



Color sensors
CS8, CS8-1

CS81-P3612



Model Name > CS81-P3612
Part No. > 1028225



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 μ 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 ¹⁾ :	60 mm
Sensing distance tolerance:	\pm 9 mm
Light source ²⁾ :	LED
Type of light:	Visible blue light, Visible green light, Visible red light
Light spot size:	13 mm x 13 mm
Housing design (light emission):	Rectangular
Wave length:	470 nm, 525 nm, 640 nm
Teach-in mode:	Static 1-point teach-in

¹⁾ From front edge of lens ²⁾ Average service life of 100,000 h at $T_A = +25^\circ\text{C}$

Mechanics/electronics

Ripple ¹⁾ :	< 5 Vpp
Power consumption ²⁾ :	< 120 mA

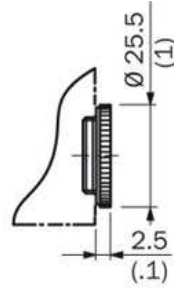
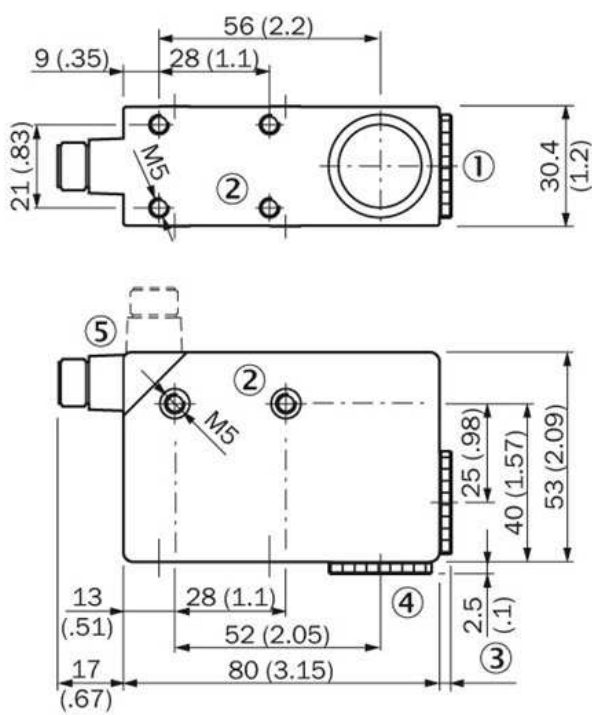
Switching frequency ³⁾ :	Adjustable, 1 kHz, 3 kHz, 6 kHz
Response time ⁴⁾ :	500 μ s 160 μ s 85 μ s
Output type:	PNP: HIGH = VS- \leq 2 V/LOW approx. 0 V
Switching mode:	PNP
Output (channel):	1 color
Output current I _{max.} ⁵⁾ :	< 100 mA
Input, teach-in (ET):	PNP:., Run: U < 2 V, Teach: U = 10 V ... < U _V
Retention time (ET):	25 ms, non-volatile memory
Time delay:	Deactivation delay 20 ms, shiftable
Connection type:	Connector M12, 5-pin
Protection class ⁶⁾ :	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 ⁷⁾
Fieldbus interface:	-

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

Ambient data

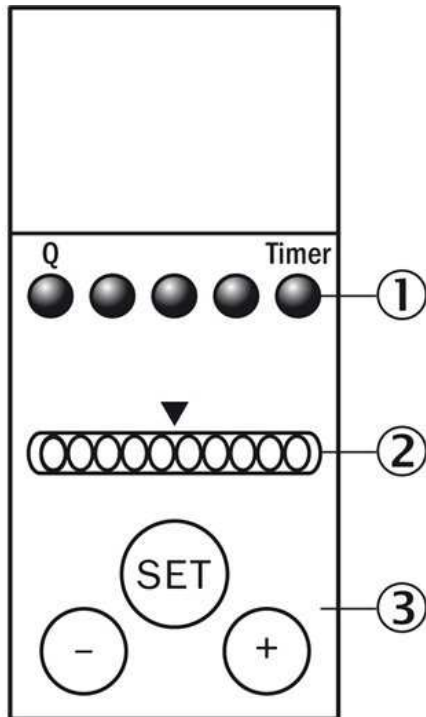
Shock load:	According to IEC 60068
Ambient operating temperature:	-10 °C ... +55 °C
Ambient storage temperature:	-20 °C ... +75 °C
UL File No.:	NRKH.E181493 & NRKH7.E181493

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



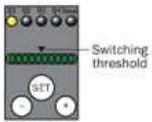
- [1] Function signal indicators (yellow)
- [2] Bar graph (green), Power on left LED
- [3] Teach-in button/"+" and "-" button

Connection type and diagram

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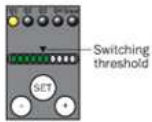
Display of the color correspondence

1. Full correspondence



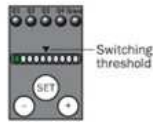
Color detected
= Q active.

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 ○

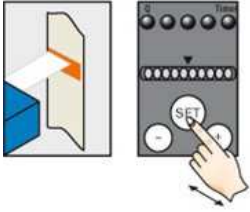
< 1 s = navigate

○ SET

> 1 s = select/confirm

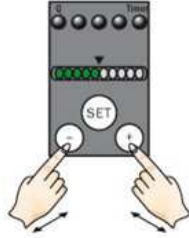
Setting the switching threshold

1. Trigger teach-in



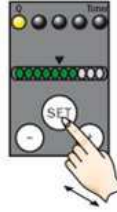
Position object in light field.
Press SET button > 1 s.

2. Select color tolerance



If 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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