HQ Color Mark Sensor
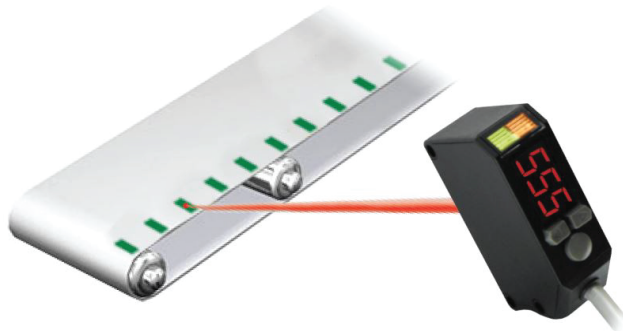
FX-CM

SALIENT FEATURES

◆ 18mm ±2mm
◆ Pushbutton Teach
◆ RGB LED light source
◆ 8 Remote Memory Setting
◆ Shock Resistant casing - 50G

CE

IP67　RGB LED　18mm

Model Number Legend

FX - CM - ☐☐ - ☐
　1　　2　　3 4　 5

1. Series

FX

2. Type

CM:　　Color Mark

3. Sensing Distance

18:　　18 mm

4. Output

N:　　NPN

P:　　PNP

5. Connection

2M:　　2m Cable

M12J3:　M12 Junction Connector with 0.3m extension

#. Accessories included

Mounting Bracket:　1 set

Screws:　　　　　　1 set

Example:

FX-CM-18P-2M

FX Series - Color Mark Sensor - 18mm sensing distance, PNP - 2 meter cable

NOTE:　Contact us for models not shown in catalogue.
　　　　　Connector cables are sold separately; look in CCG series catalogue for the same (www.inno.sg/ccg).

Proximity Sensors

Photoelectric Sensors

Measurement Sensors

Vision & Safety Sensors

Control

Weighing

Automation

Components

◆ Automatic Choice of RGB Light Source !

RGB LED light sources are provided in the FX-CM sensors, the internal microcontroller selects the best light source among the RGB LEDs according to the target object.

The sensor continually monitors the contrast ratio between the background and the object to determine the best light source.

Colors that used to be difficult to detect are now done with ease!

AUTO SELECT!
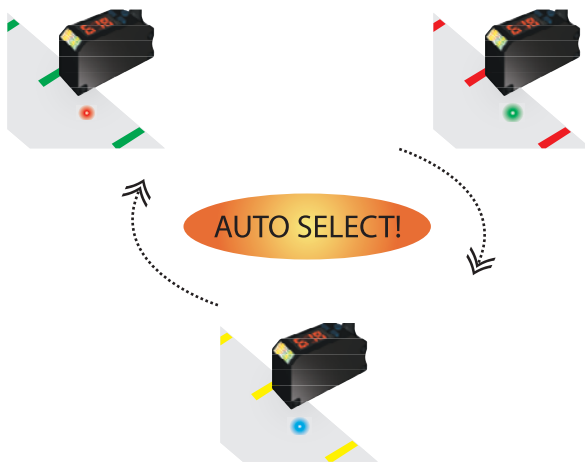
◆ Timer Output !

The FX-CM sensors feature timer output mode.
Off Delay/ On Delay/ One Shot Delay modes with increments of 10 msec is available with a ceiling of 10 sec.

◆ Color Mode

In color mode the FX-CM sensors use three LEDs (RGB).
The sensor computes the ratio of the the three to determine the color.
This ensures accuracy in detection of fast moving objects.

R G B
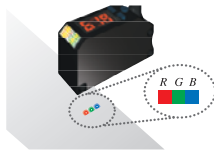
◆ Selectable Response Time

The FX-CM sensors features response time selection via the built in buttons.
Mark Mode: 0.25/ 0.5/ 1.2 m sec
Color Mode: 0.8/ 1.6/ 4 m sec

◆ Digital Display & Auto Teach

The FX-CM sensors have a built in digital display and threshold buttons for manual teach.

Auto teach function is also made available with One touch and Two touch teach functions.

◆ 8 Remote Access Memory Settings!

The FX-CM sensors have a built in eight step memory which can store eight different color settings.

This memory settings can be accessed remotely from a PLC or a Selector Switch by using the 3 additional wires coming out of the sensor (Green, Rose, Yellow).
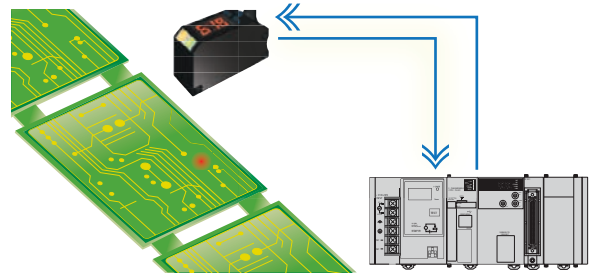
Memory	Wire Color		
	Green	Rose	Yellow
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

◆ Key Lock

The keys can be locked to prevent unauthorised/ unintended intrusions.
Push Up and Down keys simultaneously for 3 secs to activate lock; same for unlock.

Models		FX-CM-18P-2M	FX-CM-18N-2M	FX-CM-18P-M12J3	FX-CM-18N-M12J3
Sensing Distance		18mm ±2mm			
Spot Size		1 x 6mm at 18mm			
Hysteresis*t		H1 - 8; H2 - 6; L - 4			
Response Time	Mark Mode	H1 - 250 μs; H2 - 500 μ Sec; L - 1200 μs (Selectable)			
	Color Mode	H1 - 800 μs; H2 - 1600 μ Sec; L - 4000 μs (Selectable)			
Light Source	Mark Mode	1 Color (Selectable by Teaching)			
	Color Mode	3 Color - RGB LED (Automatic Selection)			
Light Wavelength		Red: 634 nm; Green: 517 nm; Blue: 469 nm			
Sensitivity Adjustment		Pushbutton Teach with fine adjust buttons			
Operation Mode		Light ON / Dark ON selectable			
Supply Voltage		10 - 30 VDC (Ripple Max 10%)			
Current Consumption		max. 40 mA			
Connection		2 meter Cable		M12 Junction connector with 0.3 meter cable	
Control Output		PNP	NPN	PNP	NPN
Control Output Rating		Load Voltage: max. 30 VDC; Load Current: max 100mA; Residual Voltage: NPN- max 1 V, PNP- min (-2.5 V)			
Output Timer Function		Off Delay / On Delay / One Shot Delay (10 m sec increments: 0-990 m sec; 1 sec increment: 1-10 sec)			
Teach		Mark Mode: 2 Point Teach/ Auto Teach; Color Mode: 1 Point Teach			
Memory Function		8 Remote Accessable Memory Setpoints			
Operation Indication		Output Indication - Orange; Sensor On - Green			
Digital Indication		3 Digit Seven Segment Red / Green LED			
Insulation Resistance		20 M Ω at 500 VDC			
Shock Resistance		50 G (500 m/ s² - X, Y, Z 3 directions)			
Environmental Illuminance		Sunlight: 10,000 lux. max. ; Incandescent Lamp: 3,000 lux. max.			
Ambient Temperature		-25° ~ 55°C (non- freezing; non- condensing)			
Ambient Humidity		35 ~ 90% RH (non- condensing)			
Protection Class		IP67			
Weight		approx. 75 g			
Material		Housing: Heat-resistant ABS; Front Cover: PMMA or equiv.; Button: TEEE or equiv.			

Note:
Sensing distance is given on the basis of test object. The actual sensing distance may vary based on object's color and ambient illumination.
Abbreviations in Hysterisis & Response Time: H1 - High Response time; H2 - Medium Response time; L - Low Response time.
FX-CM-18◻-M12J3 models require 8-pin M12 connector cables and are to be purchased seperately; refer CCG catalogue for the same (www.inno.sg/ccg).

Proximity Sensors

Photoelectric Sensors

Measurement Sensors

Vision & Safety Sensors
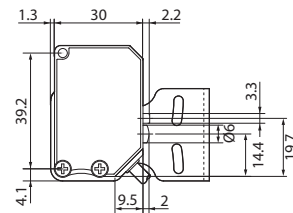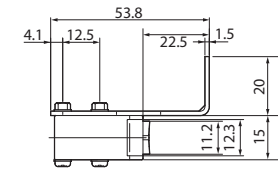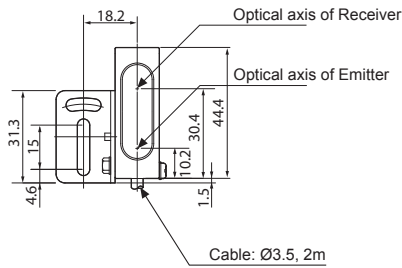
Control

Weighing

Automation

Components

FX-CM

Unit with Clamp in bottom mounting position

- FX-CM-18P-2M
- FX-CM-18N-2M
- FX-CM-18P-M12J3
- FX-CM-18N-M12J3

M3 Screw
Optical axis of Receiver
Optical axis of Emitter
Cable: Ø3.5, 2m
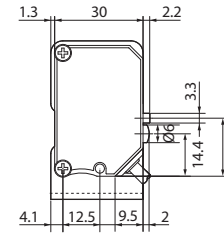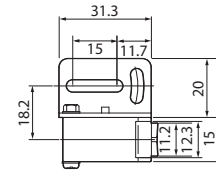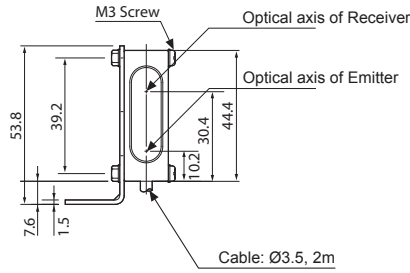
Unit with Clamp in side mounting position

- FX-CM-18P-2M
- FX-CM-18N-2M
- FX-CM-18P-M12J3
- FX-CM-18N-M12J3

Optical axis of Receiver
Optical axis of Emitter
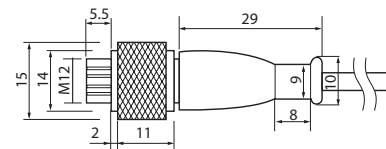Cable: Ø3.5, 2m

Bracket

Ordering Code: FX-CM-B
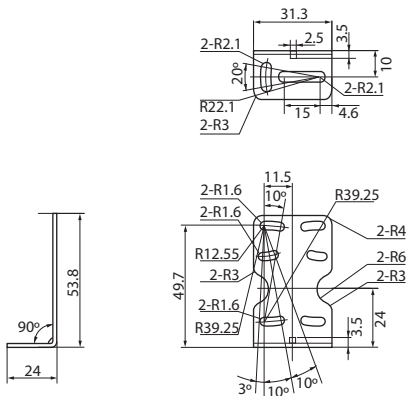
Junction Connector Male

M12, 8 Pin male Connector

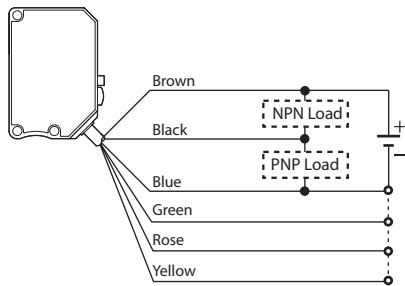- FX-CM-18P-M12J3
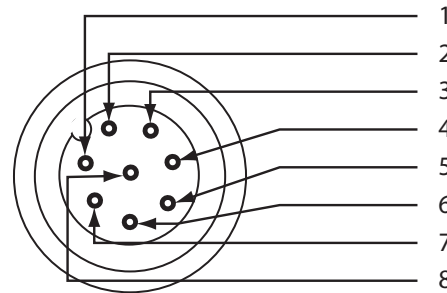- FX-CM-18N-M12J3

All dimensions are in mm

Nomenclature

- Sensor ON
- Output Indication
- Digital Display
- DOWN Button
- UP Button
- TEACH/ ENTER Button

Connection

♦ Cable

Brown
Black — NPN Load
Blue — PNP Load
Green
Rose
Yellow

♦ Junction Connector

1
2
3
4
5
6
7
8
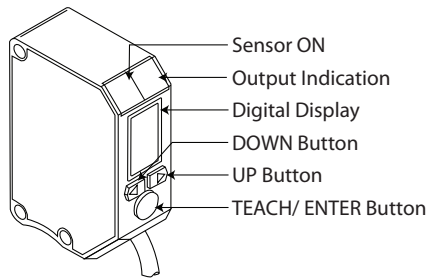
Brown	(1)	: DC 10~30V
Blue	(2)	: 0V
Black	(3)	: Control Output
Green	(4)	: Memory Bank Remote Selector

Rose	(5)	: Memory Bank Remote Selector
Yellow	(6)	: Memory Bank Remote Selector
--	(7)	: No Connection
--	(8)	: No Connection

Control Output Diagram

NPN Type

Main Circuit

Protection Circuits

Brown
Black
Load
max. 100mA
10~30 VDC
Blue
Green*
Rose*
Yellow*

* - Remote Memory Select; Connect to 0V if '1', leave open if '0'

PNP Type

Main Circuit

Protection Circuits

Brown
Black
10~30 VDC
Load
max. 100mA
Blue
Green*
Rose*
Yellow*

* - Remote Memory Select; Connect to 10~30V if '1', leave open if '0'

Proximity Sensors

Photoelectric Sensors

Measurement Sensors

Vision & Safety Sensors

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Components

Proximity Sensors

Photoelectric Sensors

Measurement Sensors

Vision & Safety Sensors

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Weighing

Automation

Components

Temperature Drift Characteristics
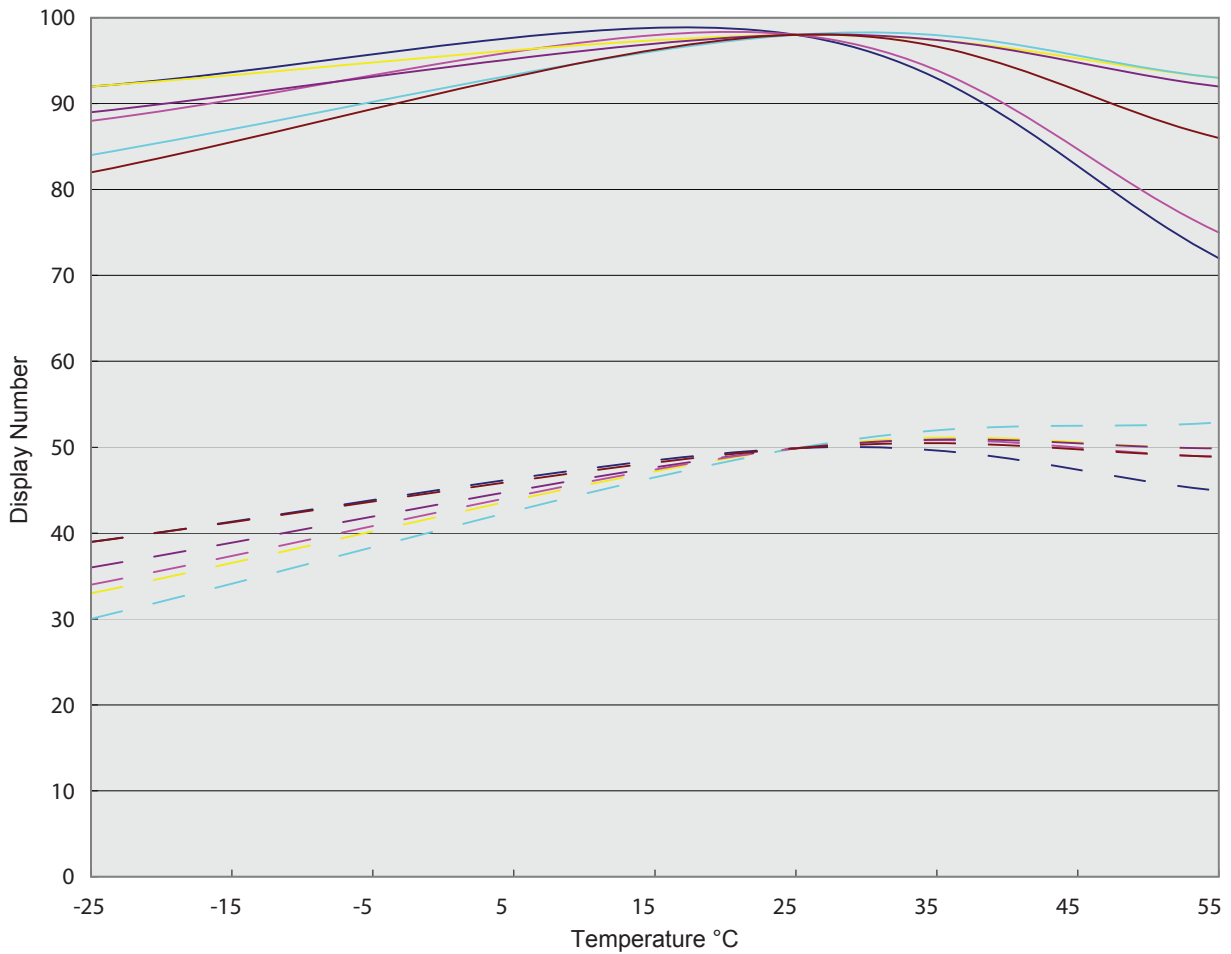
♦ Color Mode Legend

Red Target	(sample1)
Red Target	(sample2)
Green Target	(sample1)
Green Target	(sample2)
Blue Target	(sample1)
Blue Target	(sample2)

♦ Mark Mode Legend

Red LED	(sample1)
Red LED	(sample2)
Green LED	(sample1)
Green LED	(sample2)
Blue LED	(sample1)
Blue LED	(sample2)

Note: This graph represents typical data under standard test conditions and standard sample objects
Sample 1: 16*20mm Opaque matt object.
Sample 2: 16*20mm Opaque glossy object

Mounting and Adjustments

Make sure that the sensing side of the sensor is parallel with the surface of the sensing object. Normally, do not incline the sensor towards the sensing object.
The sensor is to be placed at least 10mm away from any glossy or reflective surface.

Sensing side

Surface of sensing object
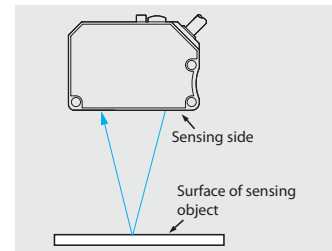
For detection of Glossy Objects, mount the sensor at an angle of 5° to 15°, as shown in the diagrams. This will improve the mark detection capability.
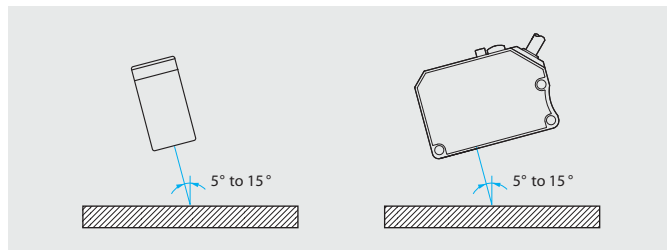
5° to 15°   5° to 15°

Cat. No. FX-CM-712

Exclusively Represented by:

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