

Inductive Proximity Sensor**E2Q4****Square Proximity Sensor**



- M12 Plug-in connection
- Integrated short circuit and reverse polarity protection
- Active face positioning: Y-axis 15°, X-axis 90° increments

**Ordering Information**

Sensing distance	Connection	Active face	Output		
				NO	NO + NC
20 mm shielded	Pre-wired	Changeable	NPN	E2Q4-N20E1	E2Q4-N20E3
			PNP	E2Q4-N20F1	E2Q4-N20F3
	Plug-in connector	Changeable	NPN	E2Q4-N20E1-M1	E2Q4-N20E3-M1
			PNP	E2Q4-N20F1-M1	E2Q4-N20F3-M1
30 mm non shielded	Pre-wired	Changeable	NPN	E2Q4-N30ME1	E2Q4-N30ME3
			PNP	E2Q4-N30MF1	E2Q4-N30MF3
	Plug-in connector	Changeable	NPN	E2Q4-N30ME1-M1	E2Q4-N30ME3-M1
			PNP	E2Q4-N30MF1-M1	E2Q4-N30MF3-M1

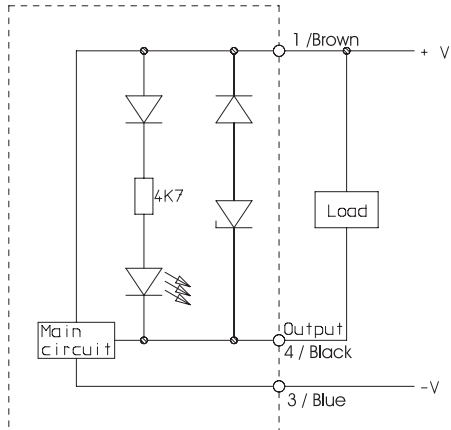
Accessories: For connector please contact us.

Specification

Operating voltage		10 to 30 VDC
Current consumption		max. 20 mA
Sensing object		Ferrous metals
Sensing distance Sn (Standard target size, LxW xH, Fe 37)	E2Q4-N20..	20 mm ±10%, shielded
	E2Q4-N30M..	30 mm ±10%, non shielded
	E2Q4-N20..	(60 x 60 x 1 mm)
	E2Q4-N30M..	(90 x 90 x 1 mm)
Setting distance	E2Q4-N20..	0 to 16,2 mm
	E2Q4-N30M..	0 to 24,3 mm
Differential travel		15 % max. of sensing distance Sn
Switching frequency		150 Hz
Control output	Type	E2Q4-N20E1: NPN - NO E2Q4-N20E1 - M1: NPN - NO E2Q4-N20F1: PNP - NO E2Q4-N20F1-M1: PNP - NO E2Q4-N20E3: NPN - NO + NC E2Q4-N20E3-M1: NPN - NO + NC E2Q4-N20F3: PNP - NO + NC E2Q4-N20F3-M1: PNP - NO + NC E2Q4-N30ME1: NPN - NO E2Q4-N30ME1-M1: NPN - NO E2Q4-N30ME3: NPN - NO + NC E2Q4-N30ME3-M1: NPN - NO + NC E2Q4-N30MF1: PNP - NO E2Q4-N30MF1-M1: PNP - NO E2Q4-N30MF3: PNP - NO + NC E2Q4-N30MF3-M1: PNP - NO + NC
	Max-Load	200 mA
	Max on-state voltage drop	3 VDC (at 200 mA load current)
Circuit protection		Reverse polarity, output short circuit
Indicator		Operating indicator (yellow LED)
Ambient temperature		Operating: -25° to 70°C
Humidity		35 to 95 % RH
Influence of temperature		± 10 % max. of Sn at 23°C in temperature range of -25° to 70°C
Dielectric strength		1.500 VAC, 50/60 Hz for 1 min. between current carry parts and case
Electromagnetic compatibility EMC		EN 60947-5-2
Vibration resistance		10 to 55 Hz, 1 mm amplitude according to IEC 60068-2-6
Shock resistance		approx. 30 G for 11 ms according to IEC 60068-2-27
Degree of protection		IP 67 (EN 60947-1)
Connection	Pre-wire	2 m PVC-Cable, 3x0,34mm ² / 4x0,34mm ²
	Plug-in connection	M12 plug, 3 / 4 pins
Material	Case	PBT
	Sensing face	PBT
Approvals		 CERTIFIED  LISTED

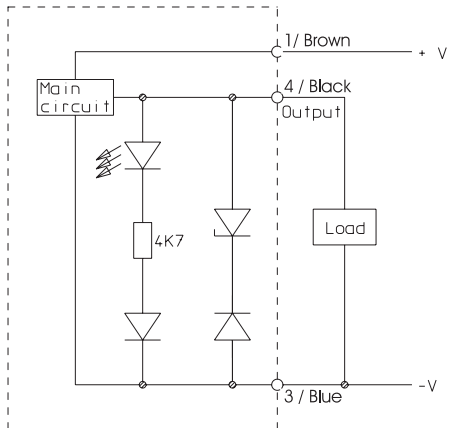
Output Circuit Diagram and Timing Chart

NPN Output



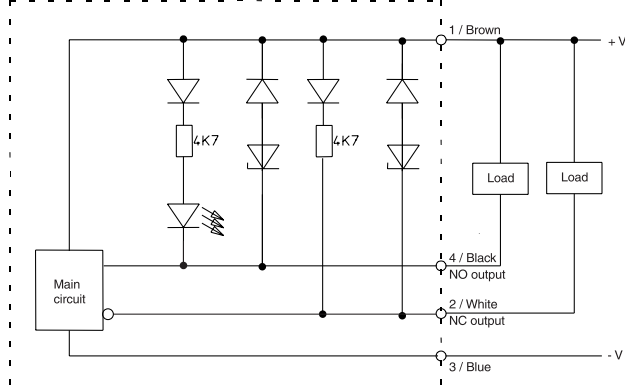
Output	NO
Sensing Object	Present: [Cross-hatched box] Absent: [White box]
Load	Operates: [Cross-hatched box] Release: [White box]
Operation Indicator	ON: [Cross-hatched box] OFF: [White box]

PNP Output



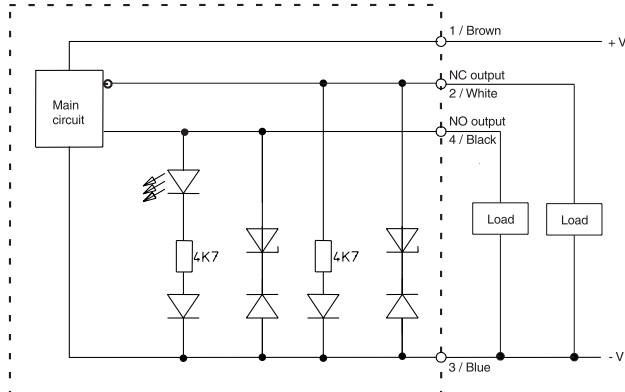
Output	NO
Sensing Object	Present: [Cross-hatched box] Absent: [White box]
Load	Operates: [Cross-hatched box] Release: [White box]
Operation Indicator	ON: [White box] OFF: [Cross-hatched box]

NPN NO + NC output



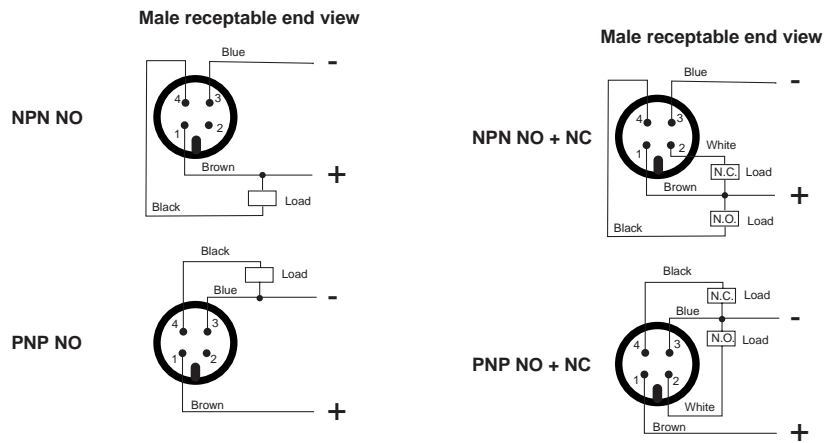
Output	NO	NC
Sensing Object	Present: [Cross-hatched box] Absent: [White box]	Present: [Cross-hatched box] Absent: [White box]
Load	Operates: [Cross-hatched box] Release: [White box]	Operates: [White box] Releases: [Cross-hatched box]
Operation Indicator	ON: [Cross-hatched box] OFF: [White box]	ON: [White box] OFF: [Cross-hatched box]

PNP NO + NC output

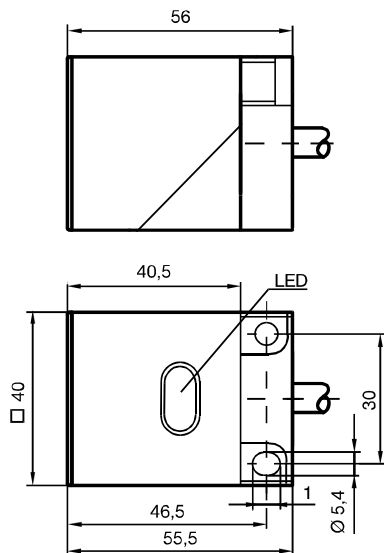


Output	NO	NC
Sensing Object	Present: [Cross-hatched box] Absent: [White box]	Present: [Cross-hatched box] Absent: [White box]
Load	Operates: [Cross-hatched box] Release: [White box]	Operates: [White box] Releases: [Cross-hatched box]
Operation Indicator	ON: [White box] OFF: [Cross-hatched box]	ON: [White box] OFF: [Cross-hatched box]

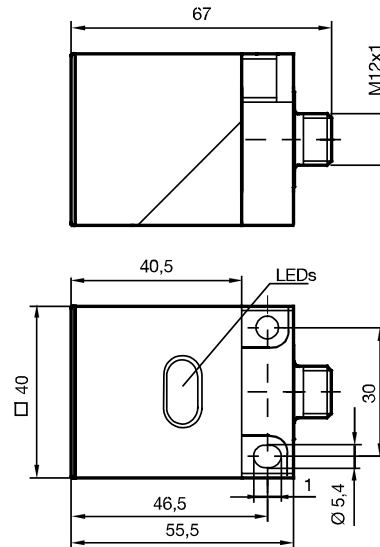
M12 connections



Dimensions E2Q4-N....



E2Q4-N....-M1



Caution

Item	Examples
<p>Power Supply</p> <p>Do not impose an excessive voltage on the E2Q4, otherwise it may explode or burn.</p> <p>Do not impose AC voltage on any E2Q4 DC model, otherwise it may explode or burn.</p>	

Correct Use

Installation

Power Reset Time

The Proximity Sensor is ready to operate within 300 ms after power is supplied. If power supplies are connected to the Proximity Sensor and load respectively, be sure to supply power to the Proximity Sensor before supplying power to the load.

Power OFF

The Proximity Sensor may output a pulse signal when it is turned off. Therefore, it is recommended to turn off the load before turning off the Proximity Sensor.

Power Supply Transformer

When using a DC power supply, make sure that the DC power supply has an insulated transformer. Do not use a DC power supply with an auto-transformer.

Sensing Object

Metal Coating:

The sensing distance of the Proximity Sensor vary with the metal coating on sensing objects.

Wiring

High-tension Lines

Wiring through Metal Conduit

If there is a power or high-tension line near the cable of the Proximity Sensor, wire the cable through an independent metal conduit to prevent against Proximity Sensor damage or malfunctioning.

Mounting

The Proximity Sensor must not be subjected to excessive shock with a hammer when it is installed, otherwise the Proximity Sensor may be damaged or lose the water-resistivity.

Environment

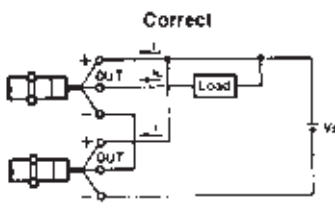
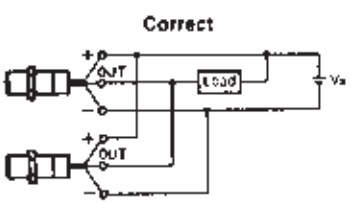
Water-resistivity

Do not use the Proximity Sensor underwater, outdoors or in the rain.

Operating Environment

Be sure to use the Proximity Sensor within operating ambient temperature range and do not use the Proximity Sensor outdoors so that its reliability and life expectancy can be maintained. Although the Proximity Sensor is water resistive, a cover to protect the Proximity Sensor from water or soluble machining oil is recommended so that its reliability and life expectancy can be maintained. Do not use the Proximity Sensor in an environment with chemical gas (e. g., strong alkaline or acid gases including nitric, chromic, and concentrated sulfuric acid gases).

DC Type

Connection type	Method	Description
AND (serial connection)		<p>The Sensors connected together must satisfy the following conditions:</p> <p>$i_L + (N-1) \times i \leq$ Upper-limit of control output of each Sensor</p> <p>$V_S - N \times V_R \geq$ Load operating voltage</p> <p>$N =$ No. of Sensors</p> <p>$V_R =$ Residual voltage of each Sensor</p> <p>$V_S =$ Supply voltage</p> <p>$i =$ Current consumption of the Sensor</p> <p>$i_L =$ Load current</p> <p>If the MY Relay, which operate at 24 VDC, is used as a load for example, a maximum of two Proximity Sensors can be connected to the load.</p>
OR (parallel connection)		<p>A minimum of three Sensors with current outputs can be connected in parallel. The number of Sensors connected in parallel varies with the Proximity Sensor model.</p>



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