

We appreciate your purchase of the **MQ** photoelectric sensor. When using this photoelectric sensor be sure to read these instructions thoroughly for the proper use of this device.

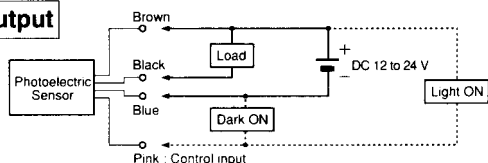
### • TYPES

	Area reflection type 3cm		Area reflection type 20cm		Area reflection type 70cm	
	NPN output	PNP output	NPN output	PNP output	NPN output	PNP output
Model No.	MQ-W3A-DC12-24VEM MQ-W3AR-DC12-24VEM	MQ-W3C-DC12-24VEM MQ-W3CR-DC12-24VEM	MQ-W20A-DC12-24VEM MQ-W20AR-DC12-24VEM	MQ-W20C-DC12-24VEM MQ-W20CR-DC12-24VEM	MQ-W70A-DC12-24VEM	MQ-W70C-DC12-24VEM
Output transistor	Light entering ON (Light ON) Common Light intercepted ON (Dark ON) use		Light entering ON (Light ON) Common Light intercepted ON (Dark ON) use		Light entering ON (Light ON) Common Light intercepted ON (Dark ON) use	
Operation indicating method	Lights with light entering					

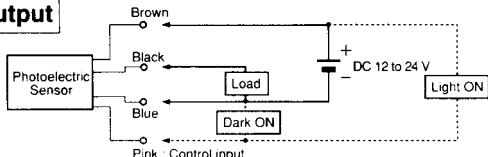
### • CONNECTION DIAGRAM

- Make connection to ⊕ side with control input wire for Light ON.
- Make connection to ⊖ side with control input wire for Dark ON.

#### NPN output



#### PNP output

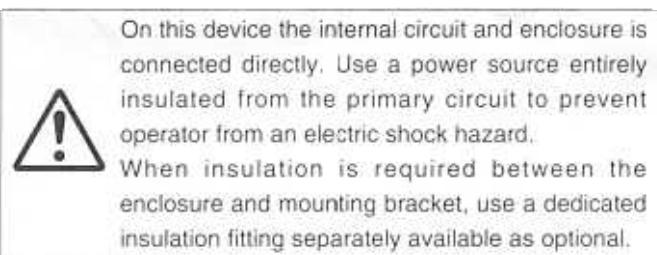


### • REGARDING DISTANCE ADJUSTMENT

- 1) Point the detection surface of the photoelectric sensor in the detecting direction and temporarily fasten the unit.
- 2) With no detectable object in position, slowly turn the distance adjustment control from the maximum position (FAR) counterclockwise to locate the point where the operation indicator LED (OPE.) goes out. Even if the location of that point is at the FAR position, that will be the set point.
- 3) Place a detectable object in the detection position, slowly turn the control from the minimum position (NEAR) clockwise to locate the point where is extinguished. Even if the location of that point is at the NEAR position, that will be the set point.
- 4) Set the control at a position midway between the points found in 2) and 3) above.
- 5) Firmly fasten the photoelectric sensor. When fastening, securely fasten the unit so that the position will not shift due to vibration or shock.

Notes : 1. If the position set between 2) and 3) above is less than 2 graduations, change the position of the detection surface and repeat the procedure of 1) to 4), or try to determine the source of external factors such as variation in ambient temperature, variation in detectable object position, etc., that is creating the problem.

2. The difference in detection distance due to the surface reflection rate of the detectable object is virtually non-existent, but if the actual object is one where the reflectivity is extremely low (object which have a frosted finish produced by black rubber), or where the reflectivity is extremely high (mirror, glass, or truly reflecting objects), confirmation should be done with the actual object.



### • CAUTIONS IN USE

- Use within the range of ambient temperature of  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ .
- Use within the range of 9.6V to 30V DC (ripple P-P included) for operating voltage.
- Use with an ambient light level at the light receiving surface of less than 10,000 lx for incandescent lamp and less than 30,000 lx for sunlight.
- Because a surge voltage exceeding 500V [ $\pm (1.2 \times 50) \mu\text{s}$  of single polarity full wave voltage] may cause damage to the internal circuit, a surge absorbing element should be used.
- Avoid using in a location where there is excessive steam, dust or corrosive gas.
- The sensor is of immersion proof type, but this does not mean that it can be used in water or where there is direct impingement of rain for detecting objects.
- Because the internal circuit can be damaged due to incorrect connections, before power is applied, the wiring should be thoroughly checked.
- Care should be taken to allow for the voltage drop (max. 1.2V) from the operating voltage of the internal circuit as applied to the load relay.
- If a load greater than 100mA is connected, the output section will be damaged, so sufficient care should be taken.
- If the wiring to the photoelectric sensor is run parallel to high voltage or power lines, due to inductive noise, misoperation or damage can occur. Wiring should be run in separate channels.
- Use cable of 0.3mm<sup>2</sup> or greater for extensions, and the length should be less than 100m.
- Do not use the sensor output signal for 50ms immediately after the power is supplied to the sensor.
- The front surface of the lens is polycarbonate. This material is resistant to water, dilute acids, and alkalis, aliphatic hydrocarbons, oils, etc., but it is not resistant to ketones, esters, halogenated hydrocarbons or aromatic hydrocarbons.