



Color sensors  
CS8, CS8-4

CS84-N1112



**Model Name** > CS84-N1112  
**Part No.** > 1028230



#### 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 (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:	$\pm$ 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  $T_A = +25^\circ\text{C}$     <sup>3)</sup> Wave length: 470 nm, 525 nm, 640 nm

#### Mechanics/electronics

Supply voltage $V_s$ <sup>1)</sup> :	DC 10 V ... 30 V
Ripple <sup>2)</sup> :	< 5 Vpp
Power consumption <sup>3)</sup> :	< 120 mA

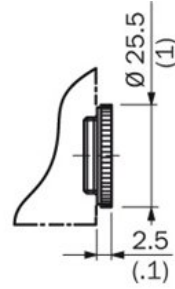
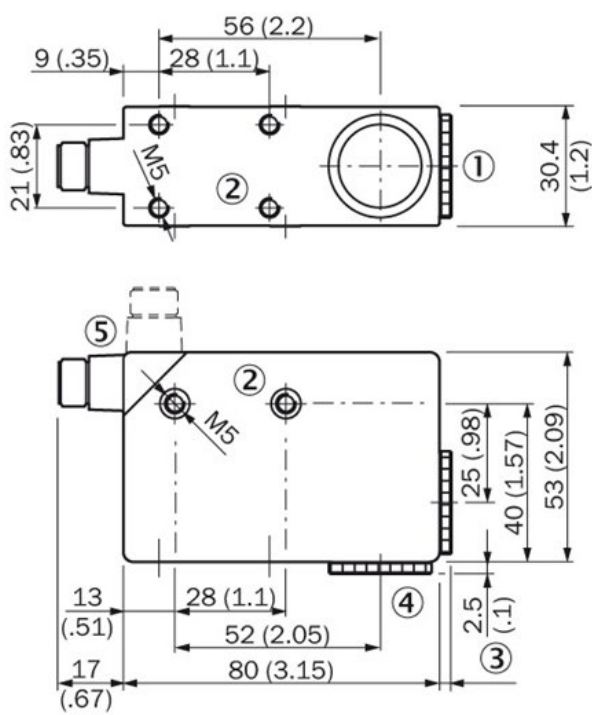
Switching frequency <sup>4)</sup> :	Adjustable, 0.5 kHz 1 kHz 3.5 kHz
Response time <sup>5)</sup> :	1,000 µs 500 µs 145 µs
Output type:	NPN: HIGH = approx. VS / LOW ≤ 2 V
Switching mode:	NPN
Output (channel):	4 colors
Output current I <sub>max</sub> . <sup>6)</sup> :	< 100 mA
Input, teach-in (ET):	NPN:, Run: U = 10 V ... < U <sub>V</sub> , Teach: U < 2 V
Input, blanking input (AT) <sup>7)</sup> :	Blanked: U < 2 V, Free-running: U > 10 V ... < U <sub>v</sub> , NPN:
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 Output Q short-circuit protected 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

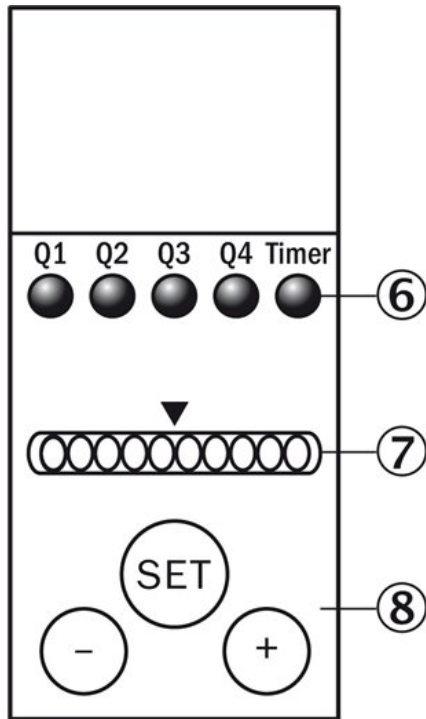
Ambient temperature:	Operation: -10 ... 55 °C, Storage: -20 ... 75 °C
Shock load:	According to IEC 60068
UL File-No.:	UL No. NRKH.E181493 & cUL No. NRKH7.E181493

## Dimensional drawing



- [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°)

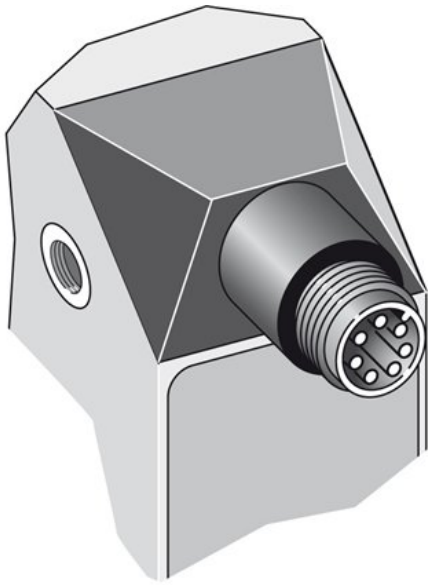
## Adjustments



- [6] Function signal indicators (yellow)
- [7] Bar graph (green), Power on left LED
- [8] Teach-in button/ "+" and "-" button

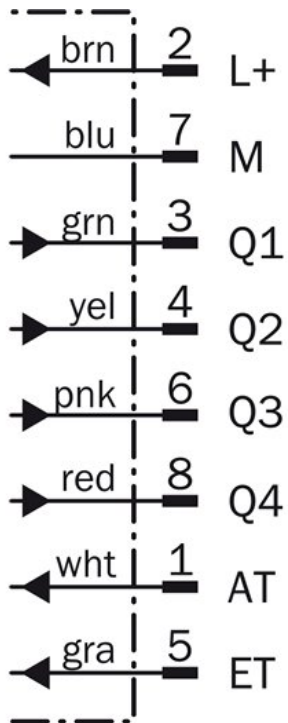
Connection type

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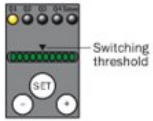
Connection diagram

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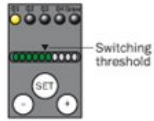
## Display of the color correspondence

### 1. Full correspondence



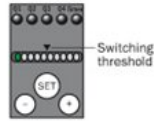
Color detected  
= **Q active**.

### 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).



> 1 s = enter/exit



< 1 s = navigate



> 1 s = select/confirm

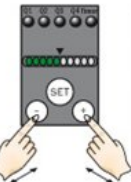
## Setting the switching threshold

### 1. Trigger teach-in



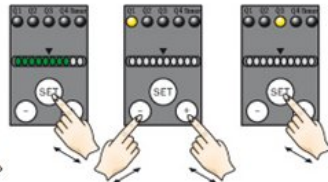
Position object in light field.  
Press SET button > 1 s.

### 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.

**Australia**

Phone +61 3 9457 0600  
1800 334 802 – tollfree  
E-Mail sales@sick.com.au

**Belgium/Luxembourg**

Phone +32 (0)2 466 55 66  
E-Mail info@sick.be

**Brasil**

Phone +55 11 3215-4900  
E-Mail sac@sick.com.br

**Canada**

Phone +1 905 771 14 44  
E-Mail information@sick.com

**Ceská Republika**

Phone +420 2 57 91 18 50  
E-Mail sick@sick.cz

**China**

Phone +86 4000 121 000  
E-Mail info.china@sick.net.cn  
Phone +852-2153 6300  
E-Mail ghk@sick.com.hk

**Danmark**

Phone +45 45 82 64 00  
E-Mail sick@sick.dk

**Deutschland**

Phone +49 211 5301-301  
E-Mail kundenservice@sick.de

**España**

Phone +34 93 480 31 00  
E-Mail info@sick.es

**France**

Phone +33 1 64 62 35 00  
E-Mail info@sick.fr

**Great Britain**

Phone +44 (0)1727 831121  
E-Mail info@sick.co.uk

**India**

Phone +91-22-4033 8333  
E-Mail info@sick-india.com

**Israel**

Phone +972-4-6801000  
E-Mail info@sick-sensors.com

**Italia**

Phone +39 02 27 43 41  
E-Mail info@sick.it

**Japan**

Phone +81 (0)3 3358 1341  
E-Mail support@sick.jp

**Magyarország**

Phone +36 1 371 2680  
E-Mail office@sick.hu

**Nederlands**

Phone +31 (0)30 229 25 44  
E-Mail info@sick.nl

**Norge**

Phone +47 67 81 50 00  
E-Mail austefjord@sick.no

**Österreich**

Phone +43 (0)22 36 62 28 8-0  
E-Mail office@sick.at

**Polska**

Phone +48 22 837 40 50  
E-Mail info@sick.pl

**România**

Phone +40 356 171 120  
E-Mail office@sick.ro

**Russia**

Phone +7-495-775-05-30  
E-Mail info@sick.ru

**Schweiz**

Phone +41 41 619 29 39  
E-Mail contact@sick.ch

**Singapore**

Phone +65 6744 3732  
E-Mail admin@sicksgp.com.sg

**Slovenija**

Phone +386 (0)1-47 69 990  
E-Mail office@sick.si

**South Africa**

Phone +27 11 472 3733  
E-Mail info@sickautomation.co.za

**South Korea**

Phone +82 2 786 6321/4  
E-Mail info@sickkorea.net

**Suomi**

Phone +358-9-25 15 800  
E-Mail sick@sick.fi

**Sverige**

Phone +46 10 110 10 00  
E-Mail info@sick.se

**Taiwan**

Phone +886-2-2375-6288  
E-Mail sales@sick.com.tw

**Türkiye**

Phone +90 (216) 528 50 00  
E-Mail info@sick.com.tr

**United Arab Emirates**

Phone +971 (0) 4 8865 878  
E-Mail info@sick.ae

**USA/México**

Phone +1(952) 941-6780  
1 800-325-7425 – tollfree  
E-Mail info@sickusa.com

More representatives and agencies  
at [www.sick.com](http://www.sick.com)