

# F18

## M18 CYLINDRICAL PHOTOELECTRIC SENSOR



# INSTRUCTION SHEET

Thank you for selecting INNO for your requirement.

This sheet describes the procedure and precautions required for installing and operating the product.

Kindly read this sheet before operating or installing the product. Store the sheet for future reference.

### CAUTION FOR SAFETY

- ① Please keep this sheet for review before use of unit.
- ① Please observe the following:

**⚠ WARNING**  
Serious injury may occur if instructions are not followed

**⚠ CAUTION**  
Product failure or injury can occur if instructions are not followed

### ⚠ WARNING

- This is not a safety product and is not to be used with machinery that requires use of safety control.
- Do not disassemble or modify this unit. It may lead to electric shock/ fire.

Do not connect DC type sensor to AC power supply.  
**RISK OF EXPLOSION!**



### ⚠ CAUTION

- This unit shall not be used outdoors.
- Do not use this unit in places where there is flammable or explosive gas.
- Please observe the rated specifications in Instruction Sheet.
- Do not use this unit beyond rated power and do not supply AC power at DC power type.
- Please check the polarity of power and wrong wiring.
- Do not use this unit in places where there is vibration or impact.
- Do not use water or oil based detergent for cleaning the unit.
- Do not use excessive force to tighten the unit to the mounting plate and do not hammer the unit.
- Please process it as industrial waste and dispose responsibly.

For more information visit [www.inno.sg](http://www.inno.sg)

### ■ SPECIFICATIONS

\*For details on Customized/ Special Models contact Seller

Sensing Type	Through Beam	Retro-Reflective	Diffuse Reflective		
*Models	NPN - NO	F18-MT-10MNO_	-	F18-MD-300NO_	F18-MD-100NO_
	PNP - NO	F18-MT-10MPO_	-	F18-MD-300PO_	F18-MD-100PO_
	NPN - NO+NC	-	F18-MR-3MND_	-	-
	PNP - NO+NC	-	F18-MR-3MPD_	-	-
Sensing Distance	10 Meters	3 Meters	300mm	100mm	
Light Source	Infrared LED	Red LED	Infrared LED		
Standard Sensing Object	min. Ø15mm opaque object	min. Ø62mm opaque object	100x100mm white matte paper		
Hysteresis	-		20% max.		
Response Time	max. 2ms				
Sensitivity Adjustment	-NA-	Built-in externally adjustable 1 turn pot.			
Operation Mode	Light ON	Dark ON	Light ON		
Supply Voltage	DC Type: 10 - 30 VDC (Ripple Max 10%)				
Current Consumption	max. DC: 46mA		max. DC: 50mA		
Connection	2 meter pre-wired cable or 0.3 meter cable with M12 Junction connector depending on the model				
Output	Type	NO + NC (for Retro Reflective Only) / NPN or PNP			
	Switching Capacity	100mA; overload 150mA			
	Leakage Current	< 0.01mA			
	Voltage Drop	< 1.5VDC			
Operation Indication	Red LED - Operation				
Protection Circuits	Reverse Polarity, Output Short circuit Protection				
Dielectric Strength	1000 VAC, 50/60 Hz for 1 minute between current carry parts and case				
Shock Resistance	20 G - X,Y, Z three directions for 3 times to destruction				
Vibration Resistance	1mm double amplitude for 1 hour each in X, Y, Z directions (10 to 55 Hz)				
Environmental Illuminance	max. Sunlight: 5,000 lux, Lamp: 2,000 lux				
Ambient Temperature	Operation: -20° ~ 50°C; Storage: -30° ~ 70°C (non-freezing; non-condensing)				
Ambient Humidity	Operation: 35 ~ 85% RH; Storage: 35 ~ 90% RH (non-condensing)				
Protection Class	IP66				
Weight	Emitter: 68g, Receiver: 74g	approx. 110g	approx. 77g	approx. 70g	
Material	Housing: Nickel plated Brass; Lens: PMMA or Eqv.; Nuts: Chrome plated MS				
Tightening Torque	20 Nm (max.)				

### ■ MOUNTING AND ADJUSTMENTS

#### • Diffuse Type

Even though the sensor is still available at the max. sensitivity, it is recommended to adjust the sensor sensitivity considering the existence of reflective material in the background.

Set the target at a position to be detected by the beam, then adjust the pot. from the minimum to the maximum to find the optimal level at which the sensor output turns on.

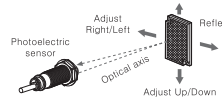


#### • Retro-reflective Type

Set the sensor and reflector opposite to each other and connect to power.

Set the sensor and reflector opposite to each other and connect to power. Check the stable indicator operation range by moving both sensor and reflector up/ down & right/ left and adjust the position in the middle.

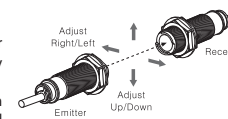
After finishing position adjustment, check for normal operation by placing the sensing target on the optical axis.



#### • Through Beam Type

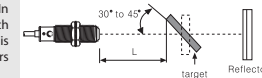
Set the receiver and emitter opposite to each other and supply the power.

Check stable indicator operation range by moving both emitter and receiver in up/ down & right/ left and adjust the position in the middle. After finishing position adjustment, check whether the sensor is operated normally by placing a sensing target on the optical axis.

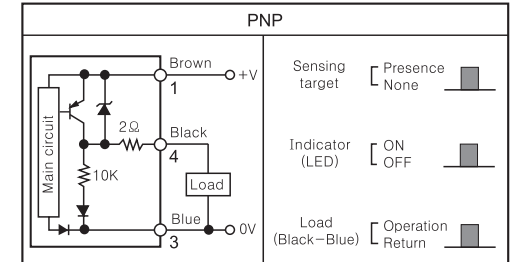
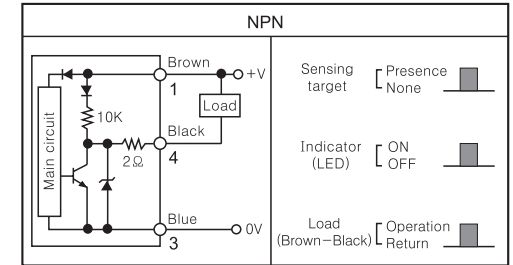


#### NOTE

If the sensing object is translucent or smaller than Ø21mm, the sensor might not detect the target as the light may pass through. In case of using multiple sensors, keep a minimum distance of 30mm. If the sensing target has a high reflectivity, the sensor may malfunction due to reflected light from the target. In such cases install the sensor in such a way that the sensing target is inclining t30° ~ 45° to the sensors optical axis.



### ■ CONTROL OUTPUT DIAGRAM



Note: 1, 3, 4 are the Pin numbers for the M12 Connector Models

### ⚠ CAUTION

If an inductive load or load with a higher than 120mA current consumption is connected, it may cause the sensor to short circuit resulting in operating errors.

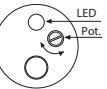
#### • Tightening Torque

Do not tighten the nut with excessive force. Maximum rated tightening torque is 20Nm.

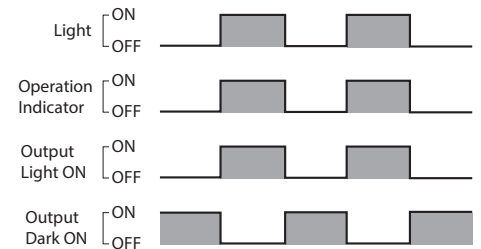


#### • Sensitivity Adjustment

Sensitivity adjustment is enabled in the diffuse and retro reflective types by use of in-built pot. Turn the pot. clock wise to increase sensitivity. Turn the pot. anti-clock wise to decrease the sensitivity.



### ■ OPERATION TYPE

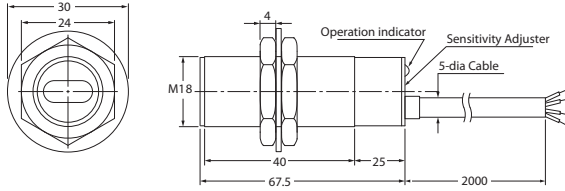


#### Represented by:

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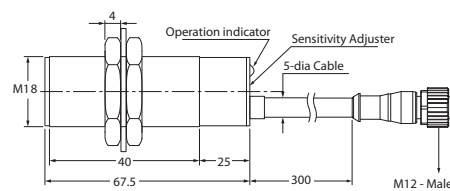
## ■ DIMENSIONS

◆ F18-MD-100\_-2M

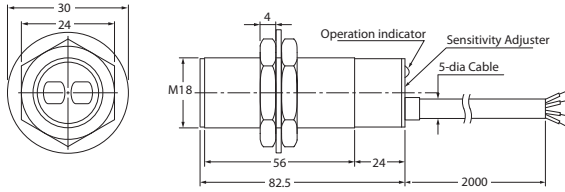


◆ F18-MD-100\_-M12J3

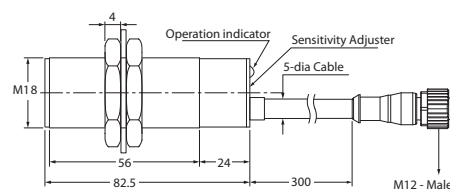
All units are in mm



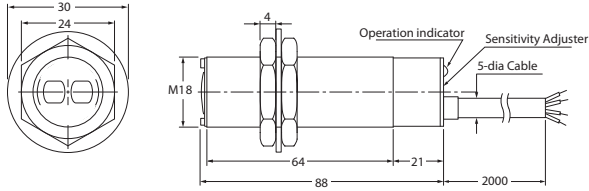
◆ F18-MD-300\_-2M



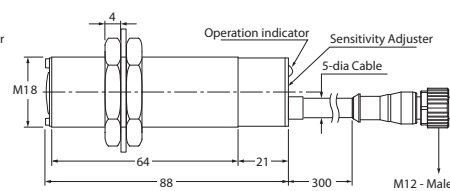
◆ F18-MD-300\_-M12J3



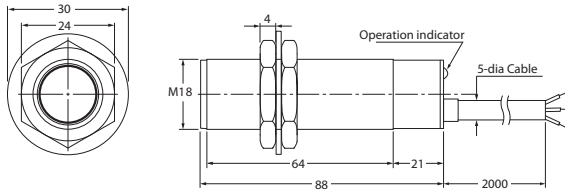
◆ F18-MR-3M\_-2M



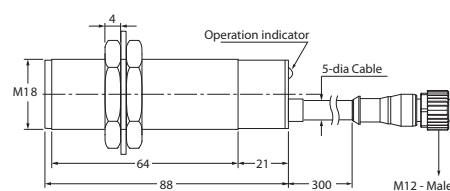
◆ F18-MR-3M\_-M12J3



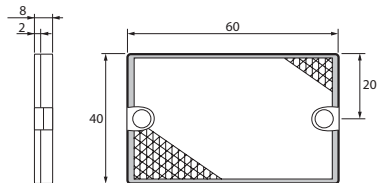
◆ F18-MT-10M\_-2M



◆ F18-MT-10M\_-M12J3

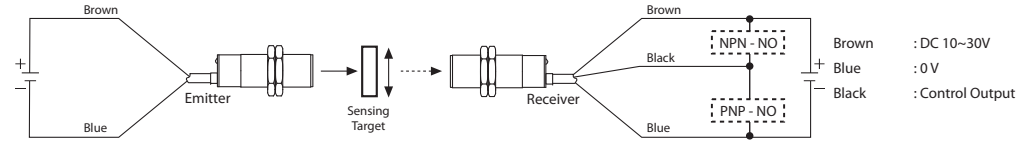


## Reflector

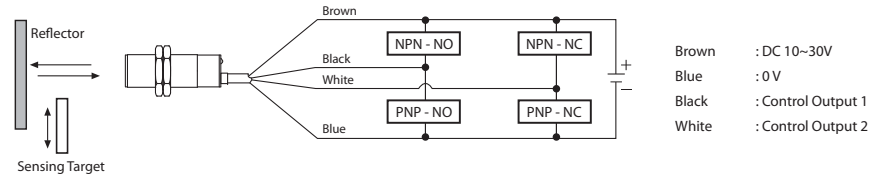


## ■ CONNECTION DIAGRAM

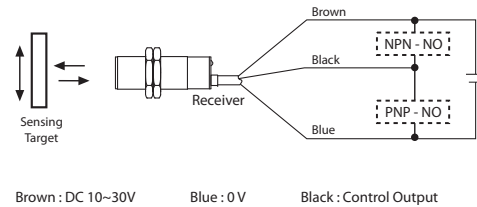
◆ Through Beam - DC 3 Wire Type



◆ Retro Reflective - DC 4 Wire Type

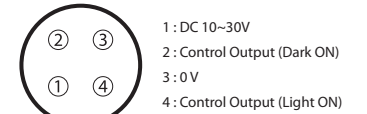


◆ Diffuse Reflective - DC 3 Wire Type



◆ M12 Junction Connector\*

◆ All Types



Note: \* - Connector Cable is not supplied along with unit

INTENTIONALLY LEFT EMPTY

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