
PHOTOELECTRIC SWITCH [CMD]

— INSTRUCTION MANUAL —

Model KL50 KR50 KR50E

- Read this instruction manual to use the sensor properly.
- Ask TAKEX sales office or distributor in your location for a copy of the manual when necessary.
- The guarantee period of this product is one year after the delivery.
- If any defect is found during the guarantee period, Takenaka will repair or replace the defective product.
- This product is an industrial sensor which issues an output upon detecting an object. It does not have any function to prevent accidents, death or injuries.
- Takenaka will not held responsibility for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.

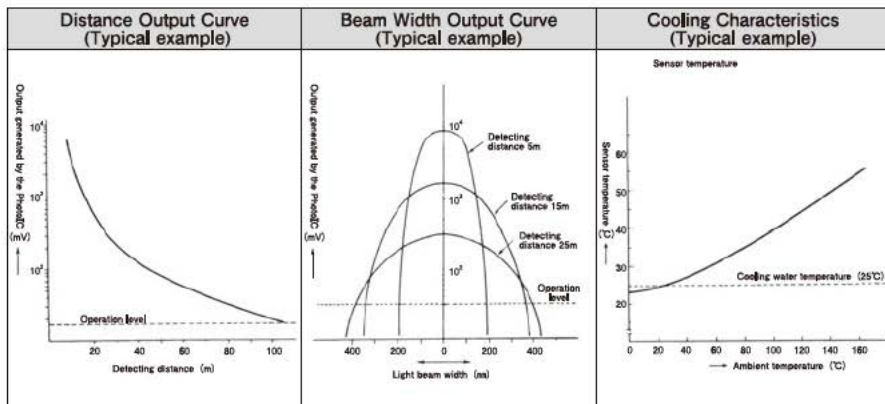
TAKENAKA ELECTRONIC INDUSTRIAL CO.,LTD.

1. Outline

- KL/KR50 series is a through beam type photoelectric switch which generates an ON-OFF output when it detects an object. The sensor is designed to detect a passage, a position or a presence of hot steel materials in iron industry.

2. Features

- Compact and robust water cooled housing
KL/KR50 series has one of the smallest housing among water cooled sensors with built-in amplifier.
Compact and robust housing withstands severe operating circumstances such as in hot-rolling lines.
- Capable of detecting red-hot steel
The sensor reliably detect high temperature red-hot steel over 1,000°C.
- Large excess gain
High power LED reaches 120m at max and assures reliable detection even in an atmosphere containing dust or vapor.
- Easy alignment
Optical sights provided both for the transmitter and the receiver make light axis alignment precise and easy.
- Airless or air purge hood attachable
These optical hoods protect the lens from dust and dirt, and assure reliable detection in a harsh environment.



3. Rating/Performance/Specification/Environmental Specification

Model	Transmitter	KL50	
	Receiver	KR50	KR50E
Detection method	Through beam type		
Detecting distance	50m max.		
Light source	Infrared LED		
Power Supply	AC100-110V/200-220V ±10% 50/60Hz		
Power consumption	4W max.		
Operation mode	Light ON		
Output type	Relay output		Voltage output
	Rating	1 transfer contact 200VAC 0.5A max. (resistance load)	DC10V 5mA max.
Smallest detectable object	φ28mm		
Operating angle	5° min.		
Response time	25ms max.	5ms max.	
Indication	Transmitter : power indicator (red LED) Receiver : light reception indicator (red LED)		
Resistance to external light	50,000 lx (Incandescent lamp)	100,000 lx (Sunlight)	
Ambient temperature	-10 - +55°C (150°C max. with water-cooling)		
Ambient humidity	35-85%RH max. (Non-condensing)		
Protective structure	I P66		
Vibration	10-55Hz / 1.5mm double amplitude / 2 hours each in 3 direction		
Shock	500m/s ² / 3 times each in 3 directions		
Dielectric withstanding	1,500VAC for 1 minute (between primary side of transformer/output terminal and case)		
Insulation resistance	500VDC, 20MΩ or higher (between primary side of transformer/output terminal and case)		
Case material	Aluminum die-cast		
Connection	Terminal block (cable outlet : ground hub)		
Mass	Transmitter : approx. 2kg, Receiver : approx. 2kg		

Cooling water specification

Flow rate	2 ℓ / minute min.
Temperature	+10 - +35°C
Withstand voltage	0.3 MPa

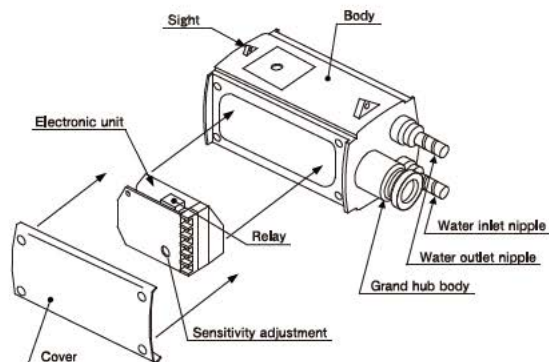
Air purge specification (with optical part)

Flow rate	200 ℓ / minute min.
Withstand voltage	1 MPa

※ Air not required for use of airless dust hood.

4. Parts description

The electronic unit inside the case can be replaced when necessary. For fixing the cover, tighten the screws with a tightening torque of 0.6N·m or less.

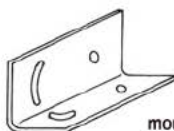


5. Installation

1. Attachments

Confirm the number of bracket and bolts.

Mounting bracket	1
Bolt M8×15	2
Spring washer	2
Plate washer	2
Rubber bushings for cable outlet	1 set (3 pcs)



mounting bracket

2. Installation

Two ways of mounting are available as shown in Fig. 1 and Fig. 2. Use the attached bolts and washers to fix the bracket on the sensor. Tightening torque should be 12N·m or less.

(in mm)

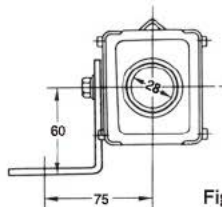


Fig. 1

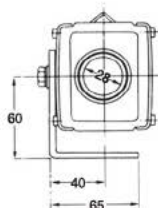
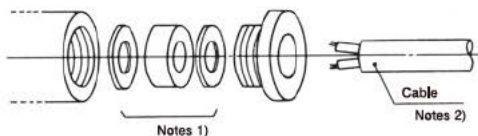


Fig. 2

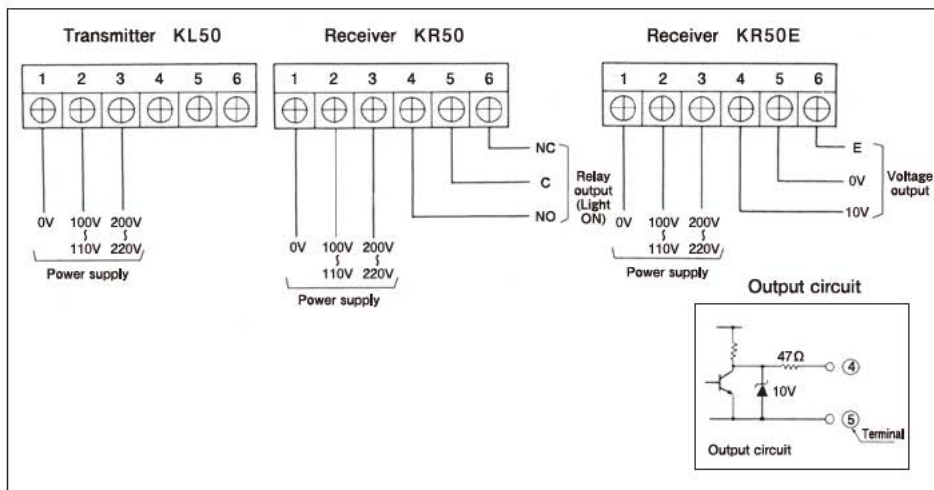
6. Cable outlet



Notes 1) Rubber bushings for cables with outer diameter of 8 to 9.5mm are inserted in the cable outlet.

Notes 2) Use attached rubber bushings for larger diameter cables of 9.5 to 11mm.

7. Wiring



8. Spare parts (Option)

1. Electronic unit

The internal electronic circuit unit is available as a standard spare.

2. Relay

Manufacturer : OMRON

Model number : G6C

Part number : G6C-2114P-US-P6C DC12V

9. Accessories

1. Air purge hood

Prevents dust or soot from accumulating on the lens by compressed air.

Model 302NC, 303NC, 304NC and 305NC

2. Airless hood

The airless hood without air purge function.

Model F38S F38S-03

F38S-04

F38S-05

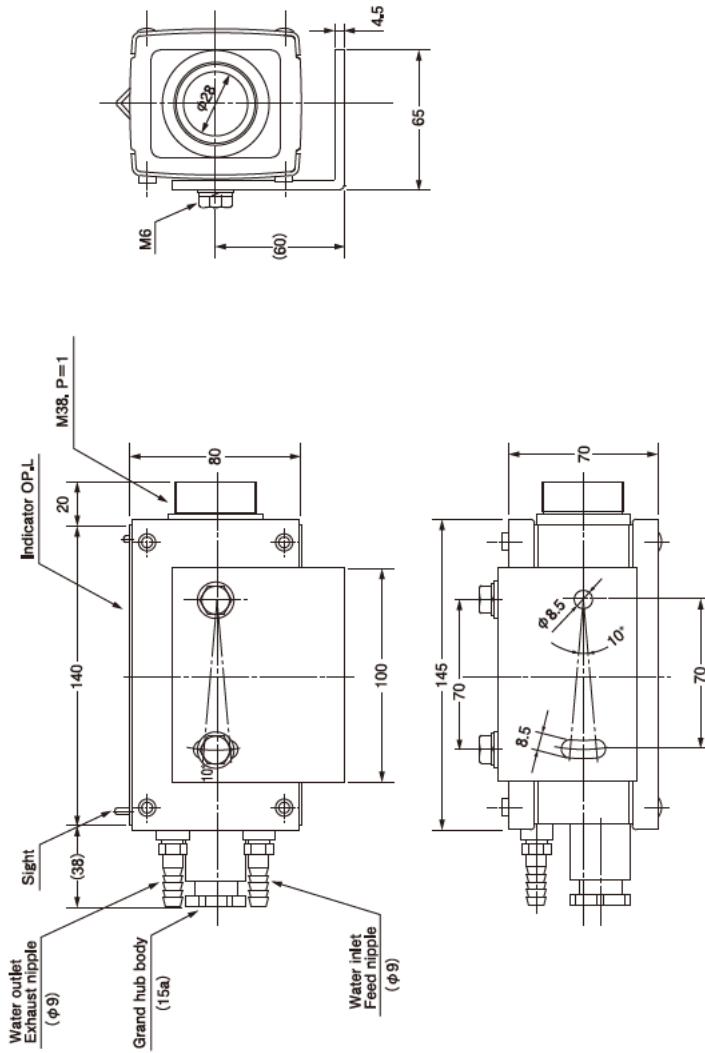
F38N

10. Notes

After wiring works or replacement of a relay, tighten up the cable gland to prevent penetration of water and dust into the sensor unit.

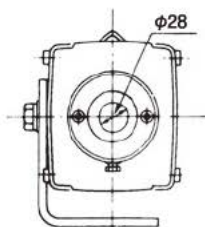
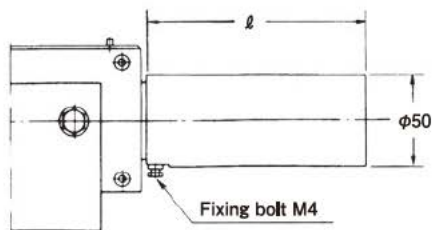
Dimensions (in mm)

● Transmitter/Receiver



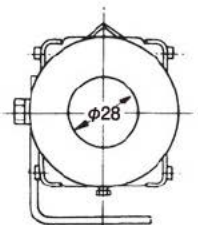
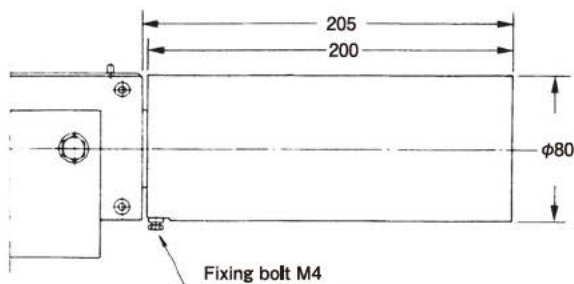
Dimensions (in mm)

● With Airless hood F38S Series attached

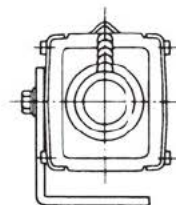
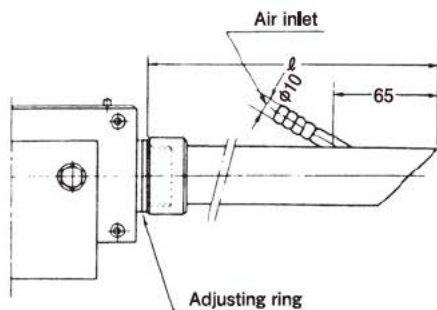


Model	Length (ℓ)
F38S	120mm
F38S-03	300mm
F38S-04	400mm
F38S-05	500mm

● With Airless hood F38N Series attached



● With air purge hood attached



Model	Length (ℓ)
302 NC	215mm
303 NC	315mm
304 NC	415mm
305 NC	515mm



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