

Photomicrosensors

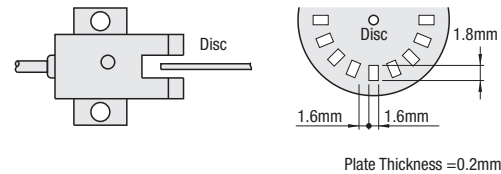
Overview



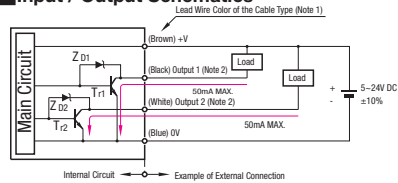
Do not use this product as a detection device for human body protection.
(For human body protection, use products compliant with the local laws and regulations such as OSHA, ANSI and IEC.)

Type	Mini Type	Compact Type - Cable	Compact Type - Connector
Part Number	FPM_24	FPM_44	FPM_54
Detection Distance		5mm (Fixed)	
Smallest Detected Subject		0.8x1.8mm Opaque Objects	
Hysteresis		0.05mm or less	
Repeatability		0.03mm or less	
Power Supply Voltage		5~24V, DC±10%, Ripple P-P 10% or less	
Current Consumption		15mA or less	
Output		NPN Transistor - Open Collector · Max. Allowable Current: 50mA · Applied Voltage: 30V DC or less (between Output and OV) · Residual Voltage: 0.7V or less (at 50mA applied) 0.4V or less (at 16mA applied)	
Response Time		Light Seen - ON / Light Shielded - ON Equipped 2 Outputs Light Seen: 20μs or less / Light Shielded 100μs or less (Frequency Response 1kHz or higher) (Note 1)	
Operation Status Indicator		RED LED (ON while light seen)	
Environmental Protection		Service Ambient Temperature (Note 2) -25~+55°C (No Condensations or Freezing), In Storage: -30~+80°C Service Environment Humidity 35~85%RH, 35~85%RH in Storage Service Environment luminosity Fluorescent Light: 1,000lx or less at Lit Surface Withstand Voltage AC 1,000V 1 min., between Circuit and Case Dielectric Strength 50MΩ or higher at 250VDC, between Circuit and Case Vibration Resistance Endurance 10~2,000Hz, Full Wave Amplitude 1.5mm X, Y, Z Directions for 2 hrs. Shock Resistance Endurance 15,000m/s ² (approx. 1,500G) X, Y, Z Directions for 3 times	
Light Emitting Element		Infrared LED (Unmodulated)	
Material		Case: PBT Polybutylene Terephthalate, Slit Cover: Polycarbonate, Terminal [FPM_54 only]: Solder Plating	
Cable		0.09mm ² - 4 Conductor Cabtyre Cable 1m	
Cable Extension		Extendable up to 100m when 0.3mm ² or larger cable used.	
Mass	Approx. 10g	Approx. 15g	Approx. 3g
Page	P.1790	P.1791	P.1792

(Note 1): Frequency Response is the value from rotating disc on the right.
(Note 2): Ensure to mount Mini Type to metals when using under the temperature +50°C or more.



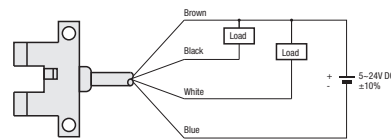
Input / Output Schematics



(Note 1): Lead wire colors of connector type are the same.
(Note 2): Ensure to insulate unused output wires.

Codes ... Z01, Z02: Zener Diodes for Surge Protection
Tr1, Tr2: NPN Output Transistors

Connections



Output Operation

	Lead Wire Color	Output Operation
Output 1	Black	Light Seen - ON
Output 2	White	Light Blocked - ON

Cautions

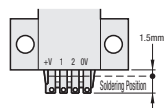
Wiring

Proper wiring is needed since power supply reverse polarity circuit protection or output short circuit protection are not equipped. Also ensure to insulate unused output wires.

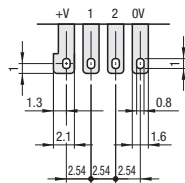
Soldering

When soldering to terminals directly, ensure to meet the following conditions.

	FPM_54
Soldering Temperature	260°C or less
Soldering Time	3 sec. or less
Soldering Position	Refer to the right diagram.

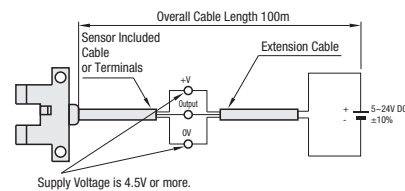


Terminals



Cable Extension

Although cables 0.3mm² or more can be extended up to 100m long, extended cables will cause voltage drop. Ensure to maintain a proper rated voltage at the wire terminations or terminal blocks.



However, when the overall cable length including accessory cables is as described below, voltage checking would be unnecessary.

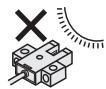
Conductor Sectional Area	Overall Cable Length
0.08~0.1mm ²	Up to 5m
0.2mm ²	Up to 10m
0.3mm ²	Up to 20m

Tightening Torque

	Tightening Torque
FPM_24	0.15N·m
FPM_44	0.5N·m
FPM_54	0.5N·m

Others

Since this is a product for embedded use, external light interference resistant feature is not provided. Do not expose the receiving section to direct lights.



Avoid usage during power-on transient state (50ms).

Photomicrosensors

Mini Type

CE

Not available outside of Japan.

Rails for Mounting P.1795~1801 Slit Cams for Indexing P.1793

FPMK24 (Standard)

FPMF24 (Type F)

FPMU24 (Type U)

FPML24 (Type L)

FPMR24 (Type R) RoHS

FPMK24 (Standard)

FPML24 (Type L)

FPMF24 (Type F)

FPMR24 (Type R)

Shape	Part Number	Detection Distance	Output	Operation Mode	Unit Price
Standard	FPMK24	5mm (Fixed)	NPN Transistor Open Collector	Light Seen - ON Light Blocked - ON Equipped 2 Outputs	
Type L	FPML24				
Type F	FPMF24				
Type R	FPMR24				
Type U	FPMU24				

Ordering Example

Part Number

FPML24

Days to Ship

Configure Online

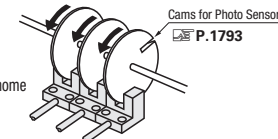
Price

Configure Online



Example

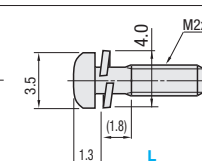
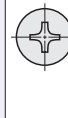
The slot on a rotating disc detects the home position.



Screws for Photo Sensors (M2)



FKN



Screw	Material: Carbon Steel for Mechanical Structure Screw: Cross Recess Pan Head Screws
Washer	Spring Washer: Spring Lock Washer
S	Chromate (Yellow)

Part Number	Unit Price	Volume Discount Rate
Type	M-L	1-5 pc(s) 6~
FKN	2-6	
	2-8	
	2-10	
	2-12	

Ordering Example Part Number FKN2-8

Days to Ship Configure Online