



- Tungsten lamp type provides high resolution
  - **MX10 Series** is capable of detecting yellow marks on white background
  - **MX10F Series** Fiber type allows flexible installation
- Response time of 20  $\mu$ s max. and cyclic response frequency of 25 kHz provides high-speed response and detection of small "register" marks

### Type

Detection method	Detecting distance	Model	Operation mode	Output mode
 Reflective type	13mm (8 mm from lens hood surface)	<b>MX10</b>	Light-ON/Dark-ON selectable	Current output Voltage output
 Through-beam type	20mm	<b>MX10F-FT</b>		
 Reflective type	5mm	<b>MX10F-FR</b>		
 Coaxial reflective type	8mm	<b>MX10F-FX</b>		
	1.5mm	<b>MX10F-FS</b>		

\* Model Nos. for fiber type sensors are set model Nos. respectively including an amplifier (MX10F) and a typical fiber optic cable.

### Power supply unit

Model	Power supply	Power supplied to sensor	Operation mode	Output mode
<b>MP2F</b>	AC/DC 100~240V	DC12V、100mA DC4.5V、780mA	Timer function selectable	Relay output Current output Voltage output Burnt-out lamp alert output

### Optional Parts

Type	Model	Description
Standard lens	<b>L12</b>	Aspheric lens offering high resolution (accessory)
Standard lamp	<b>LM66</b>	(accessory)
Lamp	<b>LM67</b>	Filament orientation different from LM66

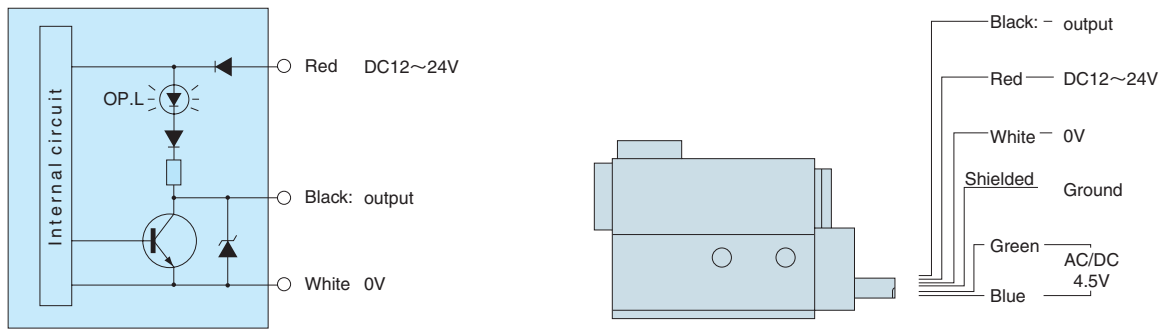
## Rating/Performance/Specification

	Type	General-purpose type		Optical fiber type				
	Model	MX10		MX10F				
Rating/performance	Fiber unit type	—		FT	FR	FX	FS	
	Detection method	Reflective (differential comparison)		Through-beam type	Reflective type	Coaxial reflective type		
	Detecting distance	13mm (8 mm from lens hood)		20 mm max (0~25mm)	5 mm max (0.5~8mm)	8 mm max (0.5~12mm)	1.5 mm max (0.2~3mm)	
	Power supply	Sensor: 12 – 24V DC ±10% Ripple: 10% max. Lamp: 4.5V AC/DC4.5V ±10% 50/ 60Hz						
	Current consumption	Sensor: 35 mA max., Lamp: AC4.5V 3.6W(0.8A)						
	Output mode	Current output: Rating: sink current 100 mA (30 VDC) max. Voltage output: Rating: output impedance 3.9 kΩ (residual voltage: 1 V max.)						
	Operation mode	Light-ON/Dark-ON selectable (with switch)						
	Spot diameter	1 x 4mm		ø15mm	ø6mm	ø6mm	ø1.5mm	
	Smallest detectable mark width	0.1mm (black mark on whit background)		1mm min. (opaque object)	0.1mm (black mark on whit background)			
	Activation position repeatability	0.1mm						
	Response time	20 μs						
	Cyclic response frequency	10 kHz max.						
	Specification	Light source	Tungsten bulb					
		Adjustment	Sensitivity adjustment: multi-turn volume dial Position indication on dial: ruler on drum					
Indicator		Operation indicator (red LED)						
Case material		Zinc die-cast						
Connection		Permanently attached cord (vinyl insulated ø6) Two 0.5 mm <sup>2</sup> and three 0.3 mm <sup>2</sup> cores, 4 m						
Mass		600 g max.						
Applicable amplifier		MP2F						
Notes		MX10-30, MX10-60 and MX10-120 for minute object detection are also available. Contact Takex for details.			—			
		Tungsten bulb Replacement: insert socket Time for stabilization: about 30 minutes after illumination / Life: 10,000 hours av. (when used according to rating) Mounting: M5 x 5 screw (mountable in three orientations) Wiring: core extension: 20 m with standard cord, 50 m with cord of 1.25 mm <sup>2</sup> or thicker [Lamp voltage must be 4.5 V min. Shielded wires must be used.]						

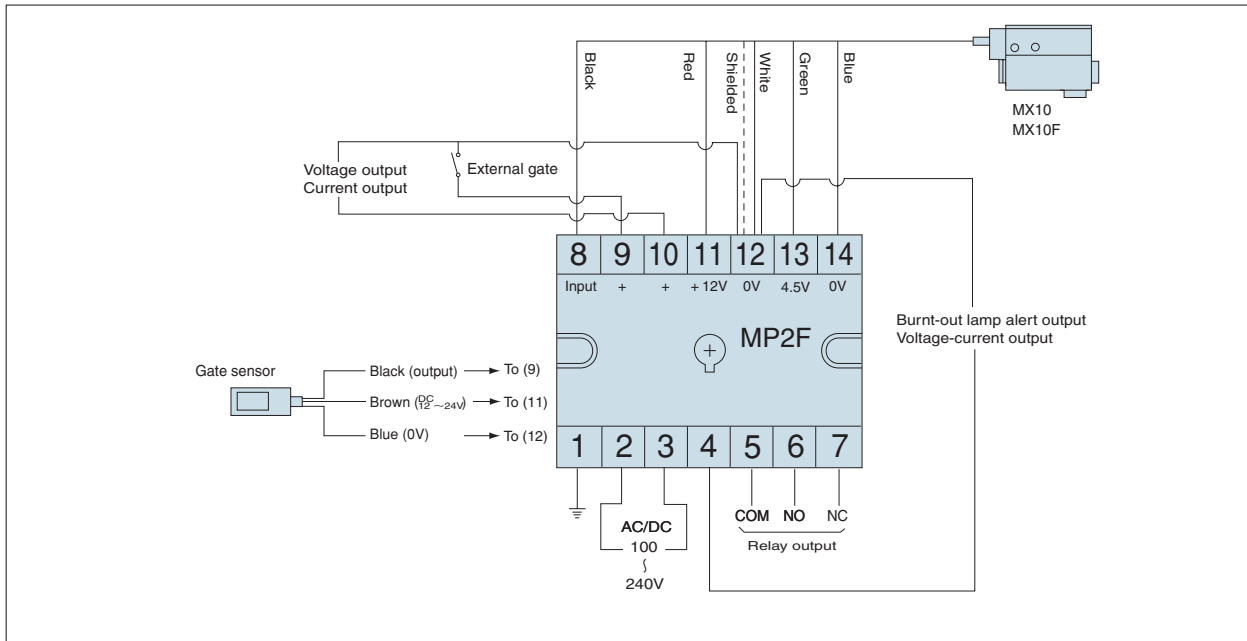
## Environmental Specification

Environment	Ambient light	1,000 lx max. (radiation from above)
	Ambient temperature	Storage: -10- +50 °C (non-freezing)
	Ambient humidity	35-85%RH (non-condensing)
	Protective structure	IP66
	Temperature rise	15deg (Case temperature as mounted on iron plate of 60 x 80 x 1.6 (t))

## Input/Output Circuit and Connection



## Connection Example



## Principle of Operation

Light emitted from the lamp goes through the half mirror and object lens and then converges on the detection mark. Then the converged light is reflected as a beam according to the brightness, saturation, etc. of the mark and goes through the half mirror and object lens to enter the light-sensitive element (1), which is called detected light. While the light from the lamp is radiated on the mark, some of it also goes through the guide glass and sensitivity adjustment mechanism to enter the light-sensitive element (2), which is called reference light. The two types of light (detected light and reference light) are converted into electric signals in the individual light-sensitive elements (1) and (2), which are input into the differential amplifier for comparison and output as a detection signal.

