CS-R80

Color Sensors/Mark Sensors

- **Identifies the color proportion by analyzing light into three primary colors: red, green, and blue**
- **Helpful for checking LED colors**
- **Resolving power: 0.1%**

■ Type

Detection method	Model	Operation mode	Output mode	Power supply
Fiber type Identifying RGB composition values	**CS-R80**	Mode selection between three color teaching single color teaching	NPN open collector output	12-24 VDC
	CS-R80PN		PNP open collector output	

■ Optional Parts

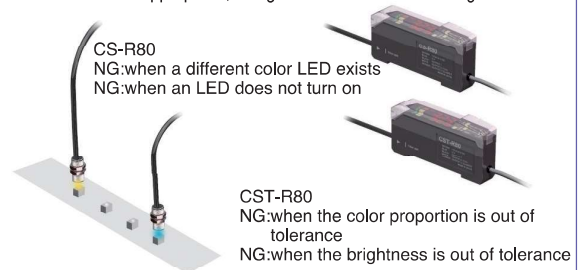| Product name	Type
Dedicated fiber optic cable	**FT105BC-CS**
Light reception adjustment unit	**CS-ND**

■ Applications

- To check illuminating LEDs
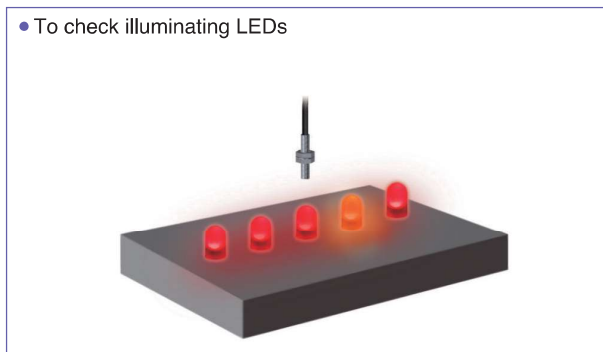
Figures below show examples in which the sensor checks whether a different color LED exists, whether each LED turns on, and whether the light emission qualities of LEDs are appropriate, using CS-R80 and CST-R80 together.

CS-R80
NG:when a different color LED exists
NG:when an LED does not turn on

CST-R80
NG:when the color proportion is out of tolerance
NG:when the brightness is out of tolerance

TAKEX

CS-R80

■ Rating/Performance/Specification

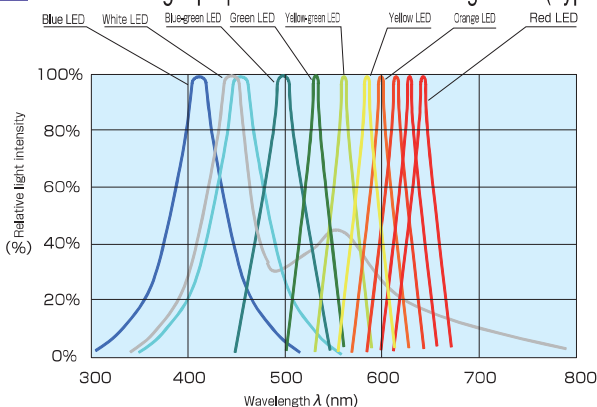| Model	CS-R80	CS-R80PN
Detection method	RGB color composition (RGB light receiving element)	
Resolution	0.1%	
Power supply	12-24V DC ±10% / Ripple 10% or less	
Current consumption	50mA or less	
Teaching standard color	Teaching 1 color (Mode 1) Teaching 3 colors (Mode 3) *1	
Output	1 output (Mode 1) 3 output (Mode 3)	
External input for teaching	No voltage input (contact / no contact)	
Output mode	NPN open collector output, Sink current 50mA(DC30V) or less, residual voltage : 2V	PNP open collector output, Source current 50mA(DC30V) or less, residual voltage : 2V
Operation mode	Conformity ON or OFF selectable	
Time delay	Selectable between On delay, Off delay and timer disabled Delay time : 250ms fixed	
Response time	50ms or less *2	
Indicator	Operation indicator : "OP" LED lights when output is ON Level indicator : "H" LED lights when light intensity is excessive Level indicator : "L" LED lights when light intensity is not enough	
Display	1 orange digit indicator + 3 red digit indicator	
Switches	(+),(-) Push button switch: select Mode/teaching/change setting value/select channel Select switch: select RUN/SELECT/SET	
Circuit protection	Short circuit protection	
Material	Polycarbonate	
Connection	Cable type (outer dimension: dia. 3.7mm) 0.2 mm² 5 cores, 2 m (black)	
Weight	Approx. 60g (Including 2m cable and bracket)	
Accessory	Mounting bracket, operation manual	

*1 Set to Mode 1 in the factory setting.
*2 Detection becomes possible one second after the sensor is powered on. The response time varies, depending on the environment such as light intensity. Optical fiber cable is available separately. Recommended fiber: F T105BC-CS; recommended distance: 5mm.

■ Environmental Specification

Ambient light	1000 lx or less (must be stable)
Ambient temperature	-25 - +55°C (non-freezing)
Ambient humidity	35-85%RH (non-condensing)
Protective structure	IP40
Vibration	10-55 Hz / 1.5 mm double amplitude / 2 hours each in 3 direction
Shock	500 m/s² / 3 times each in 3 directions

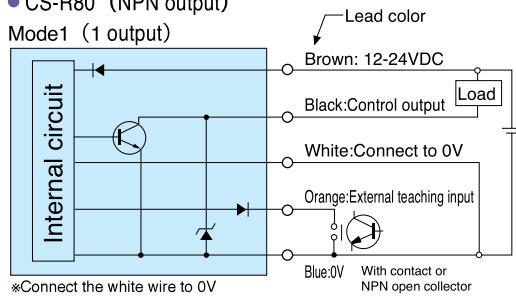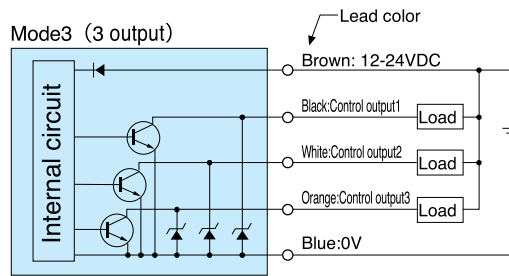## ■ LED wavelength properties which can be distinguished (Typical)

CS-R80

■ Input/Output Circuit and Connection
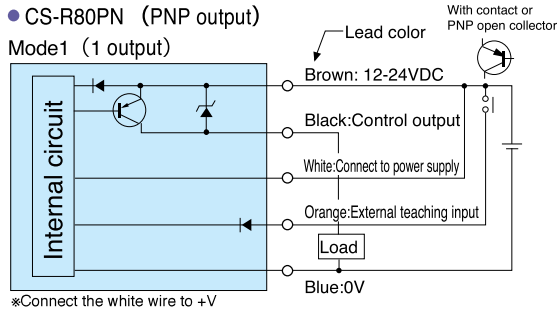
● CS-R80 （NPN output）

Mode1 （1 output）

Lead color

Internal circuit

Brown: 12-24VDC

Black:Control output — Load

White:Connect to 0V

Orange:External teaching input

Blue:0V With contact or NPN open collector

※Connect the white wire to 0V

Mode3 （3 output）

Lead color

Internal circuit

Brown: 12-24VDC

Black:Control output1 — Load

White:Control output2 — Load

Orange:Control output3 — Load

Blue:0V

● CS-R80PN （PNP output）

With contact or PNP open collector

Mode1 （1 output）

Lead color

Internal circuit

Brown: 12-24VDC

Black:Control output

White:Connect to power supply

Orange:External teaching input — Load

Blue:0V

※Connect the white wire to +V

Mode3 （3 output）

Lead color

Internal circuit

Brown: 12-24VDC

Black:Control output1 — Load

White:Control output2 — Load

Orange:Control output3 — Load

Blue:0V

■ Panel and Indicators

Operation indicator   Digital display   +/- button   Select switch

Excess light intensity indicator

Low light intensity indicator

RUN switch

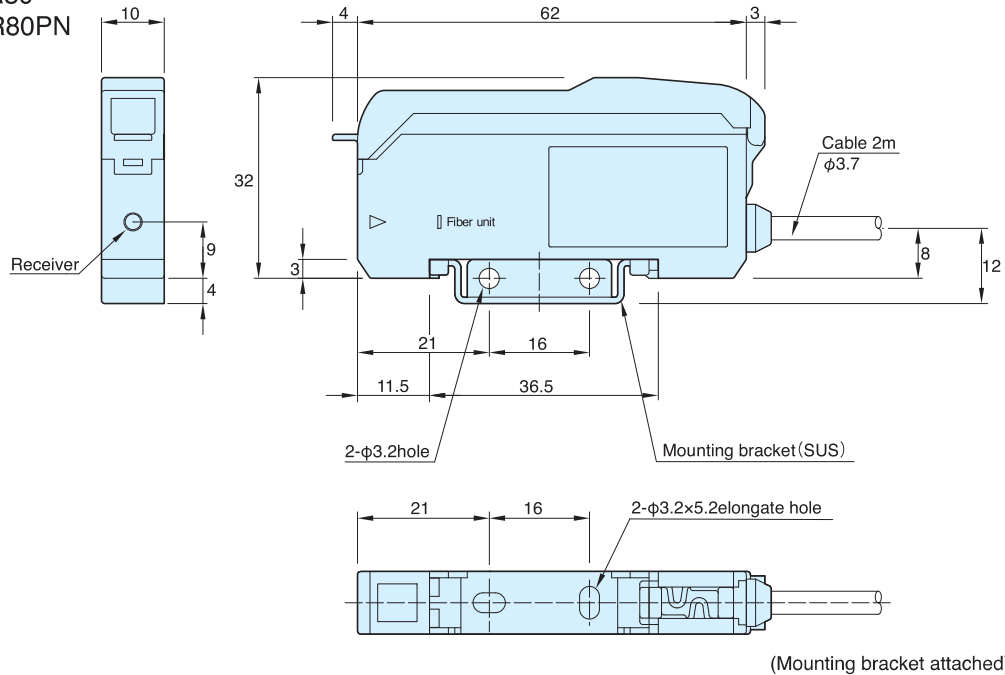### About the panel
● Indicators
Operation indicator (OP): Illuminates when the output is ON.
Excess light intensity indicator: Illuminates when the light intensity is full.
Low light intensity indicator: Illuminates when the light intensity insufficient.
* If the excess (H) or low (L) light intensity indicator Illuminates, the light intensity is outside the measurement range. Adjust the light intensity, distance, etc. so that the sensor can measure the light intensity.
● Digital display: Shows various statuses with one orange digit and three red digits.
At RUN mode   One orange digit: Shows the selected ch. Three red digits: Show values of the difference from standard colors
● RUN switch: Selects between RUN and setting modes.
● SELECT switch: Selects between SELECT and SET modes.
● +/- button: Changes tolerances and setting items.
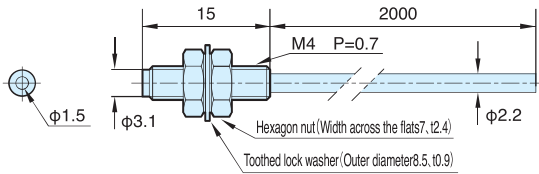
TAKEX

CS-R80

■ Dimensions (in mm)

Model CS-R80
CS-R80PN

CAD

10

4 — 62 — 3

32

9
4

Receiver

Fiber unit

Cable 2m
φ3.7

8

12

3

21   16

11.5   36.5

2-φ3.2hole

Mounting bracket（SUS）

21   16

2-φ3.2×5.2elongate hole

(Mounting bracket attached)

Model FT105BC-CS

CAD

15   2000

M4   P=0.7

φ1.5

φ3.1

φ2.2

Hexagon nut（Width across the flats7, t2.4）

Toothed lock washer（Outer diameter8.5, t0.9）

Type	FT105BC-CS		
Length (m)	2		
Ambient temperature	-30〜+70°C		
Material	Sheath	Polyethylene	
	Wire	Plastic	
Diameter	Cable	2.2	
	Wire	1.5	
Bending radius	45R		

Model CS-ND(Separately available)

CAD

● Accessories
Hexagon wrench: 1

18.5

φ10

M3 locking screw
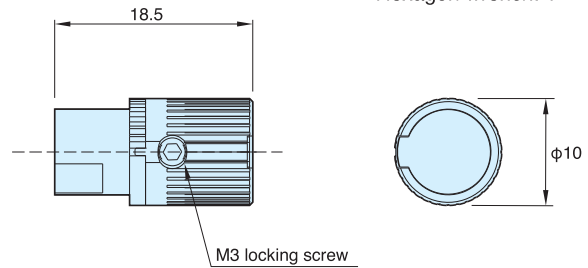
Fiber optic cable attached

<<Notice>>
● This product is a color sensor to identify colors with reflection from a luminous body such as an LED or an external light source. Therefore, it may misidentify a color if the ambient light intensity is changed. The ambient light intensity when teaching is set at the standard luminous intensity. Please use this product in the environment with its ambient luminous intensity ± 10 %.
● If light intensity of the detected luminous body is not sufficient, the body may not be detected. Please do not implement teaching when light is not emitted on the detecting fiber.
● Do not use an ordinary fluorescent lamp because it flickers rapidly.

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