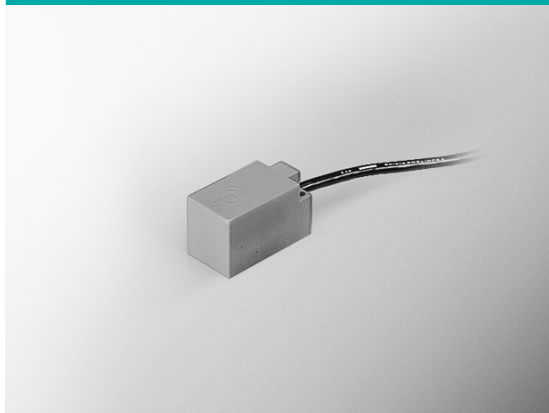


Vehicle-Mounted Square Proximity Sensors

FL2R-V Series

Proximity Sensor for Vehicle Mounting with High Surge Resistance



- Dedicated surge absorption circuit ensures high surge resistance of 1kV
- Seal capabilities (IP67) that support mounting in vehicles
- Easy-to-understand at-a-glance indicator lamp (red LED)



CLICK

ORDER GUIDE

● DC 2-wire type

Actuation method	Appearance	Sensing distance	Sensing face	Output operation mode	Catalog listing
High-frequency oscillation			Top	N.O.	FL2R-12J6HV
				N.C.	FL2R-12K6HV
	Side		N.O.	FL2R-12J6SV	
			N.C.	FL2R-12K6SV	

● DC 3-wire type

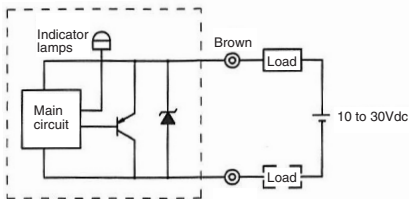
Actuation method	Appearance	Sensing distance	Sensing face	Output operation mode	Catalog listing	
High-frequency oscillation			Top	NPN	N.O.	FL2R-12A5HV
					N.C.	FL2R-12B5HV
				PNP	N.O.	FL2R-12D5HV
					N.C.	FL2R-12E5HV
	Side		NPN	N.O.	FL2R-12A5SV	
				N.C.	FL2R-12B5SV	
PNP	N.O.	FL2R-12D5SV				
	N.C.	FL2R-12E5SV				

SPECIFICATIONS

●DC 2-wire type

Catalog listing	FL2R-12J6□V	FL2R-12K6□V
Actuation method	High-frequency oscillation (unshielded)	
Rated supply voltage	12/24Vdc	
Operating voltage range	10 to 30Vdc	
Leakage current	0.8mA max.	
Rated sensing distance	12 ± 1.2mm	
Standard target object	40 x 40 x 1 mm iron	
Differential travel	15% of sensing distance max.	
Hysteresis	0.1mm max.	
Operation mode	N.O.	N.C.
Output mode	DC 2-wire type, transistor output	
Control output	Switching current 3 to 100mA, voltage drop 3V max., output dielectric strength 30Vdc	
Operating frequency	800Hz min.	
Temperature characteristics	±10% max. of sensing distance for the -25 to +70°C range when +25°C is taken as standard temperature	
Supply voltage characteristics	±1% max. of sensing distance with ±15% voltage fluctuation, taking rated supply voltage as standard voltage	
Indicator lamps	Lights (red or green) during output	Lights (red) during output
Setting lamp	Light (green) in stable area	—
Operating temperature range	-25 to +70°C	
Storage temperature range	-25 to 70°C	
Operating humidity range	35 to 95% RH	
Insulation resistance	50MΩmin. (at 500Vdc) between case and electrically live metal	
Dielectric strength	500Vac 50/60Hz for 1 minute between case and electrically live metal	
Vibration resistance	10 to 55Hz, 1.5mm peak-to-peak amplitude, 2 hrs each in X, Y and Z directions	
Shock resistance	490m/s ² 10 times each in X, Y and Z directions	
Protection	IP67 (IEC standard)	
Weight	Approx. 110g (with 1m cable)	
Circuit protection	Reverse connection protection, surge absorption, load short-circuit protection	

WIRING DIAGRAM



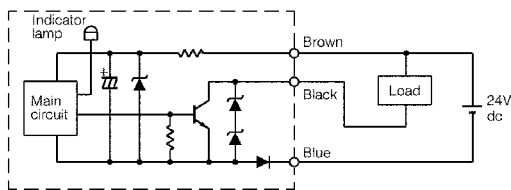
The load can be connected to either side of the power supply.

● DC 3-wire type

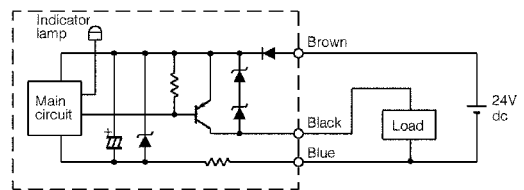
Item	Catalog listing	FL2R-12A5□V	FL2R-12B5□V	FL2R-12D5□V	FL2R-12E5□V
Actuation method		High-frequency oscillating type (unshielded)			
Rated supply voltage		24Vdc			
Rated sensing distance		12 ± 1.2mm			
Usable setting distance		8.4mm			
Standard target object		40 × 40mm, 1mm thick iron			
Differential travel		10% max. of sensing distance			
Operating voltage range		19 to 30Vdc			
Current consumption		25mA max. (24Vdc)			
Output operation mode		NPN N.O.	NPN N.C.	PNP N.O.	PNP N.C.
Control output		Switching current: 200mA max. Voltage drop: 3V max., output dielectric strength: 30Vdc			
Operating frequency		300Hz			
Hysteresis		0.05mm Max.			
Temperature characteristics		± 10% max. for the range of -25 to +70°C when +25°C is taken as standard temperature in sensing distances			
Supply voltage characteristics		± 1% max. with +15% voltage fluctuation with rated supply voltage as standard voltage in sensing distance			
Indicator lamps		Lights (red) when object approaches			
Operating temperature range		-25 to +70°C			
Storage temperature range		-25 to +70°C			
Storage humidity range		35 to 95% RH			
Insulation resistance		50MΩ min. (at 500Vac)			
Dielectric strength		1,000Vac, 50/60Hz for 1 minute			
Vibration resistance		10 to 55Hz, 1.5mm peak-to-peak amplitude, 2 hrs in X, Y and Z directions			
Shock resistance		490m/s ² 10 times in X, Y and Z directions			
Protection		IP67 (IEC standard)			
Weight		Approx. 110g (with 1m cable)			
Circuit protection		Surge absorption, load short-circuit protection, reverse connection protection			
Wiring method		Pre-leaded (oil-resistant 1m cord standard)			
Case material		ABS resin			

WIRING DIAGRAM

● NPN output type

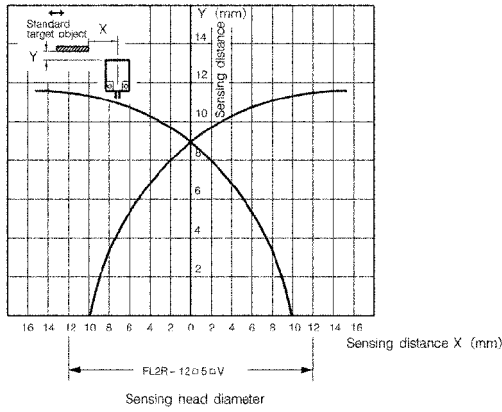


● PNP output type



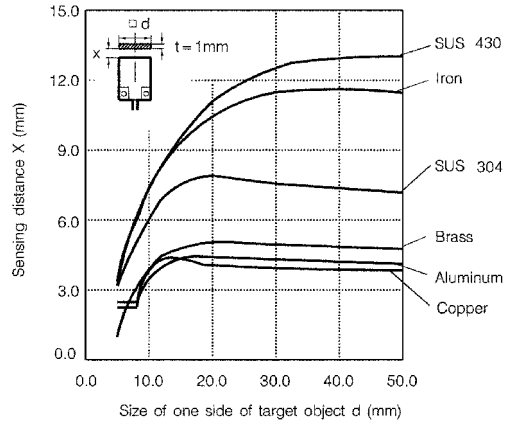
SENSING AREA (typical)

●FL2R-12□□□V



SENSING DISTANCE ACCORDING TO MATERIAL & SIZE OF OBJECT (typical)

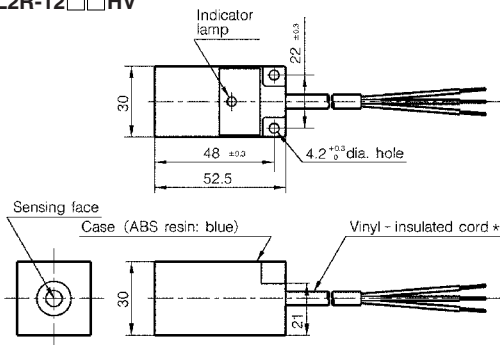
●FL2R-12□□□V



EXTERNAL DIMENSIONS

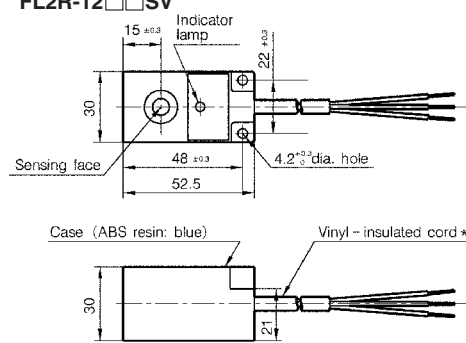
(unit: mm)

FL2R-12□□□HV



Vinyl-insulated cord (oil-resistant: 0.5mm², 20/0.18, 3-core) 5.7mm dia.

FL2R-12□□□SV



Vinyl-insulated cord (oil-resistant: 0.5mm², 20/0.18, 3-core) 5.7mm dia.

PRECAUTIONS

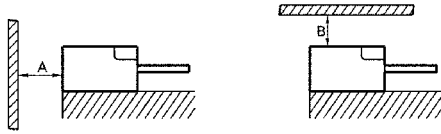
● Mounting

Tighten the screws to the torque shown below.

Catalog listing	Allowable tightening torque (N·m)	Recommended screw diameter
FL2R-12□□□V	0.5	M4

● Influence of surrounding metal

Metal other than the object surrounding the sensor may influence operating characteristics. Maintain the following space between the sensor and surrounding metal:



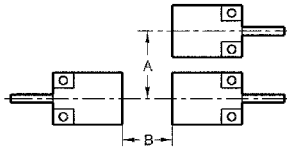
Note: Shaded areas indicate surrounding metal other than the target object.

Catalog listing	A (mm)	B (mm)
FL2R-12□□HV	50	25
FL2R-12□□SV	25	50

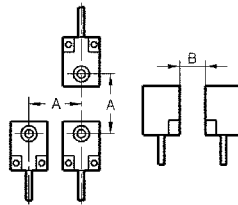
● Mutual interference prevention

When mounting proximity sensors in parallel or facing each other, mutual interference may cause the sensor to malfunction. Maintain at least the spaces indicated in the figures above.

Top sensing type



Side sensing type



Catalog listing	A (mm)	B (mm)
FL2R-12□□□V	120	120

● Operation at power ON

After the power is turned ON, it takes 40ms or less until the proximity sensor is ready for sensing.

When the load and the proximity sensor use different power supplies, be sure to turn the proximity sensor ON before turning the load ON.

● Minimum cord bending radius (R)

The minimum bending radius (R) of the cord is 3 times cord diameter, take care not to excessively bend the cord beyond this radius.

Also, do not excessively bend the cord within 30mm of the cord lead-in port.