Inductive proximity switches–Square type, PE-B

Supply voltage:
10-30V DC
80-250V AC, 50/60Hz
Operating distance: 4 to 50mm

■ Features

- Operating distance from 4mm to 50mm permits a variety of applications.
- LED's for operating indication lamp are provided for all types thus facilitating operation checks.
- Ones with an operating distance of over 20mm meet the requirements of the CENELEC Standards.
- Wide operating voltage range Operating range of supply voltage is from 80 to 250V AC or from 10 to 30V DC.
- Provided with built-in reverse polarity and surge voltage protection circuits.
- PNP output types are also available thus permitting application to machine tools in Europe.



PE-B SK-588

■ Type number nomenclature

PE – B 4 D 3 B

Basic type

Series
B: Square shaped

Operating distance
4: 4mm 20: 20mm
7: 7mm 30: 30mm
10:10mm 50: 50mm
15:15mm

Operating system
D: DC, 3-wire, NPN output
Q: DC, 3-wire, PNP output
A: AC, 2-wire
S: DC, 2-wire

Sensing head direction
Blank: Standard
3: Upper side (PE–B4 only)

Contact
Blank: 1NO
B: 1NC

■ Ordering code

PE1 B 10 – D B 3

Basic type

Series
B: Square shaped

Operating distance
04: 4mm 20: 20mm
07: 7mm 30: 30mm
10: 10mm 50: 50mm
15: 15mm

Operating system
D: DC, 3-wire, NPN output
Q: DC, 3-wire, PNP output
A: AC, 2-wire
S: DC, 3-wire

Sensing head direction
Blank: Standard
3: Upper side (PE-B4 only)

Contact
Blank: 1NO
B: 1NC

05

■ Versions

Operating system	Target size (mm)	Operating distance (mm)	Output * 1NO Type	Ordering code	1NC Type	Ordering code	Output * 1NO Type	Ordering code	1NC Type	Ordering code
DC supply 3-wire	20 × 20 × 1	4	**PE-B4D**	PE1B04-D	**PE-B4DB**	PE1B04-DB	**PE-B4Q**	PE1B04-Q	**PE-B4QB**	PE1B04-QB
	20 × 20 × 1	4	**PE-B4D3**	PE1B04-D3	**PE-B4D3B**	PE1B04-DB3	**PE-B4Q3**	PE1B04-Q3	**PE-B4Q3B**	PE1B04-QB3
	30 × 30 × 1	7	**PE-B7D**	PE1B07-D	**PE-B7DB**	PE1B07-DB	**PE-B7Q**	PE1B07-Q	**PE-B7QB**	PE1B07-QB
	40 × 40 × 1	10	**PE-B10D**	PE1B10-D	**PE-B10DB**	PE1B10-DB	**PE-B10Q**	PE1B10-Q	**PE-B10QB**	PE1B10-QB
	50 × 50 × 1	15	**PE-B15D**	PE1B15-D	**PE-B15DB**	PE1B15-DB	–	–	–	–
	50 × 50 × 1	20	**PE-B20D**	PE1B20-D	**PE-B20DB**	PE1B20-DB	**PE-B20Q**	PE1B20-Q	**PE-B20QB**	PE1B20-QB
	90 × 90 × 1	30	**PE-B30D**	PE1B30-D	**PE-B30DB**	PE1B30-DB	**PE-B30Q**	PE1B30-Q	**PE-B30QB**	PE1B30-QB
	150 × 150 × 1	50	**PE-B50D**	PE1B50-D	**PE-B50DB**	PE1B50-DB	**PE-B50Q**	PE1B50-Q	**PE-B50QB**	PE1B50-QB
AC supply 2-wire	30 × 30 × 1	7	**PE-B7A**	PE1B07-A	–	–	–	–	–	–
	40 × 40 × 1	10	**PE-B10A**	PE1B10-A	–	–	–	–	–	–
	50 × 50 × 1	20	**PE-B20A**	PE1B20-A	–	–	–	–	–	–
	90 × 90 × 1	30	**PE-B30A**	PE1B30-A	**PE-B30AB**	PE1B30-AB	–	–	–	–
	150 × 150 × 1	50	**PE-B50A**	PE1B50-A	**PE-B50AB**	PE1B50-AB	–	–	–	–
DC supply 2-wire	20 × 20 × 1	4	**PE-B4S**	PE1B04-S	**PE-B4SB**	PE1B04-SB	–	–	–	–
	30 × 30 × 1	7	**PE-B7S**	PE1B07-S	**PE-B7SB**	PE1B07-SB	–	–	–	–
	40 × 40 × 1	10	**PE-B10S**	PE1B10-S	**PE-B10SB**	PE1B10-SB	–	–	–	–
	50 × 50 × 1	20	**PE-B20S**	PE1B20-S	**PE-B20SB**	PE1B20-SB	–	–	–	–
	90 × 90 × 1	30	**PE-B30S**	PE1B30-S	**PE-B30SB**	PE1B30-SB	–	–	–	–
	150 × 150 × 1	50	**PE-B50S**	PE1B50-S	**PE-B50SB**	PE1B50-SB	–	–	–	–

Notes: *PE-B□D: NPN transistor, open collector output
PE-B□Q: PNP transistor, open collector output
PE-B□A: Thyristor output
PE-B□S: Transistor output

■ Ordering information

Specify the following:
1. Type number or ordering code

■ Specifications

Type	**PE-B□D**, **PE-B□DB**	**PE-B□Q**, **PE-B□QB**	**PE-B□S**, **PE-B□SB**	**PE-B□A**, **PE-B□AB**
Output	NPN transistor, open collector output	PNP transistor, open collector output	Transistor, output	Thyristor, output
Supply voltage	12/24V DC *1		12/24V DC *1	120/240V AC *2
Output capacity	Max. 200mA at 12/24V DC (PE-B4D□, PE-B4Q□: Max. 50mA at 12/24V DC)		Max. 100mA	10 to 200mA
Current consumption	Max. 15mA at 24V DC		0.8mA or less (Leakage current)	2mA at 200V AC (Leakage current)
Ambient temperature	–25 to +75°C		–25 to +75°C	–25 to +75°C
Dielectric strength	2000V AC, 1 min.		2000V AC, 1 min.	2000V AC, 1 min.
Insulation resistance	Over 50MΩ (500V DC megger)			
Degree of protection	IP67 (IEC)			
Response frequency	See table below			
Vibration	10 to 55Hz, 1.5mm double amplitude (in X, Y and Z direction, respectively for two hours)			
Shock	500m/s^2			
Circuit protection	Short-circuit (except PE-B□A and PE-B□AB), reverse polarity, surge voltage			

Notes: *1 Operational voltage range: 10 to 30V DC *2 Operational voltage range: 80 to 250V AC.

■ Response frequency

DC supply

PE-B7D, PE-B7Q, PE-B7S	300Hz
PE-B4D, PE-B4Q, PE-B4S	200Hz
RE-B10D, PE-B10Q, PE-B10S	

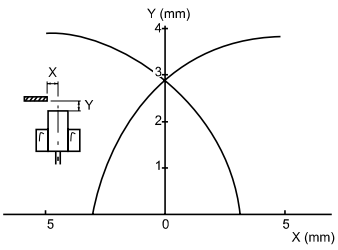
PE-B15D, PE-B20D, PE-B20Q, PE-B20S	100Hz
PE-B30D, PE-B30Q, PE-B30S	50Hz
PE-B50D, PE-B50Q, PE-B50S	10Hz

AC supply

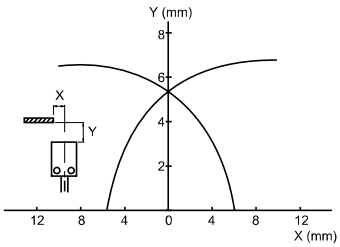
PE-B7A, PE-B10A, PE-B20A	20Hz
PE-B30A, PE-B50A	5Hz

■ Response curve for iron (Typical)

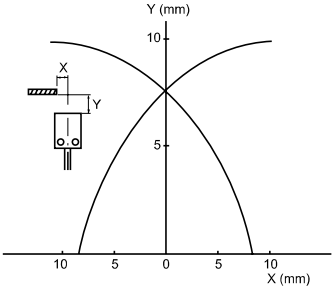
PE-B4□
Material: Iron
20 × 20 × 1mm



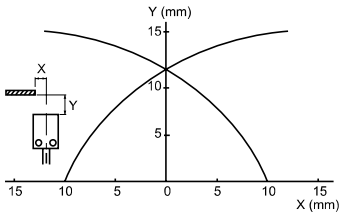
PE-B7□
Material: Iron
30 × 30 × 1mm



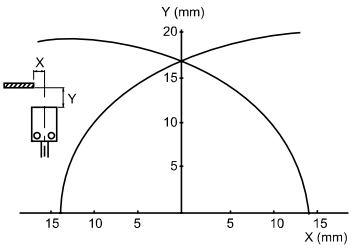
PE-B10□
Material: Iron
40 × 40 × 1mm



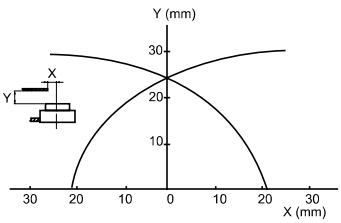
PE-B15□
Material: Iron
50 × 50 × 1mm



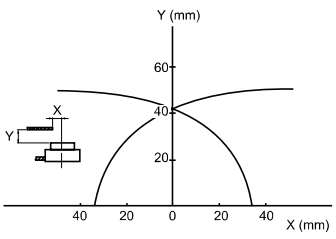
PE-B20□
Material: Iron
50 × 50 × 1mm



PE-B30□
Material: Iron
90 × 90 × 1mm



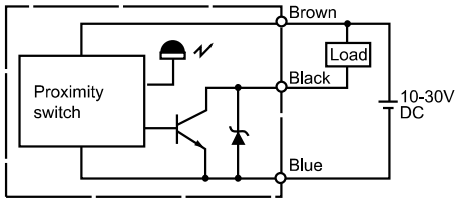
PE-B50□
Material: Iron
150 × 150 × 1mm



■ Wiring diagrams

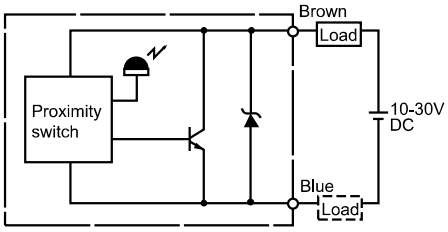
● DC supply/3-wire system

PE-B□D



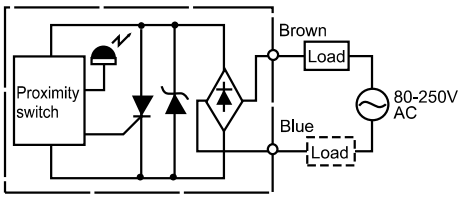
● DC supply/2-wire system

PE-B□S

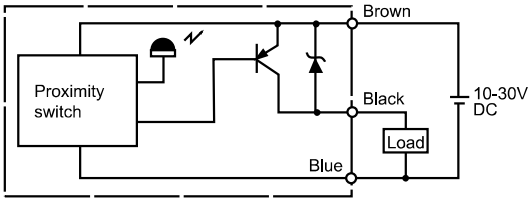


● AC supply/2-wire system

PE-B□A

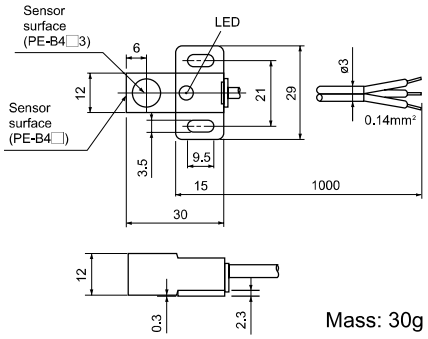


PE-B□Q

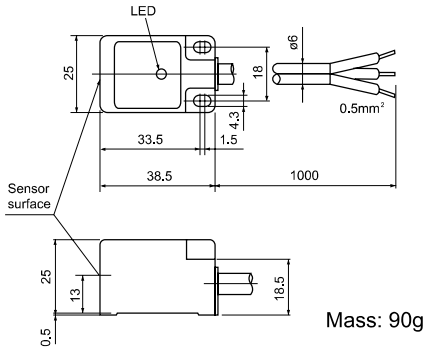


■ Dimensions, mm

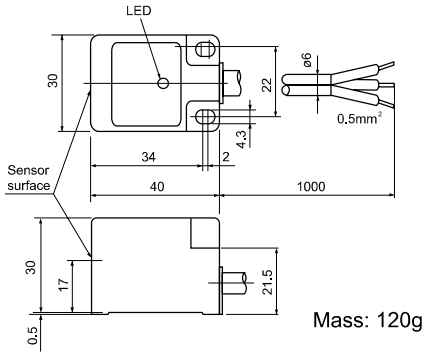
PE-B4□, B4□3 PE-B4□B, B4□3B



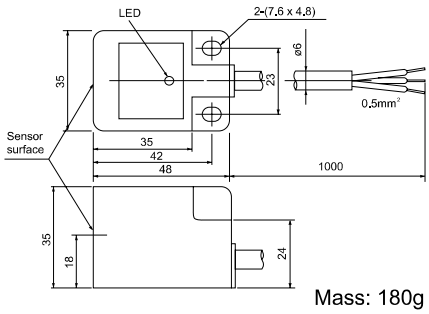
PE-B7□, PE-B7□B



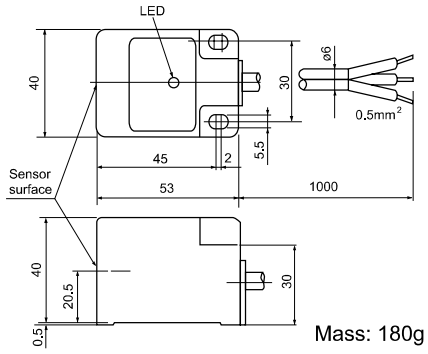
PE-B10□, PE-B10□B



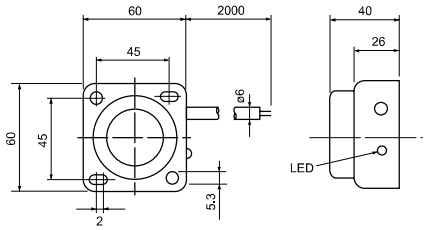
PE-B15D, PE-B15DB



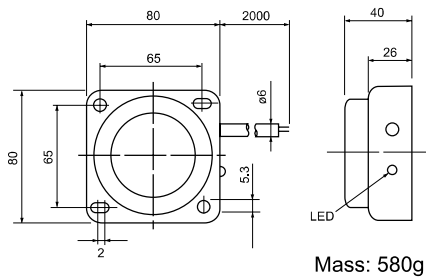
PE-B20□, PE-B20□B



PE-B30□, PE-B30□B

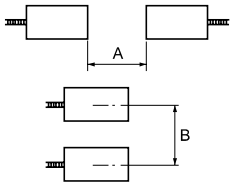


PE-B50□, PE-B50□B



■ Mutual interference:

Be sure to space two switches at a distance greater than that shown in the table at right to prevent mutual interference.



Type	A (mm)	B (mm)
PE-B4□	60 (30)	60 (30)
BE-B7□	80 (40)	80 (40)
PE-B10□	120 (60)	120 (60)
PE-B15□	200 (100)	120 (60)
PE-B20□	200 (100)	200 (100)
PE-B30□	300 (150)	300 (150)
PE-B50□	500 (250)	500 (250)

Note: The values in parentheses are applicable when using two switches with oscillation frequencies different from each other.