



Color sensors  
CS8, CS8-1

CS81-P1112



**Model Name** > CS81-P1112  
**Part No.** > 1028224



#### 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  $\mu$ s
- 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 (W x H x D):	30.4 mm x 80 mm x 53 mm
Sensing distance <sup>1)</sup> :	12.5 mm
Sensing distance tolerance:	$\pm$ 3 mm
Light source <sup>2)</sup> :	LED
Type of light:	Visible blue light, Visible green light, Visible red light
Light spot size:	2 mm x 4 mm
Light spot direction:	Vertical
Housing design (light emission):	Rectangular
Wave length:	470 nm, 525 nm, 640 nm
Teach-in mode:	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

#### Mechanics/electronics

Ripple <sup>1)</sup>: < 5 Vpp

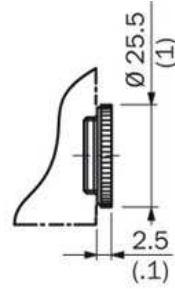
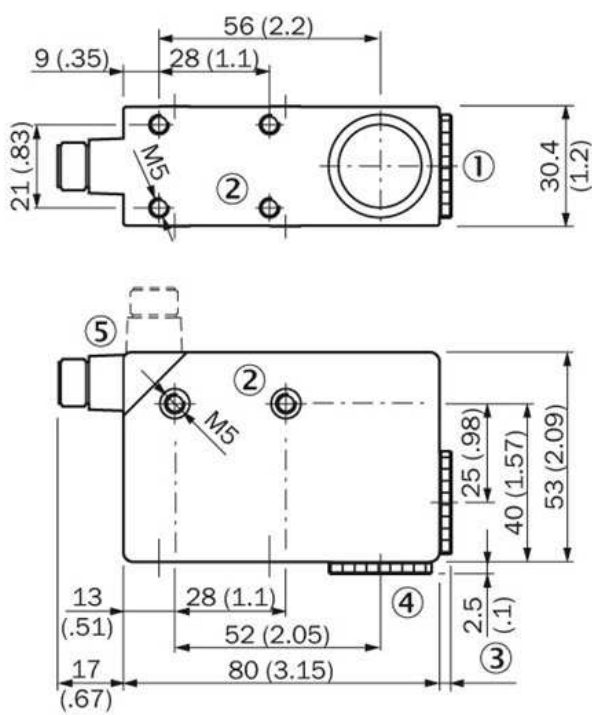
Power consumption <sup>2)</sup> :	< 120 mA
Switching frequency <sup>3)</sup> :	Adjustable, 1 kHz, 3 kHz, 6 kHz
Response time <sup>4)</sup> :	500 $\mu$ s 160 $\mu$ s 85 $\mu$ s
Output type:	PNP: HIGH = VS- $\leq$ 2 V / LOW approx. 0 V
Switching mode:	PNP
Output (channel):	1 color
Output current I <sub>max</sub> <sup>5)</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>6)</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, 5-pin
Protection class <sup>7)</sup> :	II
Circuit protection:	VS connections reverse-polarity protected Output Q short-circuit protected Interference suppression
Enclosure rating:	IP 67
Weight:	400 g
Housing material:	Metal, Zinc diecast
Supply voltage:	10 V DC ... 30 V DC <sup>8)</sup>
Fieldbus interface:	-

<sup>1)</sup> May not exceed or fall short of V<sub>S</sub> tolerances <sup>2)</sup> Without load <sup>3)</sup> With light/dark ratio 1:1 <sup>4)</sup> Signal transit time with resistive load <sup>5)</sup> Consumption count Q1/Q2 <sup>6)</sup> AT > 200  $\mu$ s <sup>7)</sup> Reference voltage DC 32 V <sup>8)</sup> Limit values; operation in short-circuit protected network max. 8 A

#### Ambient data

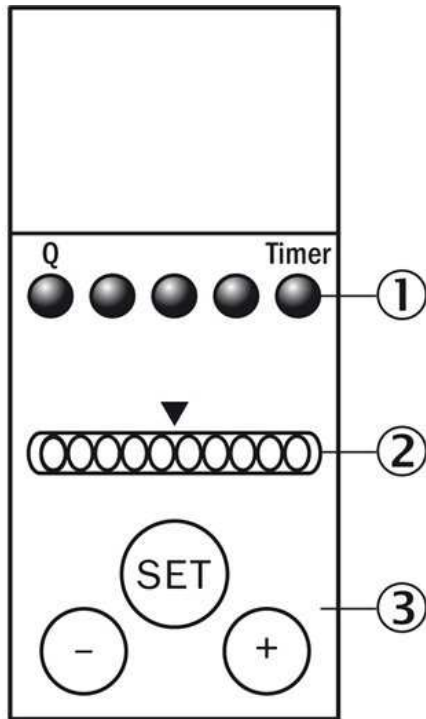
Shock load:	According to IEC 60068
Ambient operating temperature:	-10 °C ... +55 °C
Ambient storage temperature:	-20 °C ... +75 °C
UL File No.:	NRKH.E181493 & NRKH7.E181493

## Dimensional drawing



- [1] Lens (light transmission)
- [2] M5 threaded mounting hole, 5.5 mm deep
- [3] See dimensional drawing for lens
- [4] Blind screw can be replaced by lens
- [5] Connector M12 (rotatable up to 90°)

## Adjustments



- [1] Function signal indicators (yellow)
- [2] Bar graph (green), Power on left LED
- [3] Teach-in button, "+" and "-" button

## Connection type and diagram

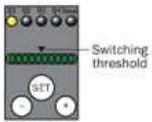
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Image Unavailable  
f:\Saqqara\im0056758.jpg

## Display of the color correspondence

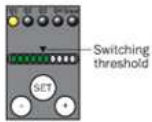
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### 1. Full correspondence



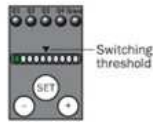
Color detected  
= Q active.

### 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 ○

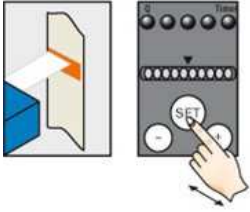
< 1 s = navigate

○ SET

> 1 s = select/confirm

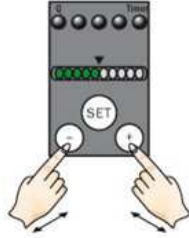
## Setting the switching threshold

### 1. Trigger teach-in



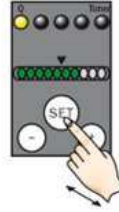
Position object in light field.  
Press SET button > 1 s.

### 2. Select color tolerance



If necessary adapt tolerance with  
"+" button (more coarse) or  
"-" button (more precise).

### 3. Confirm teach-in



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

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