of the light spot, enabling a consistent object detection
- A bar graph display provides information about the color quality and detection reliability, ensuring simple process monitoring
- Broad spectrum of color tolerances enables more flexible use
- Fast response times at high speeds for reliable detection
- Detection reliability is not affected by varying temperatures



#### Features

|                                  |                         |
|----------------------------------|-------------------------|
| Dimensions (L x W x H):          | 53 mm x 30.4 mm x 80 mm |
| Sensing distance <sup>1)</sup> : | 12.5 mm                 |
| Sensing distance tolerance:      | ± 3 mm                  |
| Light source <sup>2), 3)</sup> : | LED red, green, blue    |
| Light spot size:                 | 2 mm x 4 mm             |
| Light spot direction:            | Vertical                |
| Adjustment:                      | Static 1-point teach-in |

<sup>1)</sup> From front edge of lens    <sup>2)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C    <sup>3)</sup> Wave length: 470 nm, 525 nm, 640 nm

#### Mechanics/electronics

|                                               |                  |
|-----------------------------------------------|------------------|
| Supply voltage V <sub>s</sub> <sup>1)</sup> : | DC 10 V ... 30 V |
| Ripple <sup>2)</sup> :                        | < 5 Vpp          |
| Power consumption <sup>3)</sup> :             | < 120 mA         |

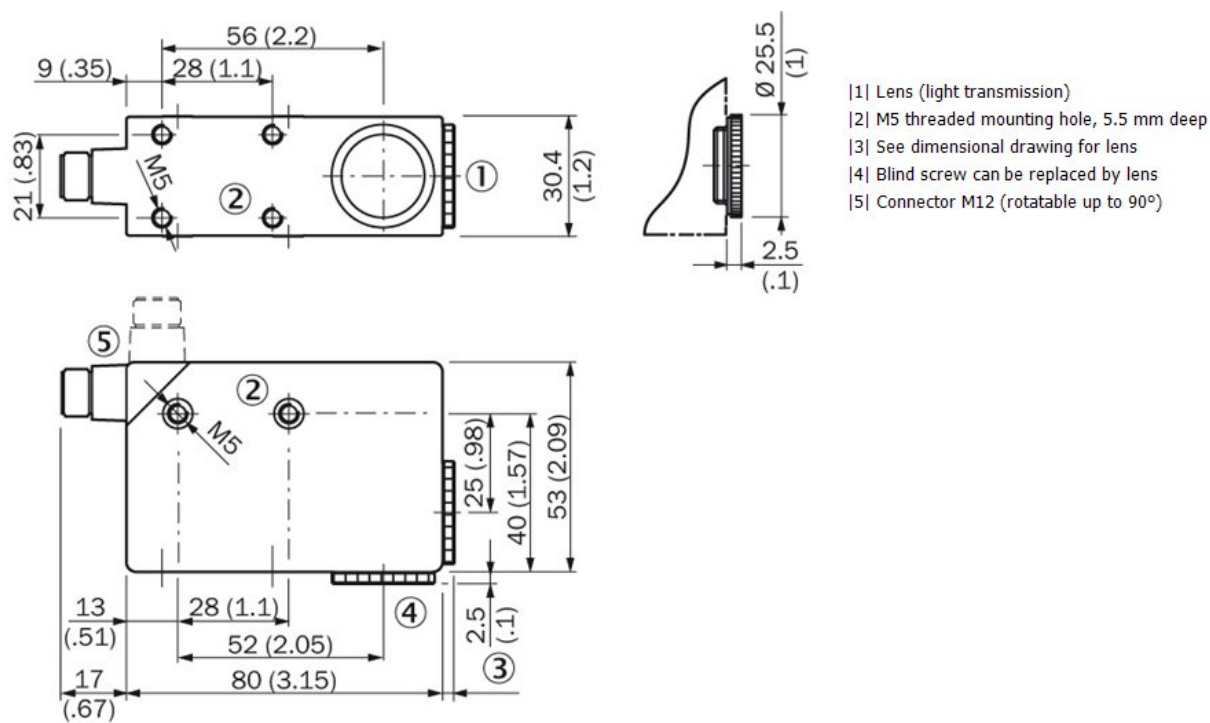
|                                                   |                                                                                                           |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Switching frequency <sup>4)</sup> :               | Adjustable, 0.5 kHz<br>1 kHz<br>3.5 kHz                                                                   |
| Response time <sup>5)</sup> :                     | 1,000 µs<br>500 µs<br>145 µs                                                                              |
| Output type:                                      | PNP: HIGH = VS- ≤ 2 V / LOW approx. 0 V                                                                   |
| Switching mode:                                   | PNP                                                                                                       |
| Output (channel):                                 | 4 colors                                                                                                  |
| Output current I <sub>max</sub> . <sup>6)</sup> : | < 100 mA                                                                                                  |
| Input, teach-in (ET):                             | PNP:., Run: U < 2 V, Teach: U = 10 V ... < U <sub>V</sub>                                                 |
| Input, blanking input (AT) <sup>7)</sup> :        | Blanked: U > 10 V ... < U <sub>v</sub> , Free-running: U < 2 V, PNP:                                      |
| Retention time (ET):                              | 25 ms, non-volatile memory                                                                                |
| Time delay:                                       | Deactivation delay 20 ms, shiftable                                                                       |
| Connection type:                                  | Connector M12, 8-pin                                                                                      |
| Protection class <sup>8)</sup> :                  | II                                                                                                        |
| Circuit protection:                               | VS connections reverse-polarity protected<br>Output Q short-circuit protected<br>Interference suppression |
| Enclosure rating:                                 | IP 67                                                                                                     |
| Weight:                                           | Ca. 400 g                                                                                                 |
| Housing material:                                 | Zinc diecast                                                                                              |

<sup>1)</sup> Limit values: operation in short-circuit protected network max. 8 A   
 <sup>2)</sup> May not exceed or fall short of V<sub>S</sub> tolerances   
 <sup>3)</sup> Without load   
 <sup>4)</sup> With light/dark ratio 1:1   
 <sup>5)</sup> Signal transit time with resistive load   
 <sup>6)</sup> Consumption count Q1 ... Q4   
 <sup>7)</sup> AT > 200 µs   
 <sup>8)</sup> Reference voltage DC 32 V

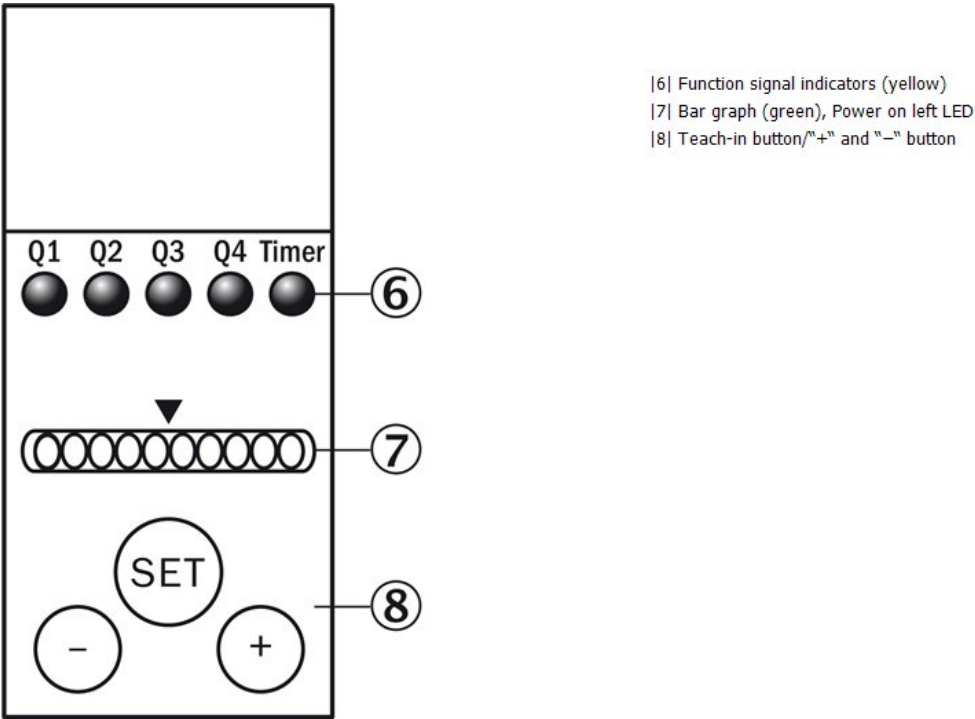
## Ambient data

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Ambient temperature: | Operation: -10 ... 55 °C, Storage: -20 ... 75 °C |
| Shock load:          | According to IEC 60068                           |
| UL File-No.:         | UL No. NRKH.E181493 & cUL No. NRKH7.E181493      |

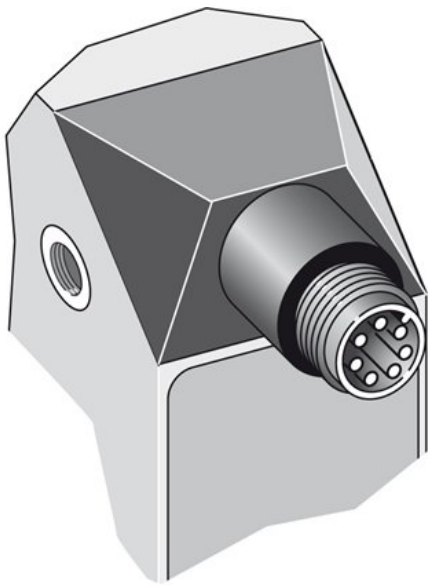
Dimensional drawing



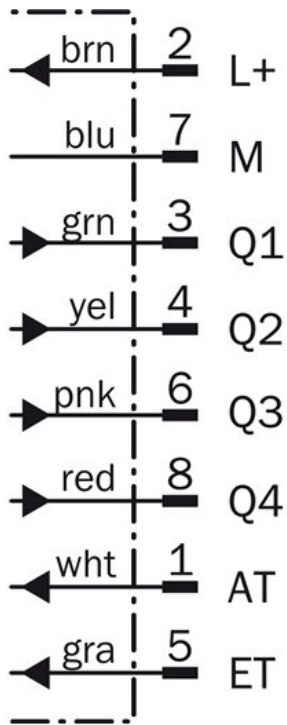
Adjustments



Connection type

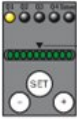


Connection diagram



## Display of the color correspondence

**1. Full correspondence**



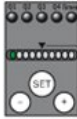
Color detected  
= **Q active**.

**2. Correspondence**



Color just detected  
= **Q active**.

**3. No correspondence**



Color not detected  
= **Q inactive**.

**Special settings**

"Evaluation mode," "Tolerance change during operation," "Show quality," "Time stage," and "Output logic" can be set via a special menu (cf. appropriate operating instructions for the device).

○ and ○  
> 1 s = enter/exit

○ or ○  
< 1 s = navigate

SET  
> 1 s = select/confirm

## Setting the switching threshold

**1. Trigger teach-in**



Position object in light field.  
Press SET button > 1 s.

**2. Select color tolerance**



If requested adapt tolerance with "+" button (more coarse) or "-" button (more precise).  
Press SET button > 1 s.

**3. Allocate channel to color**



Allocate channel for color with "+" button (Q1 to Q4) or "-" button (Q4 to Q1).  
Press SET button > 1 s.

**4. Confirm teach-in**



Press SET button > 1 s.  
Color correspondence is visualized via bar graph display.

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