

EQ-34 and EQ-34-PN models will be discontinued
September 24, 2024 Contact Ramco today to find the best
replacement option based on your sensing application

1 SPECIFICATIONS

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Item	Type	Adjustable range reflective		Discontinued in 2017
		NPN output type	PNP output type	Two outputs type
Model No. (Note 1)	EQ-34	EQ-34-PN	EQ-34W	
Adjustable range (Note 2)	0.2 to 2m	0.2 to 2m	0.2 to 2m	Far (Main): 0.2 to 2m Near (Sub): Refer to diagram in (Note 3)
Sensing range (with white non-glossy paper at setting distance 2m)	0.1 to 2m	0.1 to 2m	0.1 to 2m	Far (Main): 0.1 to 2m Near (Sub): 0.2 to 2m (with Near (Sub) distance for adjuster at max.)
Hysteresis	10% or less of operation distance (With white non-glossy paper)			
Supply voltage	10 to 30V DC Ripple P-P: 10% or less			
Current consumption	50mA or less	55mA or less	90mA or less	
Output	NPN open-collector transistor - Maximum sink current: 100mA - Applied voltage: 30V DC or less (between output and 0V) - Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)	PNP open-collector transistor - Maximum source current: 100mA - Applied voltage: 30V DC or less (between output and +V) - Residual voltage: 1V or less (at 100mA source current) 0.4V or less (at 16mA source current)	<Far (Main) output, Near (Sub) output> NPN open-collector transistor - Maximum sink current: 100mA - Applied voltage: 30V DC or less (between output and 0V) - Residual voltage: 1V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)	
Output operation	Switchable either Detection-ON or Detection-OFF			
Short-circuit protection	Incorporated			
Response time	2ms or less			
Operation indicator	Red LED (lights up when the output is ON)		Far (Main) output: Red LED (lights up when the Far (Main) output is ON) Near (Sub) output: Red LED (lights up when the Near (Sub) output is ON)	
Stability indicator	Green LED (lights up under stable light received condition or stable dark condition) (Note 4)			
Distance adjuster	2-turn mechanical adjuster with pointer		Far (Main): 2-turn mechanical adjuster with pointer Near (Sub): Variable adjuster	
Automatic interference prevention function	Incorporated (Note 5)			
Protection	IP67 (IEC)			
Ambient temperature	-20 to +55°C (No dew condensation or icing allowed), Storage: -25 to +70°C			
Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH			
Emitting element	Infrared LED (modified)			
Receiving element	2-segment photodiode			
Material	Enclosure: Polyethylene and Polyethylene terephthalate, Lens: Polyethylene			
Cable	0.3mm ² 3-core catbyte cable, 2m long		0.3mm ² 4-core catbyte cable, 2m long	
Weight	Approx. 150g			
Accessory	Adjusting screwdriver: 1pc.			

Notes: 1) The model No. with suffix '-J' stands for the connector type. (EQ-34W is excluded.)
(e.g.) As for the connector type of EQ-34: EQ-34-J
Use the mating cables as shown below.

CN-24-C2 (Straight type, 4-core, 2m)
CN-24-C5 (Straight type, 4-core, 5m)
CN-24-C2 (Elbow type, 4-core, 2m)
CN-24-C5 (Elbow type, 4-core, 5m)

The model No. with suffix '-C5' stands for the 5m cable length type. (EQ-34-PN is excluded.)
(e.g.) As for the 5m cable length type of EQ-34: EQ-34-C5
2) The adjustable range stands for the maximum sensing range which can be set with the adjuster. The sensor can detect an object 0.1m, or more, away. However, the detectable area of the Near (Sub) type of the EQ-34W begins at 0.2m.

3) The Near (Sub) distance adjustable range, L2, changes with the setting of the Far (Main) distance, L1, as shown in the table below.
EQ-34W Near (Sub) distance adjustable range

Near (Sub) distance adjustable range L2 (m)	EQ-34W	
	Far (Main) setting distance L1	Near (Sub) distance adjustable range L2
1.5m	2m	1 to 2m
1m	1.5m	0.85 to 1.5m
0.5m	1m	0.65 to 1m
0.2m	0.5m	0.35 to 0.5m
	0.2m	0.2m

4) Refer to **STABILITY INDICATOR** for the details of the stability indicator.
5) Detection may become unstable depending on the setting conditions or the sensing objects. After setting up this product, make sure to check operations using actual sensing objects.

WARNING



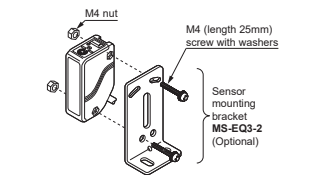
Never use this product as a sensing device for personnel protection.
In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

2 CAUTIONS

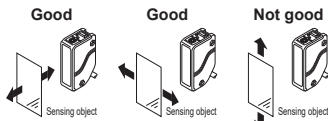
- This product has been developed / produced for industrial use only.
- Make sure that the power supply is OFF while wiring.
- Take care that wrong wiring will damage the sensor.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Extension up to total 100m, is possible with 0.3mm², or more, cable. However, in order to reduce noise, make the wiring as short as possible.
- Do not use during the initial transient time (50ms) after the power supply is switched on.
- Take care that the sensor is not directly exposed to fluorescent lamp from a rapid-starter lamp, a high frequency lighting device or sunlight etc., as it may affect the sensing performance.
- Avoid dust, dirt, and steam. Do not use it in places having excessive vapor, dust, etc., or where it may come in direct contact with corrosive gas.
- Take care that the sensor does not come in contact with water, oil, grease, organic solvents, such as, thinner etc., strong acid or alkaline.
- This sensor is suitable for indoor use only.
- Make sure that stress by forcible bend or pulling is not applied directly to the sensor cable joint.
- Since the cable end is not waterproof, do not use the sensor in the application where water may seep in from the cable end.
- When connecting the mating cable to the connector type sensor, the tightening torque should be 0.4N·m or less.

3 MOUNTING

The tightening torque should be 0.8N·m or less.



Care must be taken regarding the sensor mounting direction with respect to the object's direction of movement.



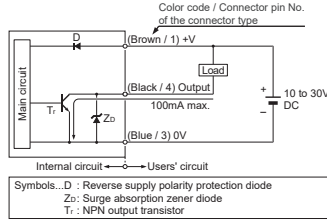
- When detecting a specular object (aluminum or copper foil, etc.) or an object having a glossy surface or coating, please take care that there are cases when the object may not be detected due to a small change in angle, wrinkles on the object surface, etc.
- When a specular body is present below the sensor, use the sensor by tilting it slightly upwards to avoid wrong operation.



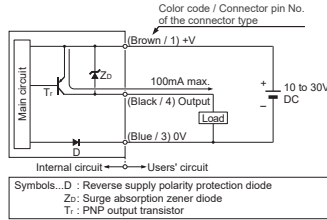
- If a specular body is present in the background, wrong operation may be caused due to a small change in the angle of the background body. In that case, install the sensor at an inclination and confirm the operation with the actual sensing object.
- Some object may produce the dead zone right in front of the sensor.

4 I/O CIRCUIT DIAGRAMS

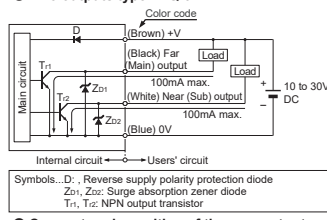
• NPN output type / EQ-34



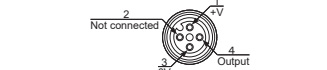
• PNP output type / EQ-34-PN



• Two outputs type / EQ-34W

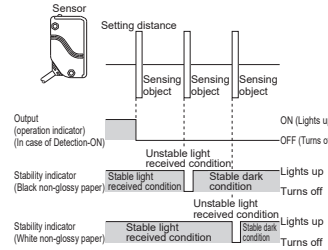


• Connector pin position of the connector type



5 STABILITY INDICATOR

- Since the EQ-30 series uses a 2-segment photodiode as its receiving element, and sensing is done based on the difference in the incident beam angle of the reflected beam from the sensing object, the output and the operation indicator operate according to the object distance. Further, the stability indicator shows the margin of the incident light intensity and not that of the object distance.
- Hence, the distance at which it lights up / OFF depends on the object reflectivity and is not at all related to the output operation. Do not use the sensor when the stability indicator is OFF (unstable light received condition), since the sensing will be unstable.

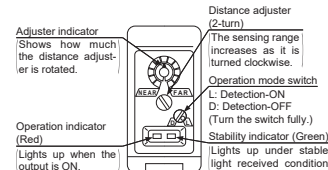


6 DISTANCE ADJUSTMENT

The following distance adjusting procedure for EQ-34, EQ-34-PN and the Far (Main) side / Near (Sub) side of EQ-34W is for use when a sensing object moves horizontally to the sensor. When a sensing object is approaching / moving away from the sensor, follow only steps ① and ② respectively. Since the sensing point may change depending on the sensing object, be sure to check the operation with the actual sensing object.

EQ-34, EQ-34-PN

• Top-view



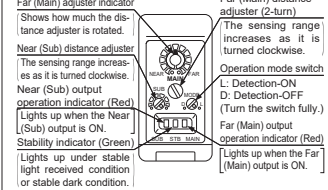
• Adjusting procedure

Step	Description	Distance adjuster
①	Turn the distance adjuster fully counterclockwise to the minimum sensing range position of 0.2m approx.	Turn fully
②	Place an object at the required distance from the sensor, turn the distance adjuster gradually clockwise, and find out point ⓐ where the sensor changes to the light received condition.	Point ⓐ
③	Remove the object, turn the distance adjuster further counterclockwise, and find out point ⓑ where the sensor changes to the light received condition again with only the background.	Point ⓑ
④	The optimum position to stably detect objects is the center point between ⓐ and ⓑ.	Center point

Note: Use the accessory adjuster screwdriver to turn the distance adjuster slowly. Turning with excessive force will cause damage the adjuster.

EQ-34W

• Top-view



• Adjusting procedure

• Far (Main) side

Step	Description	Distance adjuster
①	Turn the Far (Main) distance adjuster fully counterclockwise to the minimum sensing range position of 0.2m approx.	Turn fully
②	Place an object at the far place at the required distance from the sensor, turn the distance adjuster gradually clockwise, and find out point ⓐ where the sensor changes to the light received condition.	Point ⓐ
③	Remove the object, turn the Far (Main) distance adjuster further clockwise, and find out point ⓑ where the light received condition again with only the background.	Point ⓑ
④	The optimum position to stably detect objects for the Far (Main) setting is the center point between ⓐ and ⓑ.	Center point

• Near (Sub) side

Step	Description	Distance adjuster
①	Turn the Near (Sub) distance adjuster fully counterclockwise to the minimum sensing range point.	Turn fully
②	Place an object at the near position, at the required distance from the sensor, turn the Near (Sub) distance adjuster gradually clockwise, and find out point ⓐ where the sensor changes to the light received condition.	Point ⓐ
③	Remove the object from the near position, and place the object for Far (Main) sensing at the sensing position. Turn the Near (Sub) distance adjuster further clockwise, and find out point ⓑ where the sensor changes to the light received condition again with only the background.	Point ⓑ
④	The optimum position to stably detect objects for the Near (Sub) setting is the center point between ⓐ and ⓑ.	Center point

Notes: 1) Use the accessory adjuster screwdriver to turn the distance adjuster slowly. Turning with excessive force will cause damage the adjuster.
2) The Far (Main) distance adjustment should be done before the Near (Sub) distance adjustment. Take care that the Near (Sub) setting distance changes with change in the Far (Main) setting distance.

