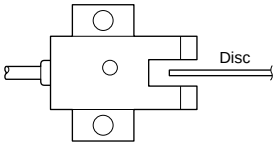
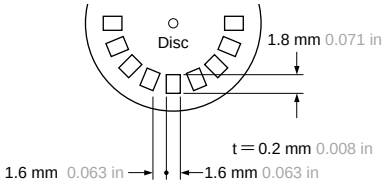
PM

SPECIFICATIONS

Item \ Type		Ultra-small		Small	
			With flexible cable	With cable	With connector
Model No.	NPN output type	**PM-□24**	**PM-□24-R**	**PM-□44**	**PM-□54**
	PNP output type	———		**PM-□44P**	**PM-□54P**
Sensing range		5 mm 0.197 in (fixed)			
Minimum sensing object		0.8 × 1.8 mm 0.031 × 0.071 in opaque object			
Hysteresis		0.05 mm 0.002 in or less			
Repeatability		0.03 mm 0.001 in or less			
Supply voltage		5 to 24 V DC ± 10 % Ripple P-P 10 % or less			
Current consumption		15 mA or less			
Output		<NPN output type> NPN open-collector transistor • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 0.7 V or less (at 50 mA sink current) 0.4 V or less (at 16 mA sink current)		<PNP output type> PNP open-collector transistor • Maximum source current: 50 mA • Applied voltage: 30 V DC or less (between output and + V) • Residual voltage: 0.7 V or less (at 50 mA source current) 0.4 V or less (at 16 mA source current)	
	Utilization category	DC-12 or DC-13			
	Output operation	Incorporated with 2 outputs: Light-ON / Dark-ON			
Response time		Under light received condition: 20 μs or less Under light interrupted condition: 100 μs or less (Response frequency: 1 kHz or more)(Note 1)			
Operation indicator		Vermilion LED (lights up under light received condition)			
Environmental resistance	Pollution degree	3 (Industrial environment)			
	Ambient temperature (Note 2, 3)	− 25 to + 55 °C − 13 to + 131 °F (No dew condensation or icing allowed), Storage: − 30 to + 80 °C − 22 to + 176 °F			
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH			
	Ambient illuminance	Fluorescent light: 1,000 ℓx at the light-receiving face			
	EMC	EN 50081-2, EN 50082-2, EN 60947-5-2			
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance	50 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance	10 to 2,000 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each			
	Shock resistance	15,000 m/s² acceleration (1,500 G approx.) in X, Y and Z directions for three times each			
Emitting element		Infrared LED (non-modulated)			
Material		Enclosure: PBT, Slit cover: Polycarbonate, Terminal part [**PM-□54(P)** only]: Solder plated			
Cable		0.09 mm² 4-core cabtyre cable [**PM-□24-R**: 0.1 mm² flexible, oil and heat resistant cabtyre cable (Note 4)], 1 m 3.281 ft long		———	
Cable extension		Extension up to total 100 m 328.084 ft is possible with 0.3 mm², or more, cable.			
Weight		10 g approx.		15 g approx.	3 g approx.

Notes: 1) The response frequency is the value when the disc, given in the figure below, is rotated.





2) In case the ultra-small type **PM-□24(-R)** is used at an ambient temperature of + 50 °C + 122 °F, or more, make sure to mount it on a metal body.
3) Take care that the flexibility of the **PM-□24-R** cable is lost if the ambient temperature in near − 10 °C + 14 °F.
4) The cable of **PM-□24-R** is a flexible cable usable on a moving base. When the sensor is mounted on a moving base, fix the sensor cable joint so that stress is not applied to it.