

## Inductive Proximity Sensor

## E2Q2

### Limit Switch Style Proximity Sensor with 5-Position Sensing Head

- Sensing face easily adjusts to one of five directions
- Easy to install and same mounting dimensions as a standard limit switch
- Integrated short circuit and reverse polarity protection
- Plastic body with stainless steel screws
- Weld field immune models available
- Conduit openings 1/2"-NPT and Brad Harrison MiniChange® connector versions available



## Ordering Information

### ■ DC INPUT TYPE

Type	Sensing distance	Output type	Part number	
			1/2" -NPT conduit opening	4-pin MiniChange connector*
Shielded	20 mm (0.79 in)	NPN (NO+NC)	E2Q2-N20E3-U	E2Q2-N20E3-50
		PNP (NO+NC)	E2Q2-N20F3-U	E2Q2-N20F3-50
Unshielded	30 mm (1.18 in)	NPN (NO+NC)	E2Q2-N30ME3-U	E2Q2-N30ME3-50
		PNP (NO+NC)	E2Q2-N30MF3-U	E2Q2-N30MF3-50

Note: \*Use Brad Harrison connector #104000A01F120 (12 foot) or equivalent.

### ■ AC INPUT TYPE

Type	Sensing distance	Output type	Part number	
			1/2" -NPT conduit opening	4-pin MiniChange connector*
Shielded	15 mm (0.59 in)	SCR (NO or NC)	E2Q2-N15Y4-U	E2Q2-N15Y4-50
Unshielded	30 mm (1.18 in)	SCR (NO or NC)	E2Q2-N30MY4-U	E2Q2-N30MY4-50

Note: \*Use Brad Harrison connector #103000A01F120 (12 foot) or equivalent.

### ■ WELD FIELD IMMUNE TYPES

These sensors withstand 25,400 amps at 1 inch (100 mT).

Type	Sensing distance	Input type	Output type	Part number	
				1/2" -NPT conduit opening	MiniChange connector
Shielded	15 mm (0.59 in)	DC	PNP (NO)	E2Q2-N15F1-51	E2Q2-N15F1-52*
		AC	SCR (NO or NC)	E2Q2-N15Y4-51	E2Q2-N15Y4-52**

Note: \*Use 4-pin Brad Harrison connector #104000A01F120 (12 foot) or equivalent.

\*\*Use 3-pin Brad Harrison connector #103000A01F120 (12 foot) or equivalent.

# Specifications

## ■ DC INPUT TYPES

Part number		E2Q2-N15□	E2Q2-N20□	E2Q2-N30□
Operating voltage		10 to 60 VDC; 10 to 30 VDC for weld-field immune types		
Current consumption		20 mA max.		10 mA max.
Sensing object		Ferrous metals		
Sensing distance		15 mm ±10%, shielded	20 mm ±10%, shielded	30 mm ±10%, unshielded
Setting distance with standard sensing object (L x W x H mm)		0 to 12 mm; 0 to 15 mm (45 x 45 x 1 mm, mild steel)	0 to 16 mm, 0 to 20 mm (60 x 60 x 1 mm, mild steel)	0 to 24 mm, 0 to 30 mm (90 x 90 x 1 mm, mild steel)
Differential travel		15% max. of sensing distance		
Control output	Type	F1: PNP-NO	E3: NPN (NO+NC) F3: PNP (NO+NC)	ME3: NPN (NO+NC) MF3: PNP (NO+NC)
	Max. load	200 mA		
	Max. on-state voltage drop	3 VDC at 200 mA load current		
Response frequency		10 Hz (weld field immune)	150 Hz	100 Hz
Circuit protection		Reverse polarity, output short-circuit		
Weld field immunity		25,400 amps at 1 inch (100 mT)	–	–
Indicator		Operating indicator (yellow LED)		
Material	Case	PBT		
	Terminal base	Aluminum		
	Sensing face	PBT		
Connections		-U, -51: 1/2"-NPT conduit opening; -G: PG 13.5 conduit opening -50, -52: 4-pin MiniChange connector		
Enclosure rating		IP67 (EN 60947-1)		
Approvals		UL listed, CSA certified		
Operating ambient temperature		-25° to 70°C (-13° to 158°F)		
Relative humidity		35% to 95% RH		
Influence of temperature		±10% max. of sensing distance at 23°C (73.4°F) in temperature range of -25° to 70°C (-13° to 158°F)		
Dielectric strength		1,500 VAC, 50/60 Hz for 1 minute between current carrying parts and case		
Electromagnetic compatibility		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		

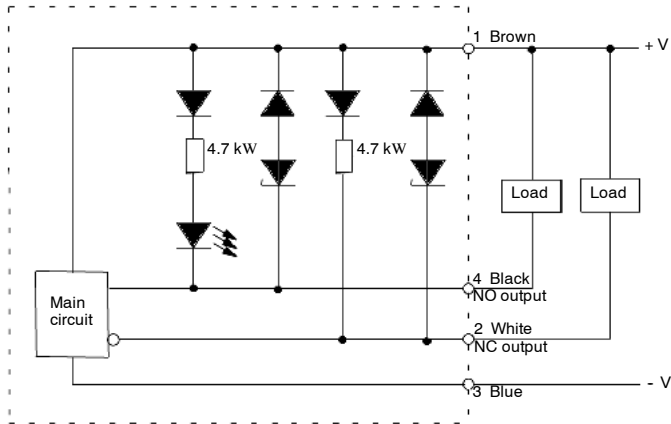
## ■ AC INPUT TYPES

Part number		E2Q2-N15Y□	E2Q2-N30MY4□
Operating voltage		20 to 253 VAC, 50/60 Hz	
Current consumption		20 mA max.	10 mA max.
Leakage current		1.9 mA max. (2.5 mA max. for weld field immune types)	
Sensing object		Ferrous metals	
Sensing distance		15 mm ±10%, shielded	30 mm ±10%, unshielded
Setting distance with standard sensing object (L x W x H mm)		0 to 12 mm; 0 to 15 mm (45 x 45 x 1 mm, mild steel)	0 to 24 mm, 0 to 30 mm (90 x 90 x 1 mm, mild steel)
Differential travel		15% max. of sensing distance	
Control output	Type	SCR (NO or NC)	
	Max. load	500 mA	
	Min. load	8 mA (10 mA for weld field immune types)	
	Max. on-state voltage drop	12 VDC at 500 mA load current	
Response frequency		20 Hz	
Circuit protection		None	
Weld field immunity		25,400 amps at 1 inch (100 mT)	
Indicator		Operating indicator (yellow LED)	
Material	Case	PBT	
	Terminal base	Aluminum	
	Sensing face	PBT	
Connections		-U, -51: 1/2"-NPT conduit opening; -50, -52: 3-pin MiniChange connector	
Enclosure rating		IP67 (EN 60947-1)	
Approvals		UL listed, CSA certified	
Operating ambient temperature		-25° to 70°C (-13° to 158°F)	
Relative humidity		35% to 95% RH	
Influence of temperature		±10% max. of sensing distance at 23°C (73.4°F) in temperature range of -25° to 70°C (-13° to 158°F)	
Dielectric strength		1,500 VAC, 50/60 Hz for 1 minute between current carrying parts and case	
Electromagnetic compatibility		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	

# Operation

## ■ OUTPUT CIRCUIT DIAGRAMS AND TIMING CHARTS

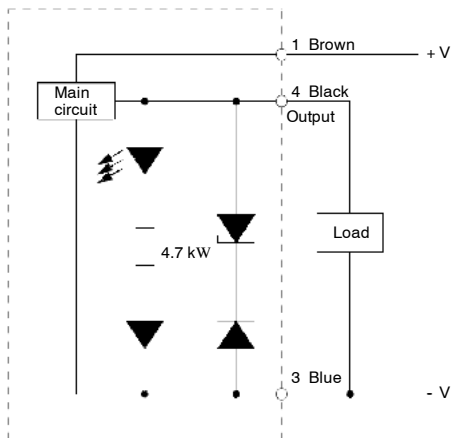
### NPN (NO + NC) Output



E2Q2-N□□□E3-□

Output		NO	NC
Target	Present Absent		
Load (output)	Operates Releases		
Operation indicator	ON OFF		

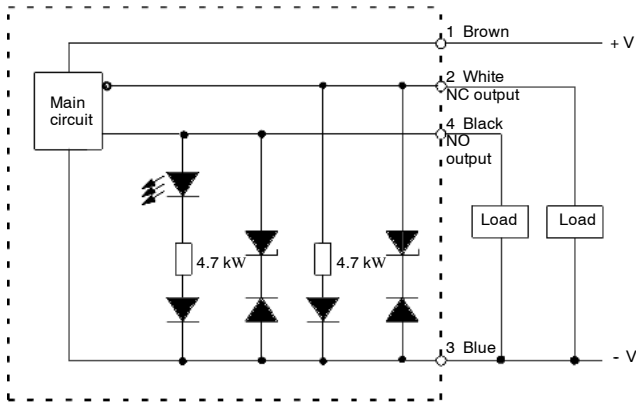
### PNP-NO Output (Weld Field Immune Models)



E2Q2-N15F1-5□

Output		NO
Target	Present Absent	
Load (output)	Operates Releases	
Operation indicator	ON OFF	

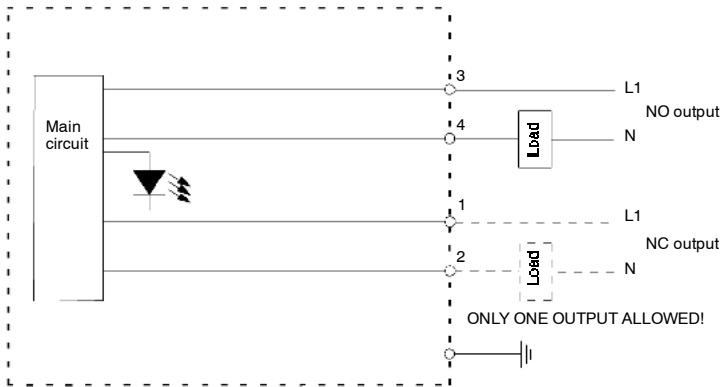
PNP (NO + NC) Output



E2Q2-N□□□F3-□

Output		NO	NC
Target	Present	[Cross-hatched]	[Cross-hatched]
	Absent	[White]	[White]
Load (output)	Operates	[Cross-hatched]	[Cross-hatched]
	Releases	[White]	[White]
Operation indicator	ON	[Cross-hatched]	[Cross-hatched]
	OFF	[White]	[White]

AC (NO or NC) Output



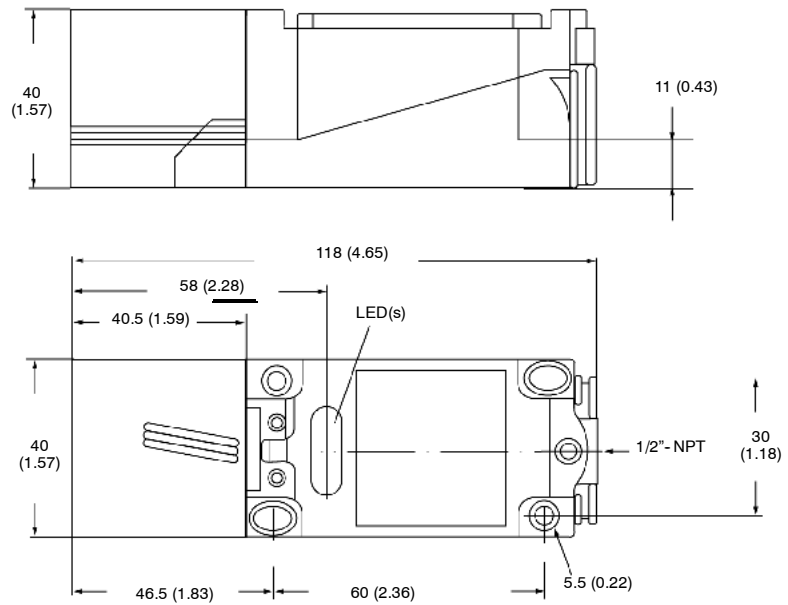
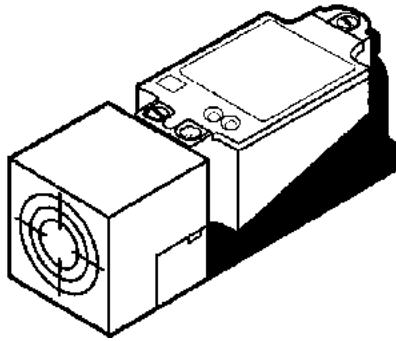
E2Q2-N□□□Y4-□

Output		NO	NC
Target	Present	[Cross-hatched]	[Cross-hatched]
	Absent	[White]	[White]
Load (output)	Operates	[Cross-hatched]	[Cross-hatched]
	Releases	[White]	[White]
Operation indicator	ON	[Cross-hatched]	[Cross-hatched]
	OFF	[White]	[White]

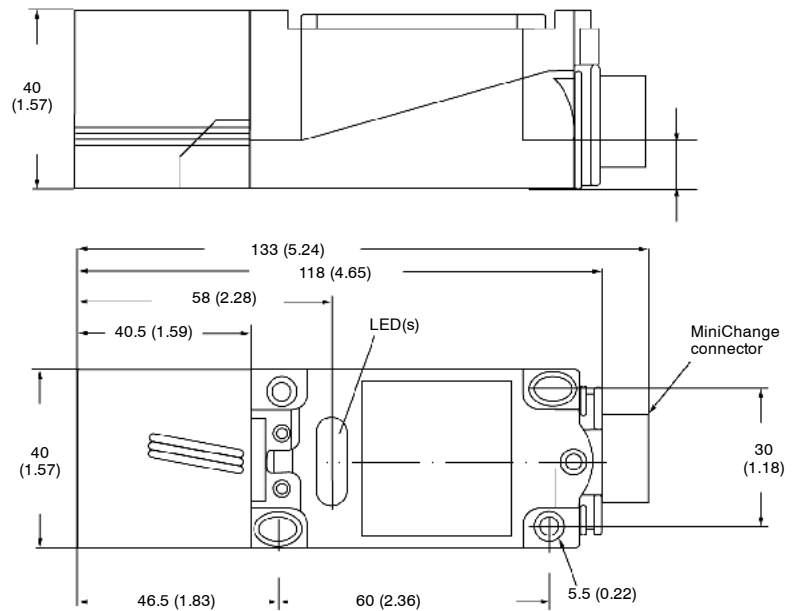
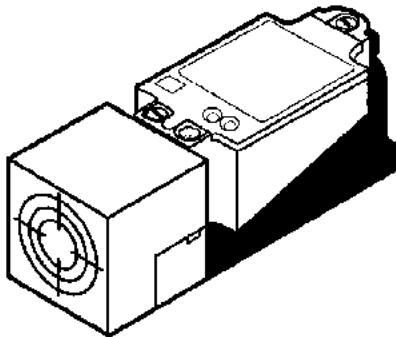
# Dimensions

Unit: mm (inch)

## ■ E2Q2-N□□□□-U AND -51 TYPE



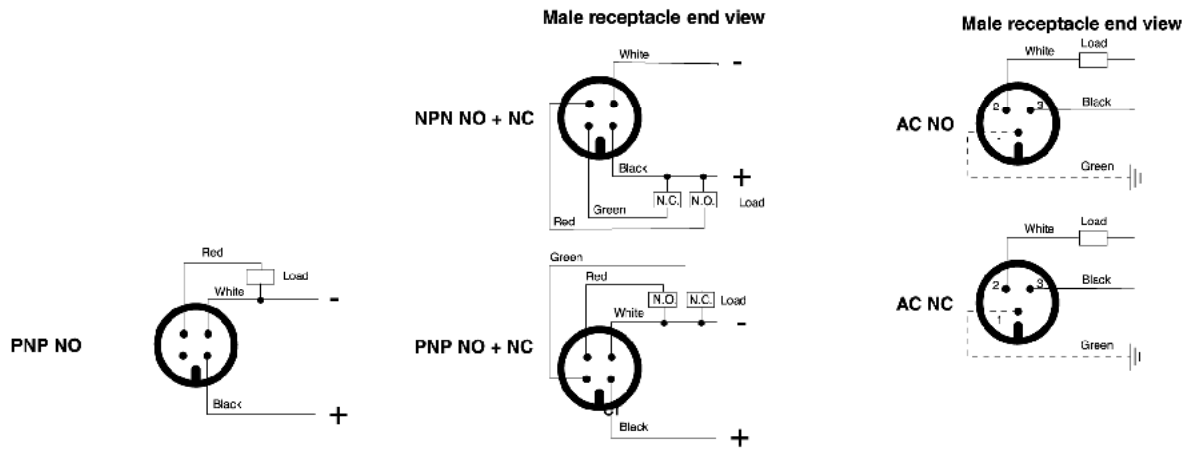
## ■ E2Q2-N□□□□-50 AND -52 TYPE



# Installation

## ■ PIN ARRANGEMENT

### MiniChange connections



## Precautions

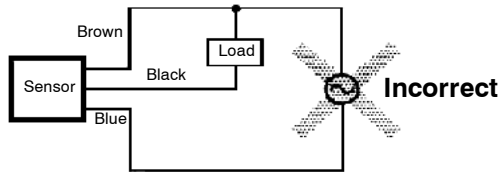


### CAUTION

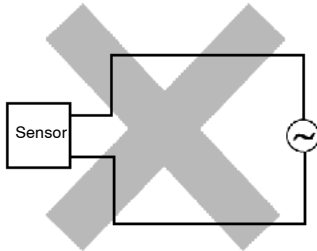
#### Power supply

Do not impose an excessive voltage on the E2Q2, otherwise it may explode or burn.

Do not impose AC voltage on any E2Q2 DC model, otherwise it may explode or burn.



Do not connect the AC types without load to the power supply. The sensor will be damaged.



## ■ 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 will 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 its water resistance.

## ■ ENVIRONMENT

### Water Resistance

Do not use the proximity sensor underwater, outdoors or in the rain.

### Operating Environment

Be sure to use the Proximity Sensor with 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 resistant, 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).

**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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