

Sensori di prossimità induttivi M18 serie AK e PK

M18 inductive proximity sensors AK & PK series



Caratteristiche principali Main features

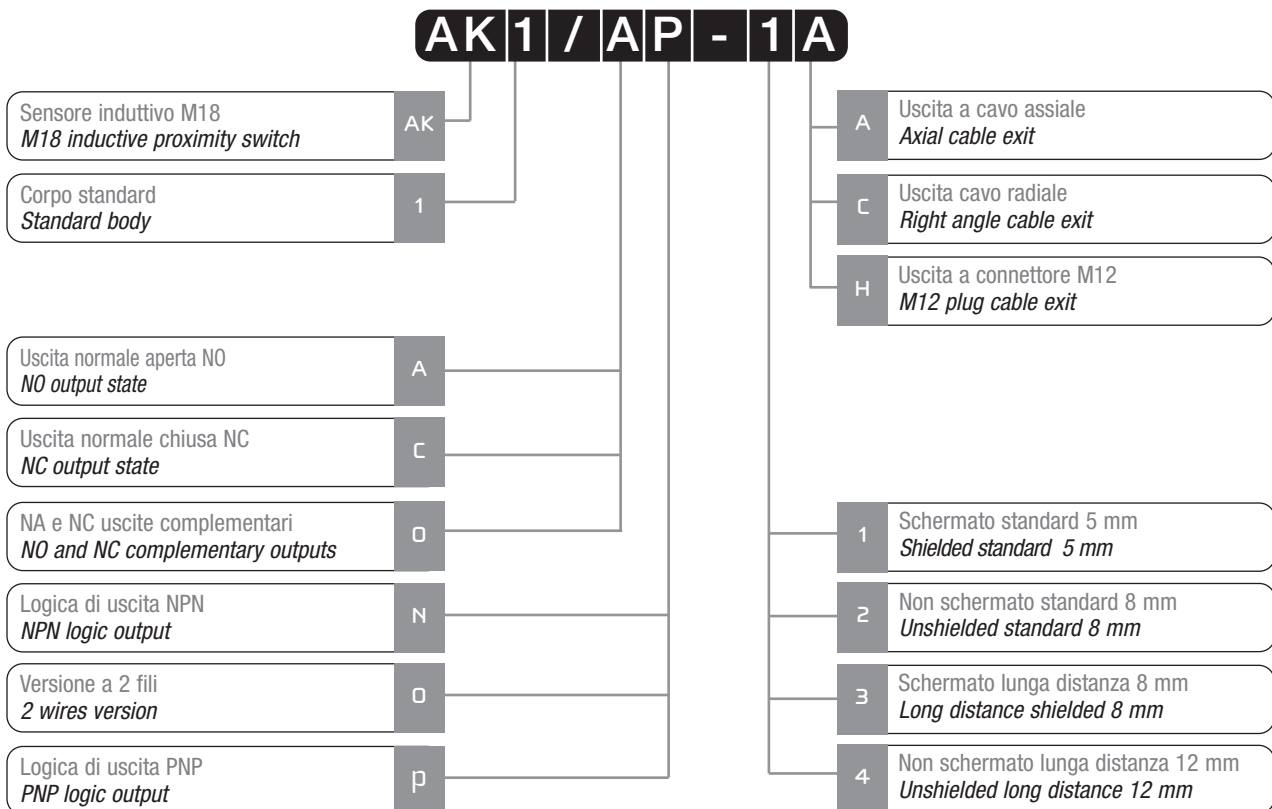
- > Vasta gamma di modelli: standard, lunga distanza, con uscita DECOUT
- > *Wide range of models: standard, long distance, DECOUT output*
- > Uscite: cavo, connettore M12
- > *Output: cable, M12 and plug cable exit*
- > Modelli a 2, 3 e 4 fili
- > *Models with 2, 3, and 4 wires*

Disponibili, su richiesta, modelli ATEX, cat. 3
ATEX models, cat. 3, available on request

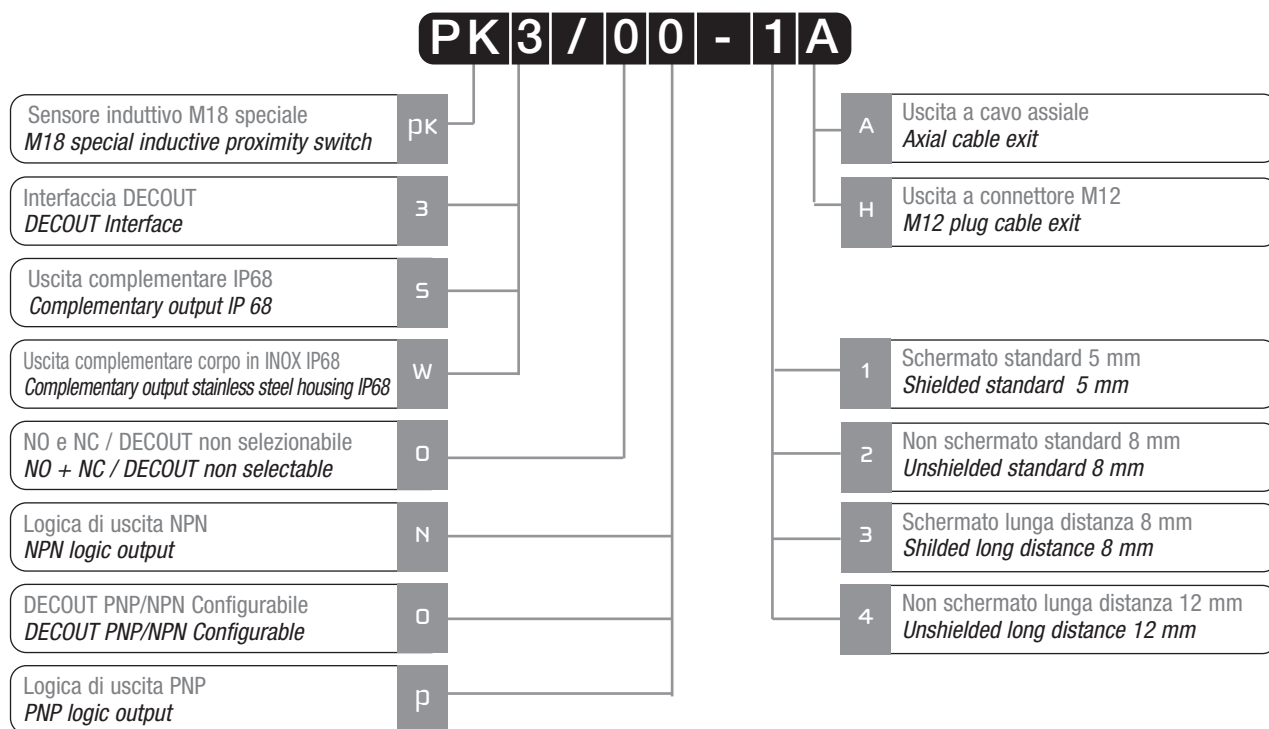
- > Modelli speciali a doppio involucro protetti all'immersione (IP 68)
- > *Special models with double enclosure immersion proof (IP 68)*
- > Modelli con uscita complementare (NO+NC)
- > *Models with complementary output (NO+NC)*
- > Marchio CE
- > **CE** Mark

Descrizione del codice - Code structure

> M18 serie AK - M18 AK series



> M18 serie PK - M18 PK series



Modelli disponibili - Available models

Corpo Standard / Standard housing

Diametro <i>Diameter</i>	Montaggio <i>Installation</i>	Portata <i>Distance</i>	Conn. <i>Plug</i>	Distanza <i>Distance</i>	NPN/NO	PNP/NO	NPN/NC	PNP/NC
M18	Schermato <i>Shielded</i>	Standard	Cavo / Wire	5 mm	AK1/AN-1A	AK1/AP-1A	AK1/CN-1A	AK1/CP-1A
			Cavo / Wire 90°	5 mm	AK1/AN-1C	AK1/AP-1C	AK1/CN-1C	AK1/CP-1C
			M12	5 mm	AK1/AN-1H	AK1/AP-1H	AK1/CN-1H	AK1/CP-1H
	Non scherm. <i>Unshielded</i>	Standard	Cavo / Wire	8 mm	AK1/AN-2A	AK1/AP-2A	AK1/CN-2A	AK1/CP-2A
			Cavo / Wire 90°	8 mm	AK1/AN-2C	AK1/AP-2C	AK1/CN-2C	AK1/CP-2C
			M12	8 mm	AK1/AN-2H	AK1/AP-2H	AK1/CN-2H	AK1/CP-2H
	Schermato <i>Shielded</i>	Lunga dist. <i>Long dist.</i>	Cavo / Wire	8 mm	AK1/AN-3A	AK1/AP-3A	AK1/CN-3A	AK1/CP-3A
			M12	8 mm	AK1/AN-3H	AK1/AP-3H	AK1/CN-3H	AK1/CP-3H
			Cavo / Wire	12 mm	AK1/AN-4A	AK1/AP-4A	AK1/CN-4A	AK1/CP-4A
	Non scherm. <i>Unshielded</i>	Lunga dist. <i>Long dist.</i>	M12	12 mm	AK1/AN-4H	AK1/AP-4H	AK1/CN-4H	AK1/CP-4H

Modelli 2 fili DC / DC 2 wires models

Diametro <i>Diameter</i>	Montaggio <i>Installation</i>	Portata <i>Distance</i>	Conn. <i>Plug</i>	Distanza <i>Distance</i>	NO-PNP/NPN	NC-PNP/NPN
M18	Schermato <i>Shielded</i>	Standard	Cavo / Wire	5 mm	AK1/A0-1A	AK1/C0-1A
			M12	5 mm	AK1/A0-1H	AK1/C0-1H
	Non schermato <i>Unshielded</i>	Standard	Cavo / Wire	8 mm	AK1/A0-2A	AK1/C0-2A
			M12	8 mm	AK1/A0-2H	AK1/C0-2H
	Schermato <i>Shielded</i>	Lunga distanza <i>Long distance</i>	Cavo / Wire	8 mm	AK1/A0-3A	AK1/C0-3A
			M12	8 mm	AK1/A0-3H	AK1/C0-3H
	Non schermato <i>Unshielded</i>	Lunga distanza <i>Long distance</i>	Cavo / Wire	12 mm	AK1/A0-4A	AK1/C0-4A
			M12	12 mm	AK1/A0-4H	AK1/C0-4H

AK & PK series - inductive sensors

Modelli DECOU / DECOU models

Diametro <i>Diameter</i>	Montaggio <i>Installation</i>	Portata <i>Distance</i>	Conn. <i>Plug</i>	Distanza <i>Distance</i>	NO/NC-PNP/NPN
M18	Schermato <i>Shielded</i>	Standard	Cavo / <i>Wire</i>	5 mm	PK3/00-1A
			M12	5 mm	PK3/00-1H
	Non schermato <i>Unshielded</i>	Standard	Cavo / <i>Wire</i>	8 mm	PK3/00-2A
			M12	8 mm	PK3/00-2H

Modelli IP 67-IP 68 con corpo in ottone / IP 67-IP 68 models with nickel-plated brass housing

Diametro <i>Diameter</i>	Montaggio <i>Installation</i>	Portata <i>Distance</i>	Conn. <i>Plug</i>	Distanza <i>Distance</i>	NPN – NO+NC	PNP – NO+NC
M18	Schermato / <i>Shielded</i>	Standard	M12	5 mm	PKS/ON-1H	PKS/OP-1H
	Non scherm. / <i>Unshielded</i>	Standard	M12	8 mm	PKS/ON-2H	PKS/OP-2H
	Schermato / <i>Shielded</i>	Lunga dist. / <i>Long distance</i>	M12	8 mm	PKS/ON-3H	PKS/OP-3H
	Non scherm. / <i>Unshielded</i>	Lunga dist. / <i>Long distance</i>	M12	12 mm	PKS/ON-4H	PKS/OP-4H

Modelli IP 67-IP 68 corpo in inox AISI303 / IP 67-IP 68 models with AISI303 stainless steel housing

Diametro <i>Diameter</i>	Montaggio <i>Installation</i>	Portata <i>Distance</i>	Conn. <i>Plug</i>	Distanza <i>Distance</i>	NPN – NO+NC	PNP – NO+NC
M18	Schermato / <i>Shielded</i>	Standard	M12	5 mm	PKW/ON-1H	PKW/OP-1H
	Non scherm. / <i>Unshielded</i>	Standard	M12	8 mm	PKW/ON-2H	PKW/OP-2H
	Schermato / <i>Shielded</i>	Lunga dist. / <i>Long distance</i>	M12	8 mm	PKW/ON-3H	PKW/OP-3H
	Non scherm. / <i>Unshielded</i>	Lunga dist. / <i>Long distance</i>	M12	12 mm	PKW/ON-4H	PKW/OP-4H

Specifiche (In accordo con IEC EN 60947-5-2 / DIN 44030) - Specifications (According to IEC EN 60947-5-2 / DIN 44030)

> Serie AK - AK series

Modelli / Models	AK*/**-1*	AK*/**-2*	AK*/**-3*	AK*/**-4*
Distanza nominale Sn / Nominal sensing distance Sn	5 mm	8 mm	8 mm	12 mm
Distanza di lavoro / Operating distance	0 ÷ 4 mm	0 ÷ 6,5 mm	0 ÷ 6,5 mm	0 ÷ 9,7 mm
Corsa differenziale / Hysteresis	1 ÷ 20%			
Dimensione azionatore normalizzato / Standard target	18x18 mm FE 360	24x24 mm FE 360		36x36 mm FE 360
Ripetibilità / Repeat accuracy U ₀ 20-30 V T _a = 23°C ± 5°C	5%			
Campo di tensione di alimentazione / Supply voltage range	10 ÷ 30 V _{cc} / V _{dc}			
Massima ondulazione residua / Max ripple content	≤ 10 %			
Corrente di uscita / Output current	≤ 400 mA (3 ÷ 100 mA per versioni a 2 fili / for 2 wires versions)			
Tensione di saturazione di uscita / Output voltage drop	≤ 1V @ 400 mA (2,8 V @ 100 mA per versioni a 2 fili / for 2 wires versions)			
Corrente di alimentazione senza carico / No load supply current	20 mA (per versione a 3 fili / for 3 wires versions)			
Corrente di perdita / Leakage current	≤ 10 µA (0,8 mA per versioni a 2 fili / for 2 wires versions)			
Frequenza di commutazione / Switching frequency	600 Hz (300 Hz per 2 fili / for 2 wires)		300 Hz (150 Hz per 2 fili / for 2 wires)	
Ritardo all'accensione / Time delay before availability	50 ms			
Campo di temperature ambiente / Ambient temperature range	-25 ÷ +70 °C			
Deriva termica di Sr / Temperature drift of Sr	10%			
Protezione al corto circuito / Short-circuit protection	Sì auto ripristinante / Yes auto reset			
Protezione all'inversione di polarità / Voltage reversal protection	Sì / Yes			
Protezione ai carichi induttivi / Induction protection	Sì / Yes			
Colpi e vibrazioni / Shocks and vibrations	IEC/EN60947-5-2 / 7.4			
Peso / Weight	55 g versione a connettore / plug version 30 g versione a cavo / cable version			
Indicatori LED / LED indicators	LED giallo stato dell'uscita / Yellow LED output state			
Grado di protezione / Degree of protection	IP 67(1) (EN60529)			
Protezione EMC / EMC protection:	Secondo / According to IEC/EN60947-5-2			
	IEC 60255-5	1 kV		
	IEC 61000-4-2	Livello 3 / Level 3 aria / air 8 kV		
	IEC 61000-4-3	Livello 3 / Level 3 10 V/m		
	IEC 61000-4-4	Livello 3 / Level 3 2 kV		
Materiale del corpo / Housing material	Ottone nichelato / Nickel-plated brass			
Superficie sensibile / Sensing face	PBT			
Connessione / Connection	Cavo / Cable 2 m PVC Connettore / Plug M12			

AK & PK series - inductive sensors

> Serie PK - PK series

Modelli / Models	PK3/00-1*	PK3/00-2*	PK*/0*-1H	PK*/0*-2H	PK*/0*-3H	PK*/0*-4H
Distanza nominale Sn / Nominal sensing distance Sn	5 mm	8 mm	5 mm	8 mm	8 mm	12 mm
Distanza di lavoro / Operating distance	0 ÷ 4 mm	0 ÷ 6,5 mm	0 ÷ 4 mm	0 ÷ 6,5 mm	0 ÷ 6,5 mm	0 ÷ 9,7 mm
Corsa differenziale / Hysteresis	1 ÷ 20%					
Dimensione azionatore normalizzato / Standard target	18x18 mm FE 360		24x24 mm FE 360		36x36 mm FE 360	
Ripetibilità / Repeat accuracy U _s 20-30 V Ta = 23°C ± 5°C	5%					
Campo di tensione di alimentazione / Supply voltage range	10 ÷ 30 Vcc / Vdc					
Massima ondulazione residua / Max ripple content	≤ 10 %					
Corrente di uscita / Output current	≤ 100 mA		400 mA			
Tensione di saturazione di uscita / Output voltage drop	≤ 1,2 V @ 100 mA		≤ 2 V @ 200 mA			
Corrente di alimentazione senza carico / No load supply current	30 mA		15 mA			
Corrente di perdita / Leakage current	≤ 10 µA					
Frequenza di commutazione / Switching frequency	0,3 kHz		1,5 kHz			
Ritardo all'accensione / Time delay before availability	100 ms		50 ms			
Campo di temperature ambiente / Ambient temperature range	-25 ÷ +70 °C					
Deriva termica di Sr / Temperature drift of Sr	10%					
Protezione al corto circuito / Short-circuit protection	Sì / Yes		Sì auto ripristinante / Yes auto reset			
Protezione all'inversione di polarità / Voltage reversal protection	Sì / Yes					
Protezione ai carichi induttivi / Induction protection	Sì / Yes					
Colpi e vibrazioni / Shocks and vibrations	IEC/EN60947-5-2 / 7. 4					
Peso / Weight	30 g connettore / plug 70 g cavo / cable		70 g			
Indicatori LED giallo / Yellow LED indicators	Stato dell'uscita / Output state		Stato dell'uscita NA / NO output state			
Grado di protezione / Degree of protection	IP 67(1) (EN60529)		IP 67/68(1) (EN60529)			
Protezione EMC / EMC protection:	Secondo / According to IEC/EN60947-5-2					
IEC 60255-5	1 kV					
IEC 61000-4-2	Livello 3 / Level 3 aria / air 8 kV					
IEC 61000-4-3	Livello 3 / Level 3 10 V/m					
IEC 61000-4-4	Livello 3 / Level 3 2 kV					
Materiale del corpo / Housing material	Ottone nichelato / Nickel-plated brass (INOX per versioni W / Stainless steel for W version)					
Superficie sensibile / Sensing face	PBT		PSU			
Connessione / Connection	Cavo / Cable 2 m PVC Connettore / Plug M12		Connettore / Plug M12			

(1) protezione garantita solo con il cavo a connettore correttamente montato / Protection guaranteed only with plug cable well mounted

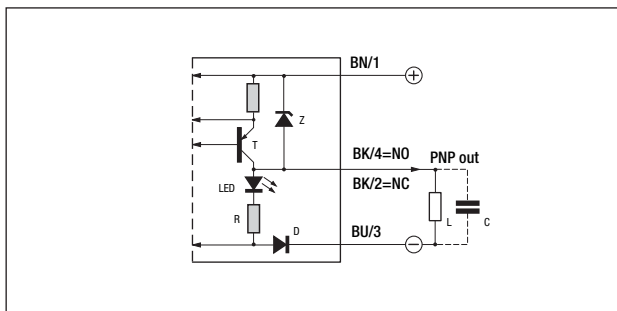
Coefficienti di riduzione - Correction factors

Codice / Code	Acciaio / Steel FE 360	Rame Copper	Alluminio Aluminium	Ottone Brass	Acciaio INOX Stainless steel V2A
PKS/**-1*	1	0,3	0,35	0,65	0,76
PKS/**-2*	1	0,38	0,48	0,5	0,7
PKS/**-3*	1	0,3	0,33	0,41	0,68
PKS/**-4*	1	0,38	0,48	0,5	0,7
AK1/**-1* / PK3/00-1*	1	0,4	0,48	0,72	0,86
AK1/**-2* / PK3/00-2*	1	0,45	0,53	0,56	0,77
AK1/**-3*	1	0,4	0,45	0,5	0,75
AK1/**-4*	1	0,45	0,53	0,56	0,77
PKW/**-1*	1	0,12	0,2	0,26	0,62
PKW/**-2*	1	0,3	0,37	0,46	0,78
PKW/**-3*	1	0,13	0,2	0,24	0,61
PKW/**-4*	1	0,32	0,39	0,42	0,69

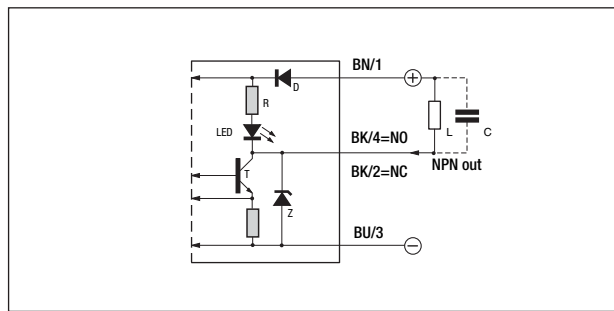
Schemi elettrici delle connessioni - Electrical diagrams of the connections

> Versioni a 3 fili - 3 wires versions

Schema di collegamento PNP
Wiring diagram PNP

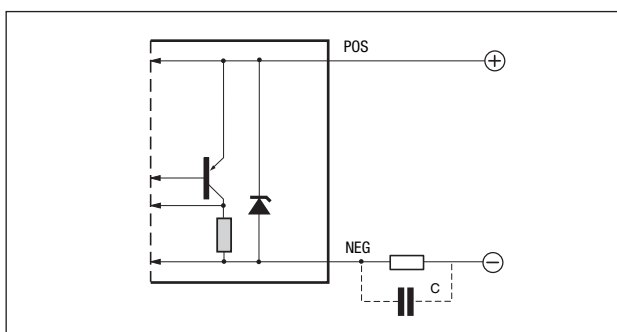


Schema di collegamento NPN
Wiring diagram NPN

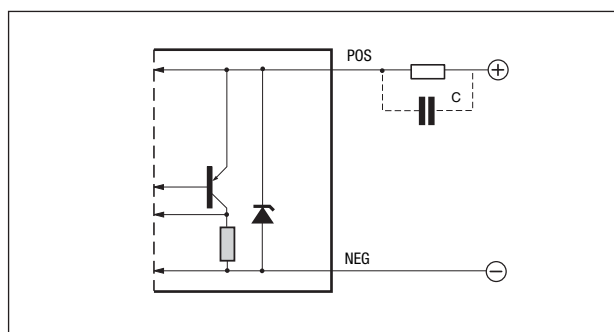


> Versioni a 2 fili - 2 wires versions

Schema di collegamento PNP
Wiring diagram PNP

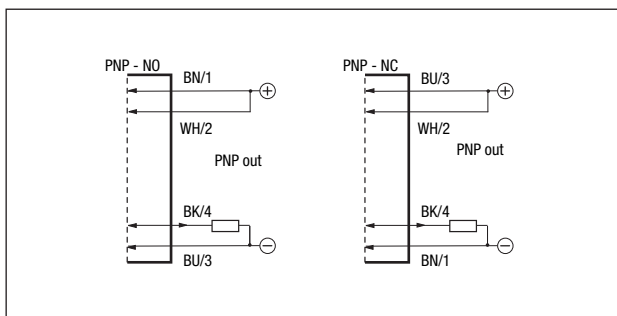


Schema di collegamento NPN
Wiring diagram NPN

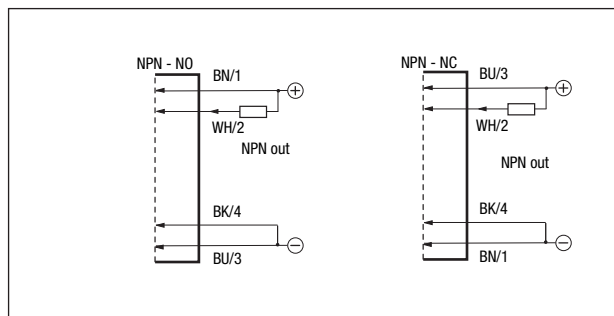


> Versioni PK3 DECOUT - PK3 DECOUT versions

Schema di collegamento PNP-NO/NC
Wiring diagram PNP-NO/NC



Schema di collegamento NPN-NO/NC
Wiring diagram NPN-NO/NC

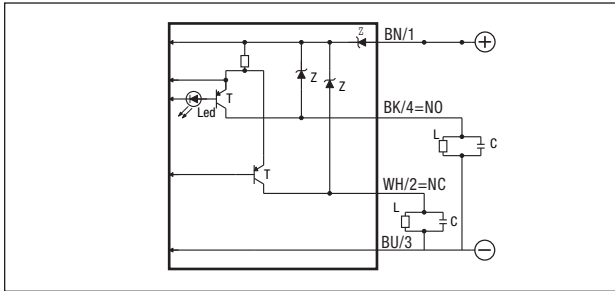


Legenda Key

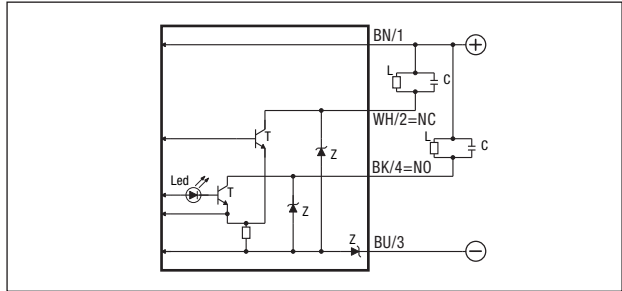
BN → marrone/brown	BU → blu/blue
BK → nero/black	WH → bianco/white
PK → rosa/pink	GY → grigio/gray

> Versioni PKS-PKW con uscite complementari - Complementary outputs versions

Schema di collegamento PNP
Wiring diagram PNP



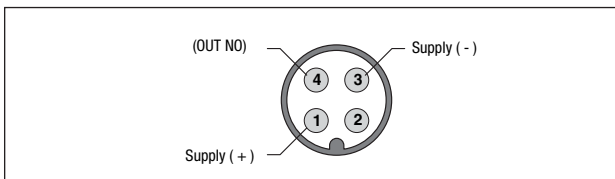
Schema di collegamento NPN
Wiring diagram NPN



Connettore - Plug

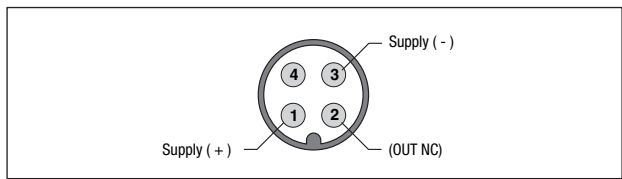
> Versioni a 3 fili - 3 wires versions

M12 - NO



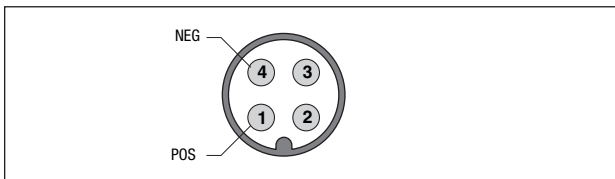
Connettori serie CD / Connectors CD series

M12 - NC



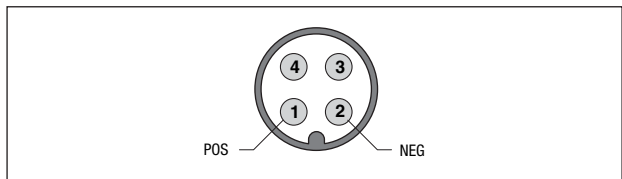
> Versioni a 2 fili - 2 wires versions

M12 - NO



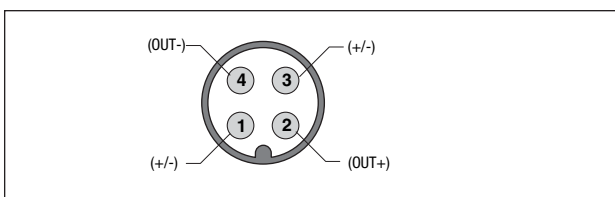
Connettori serie CD / Connectors CD series

M12 - NC



> Versioni PK3 DECOU - PK3 DECOU versions

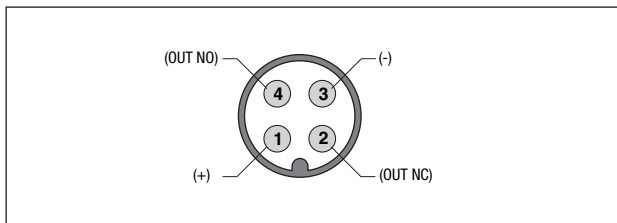
M12 - NO/NC



Connettori serie CD / Connectors CD series

> Versioni PKS-PKW con uscite complementari - Complementary outputs versions

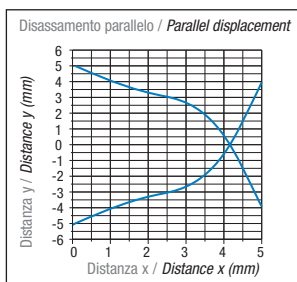
M12



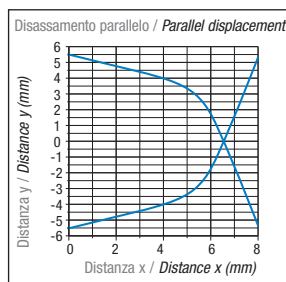
Connettori serie CD / Connectors CD series

Curva di risposta - Response diagram

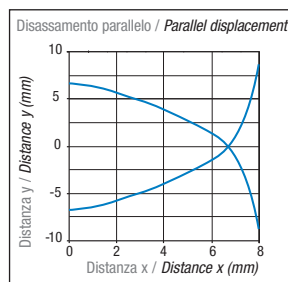
PKS/**-1*



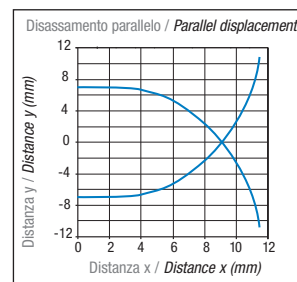
PKS/**-2*



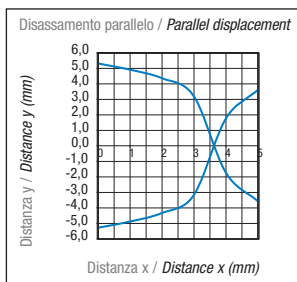
PKS/**-3*



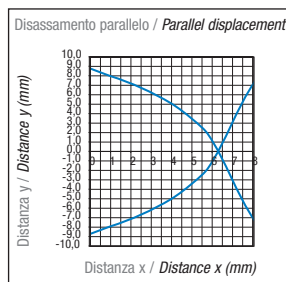
PKS/**-4*



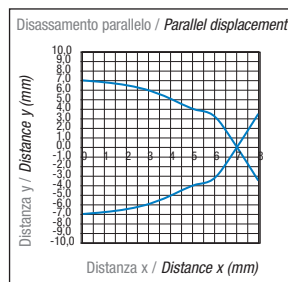
PKW/**-1*



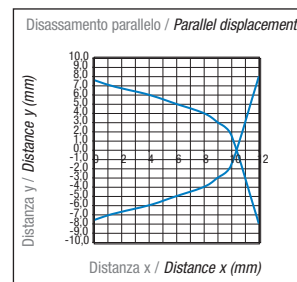
PKW/**-2*



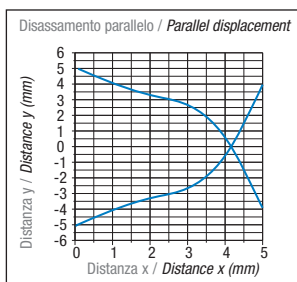
PKW/**-3*



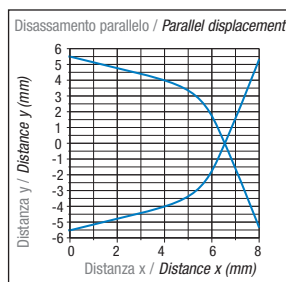
PKW/**-4*



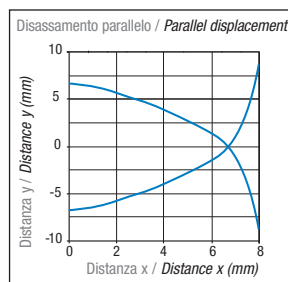
PK3/**-1*



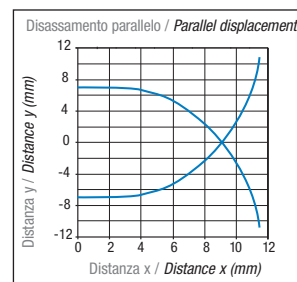
PK3/**-2*



PK3/**-3*



PK3/**-4*



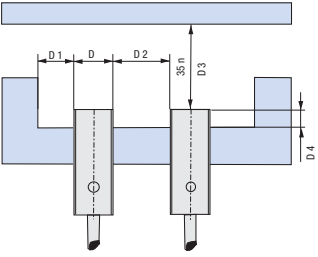
AK1/**-1*

AK1/**-2*

AK1/**-3*

AK1/**-4*

Montaggio - Installation

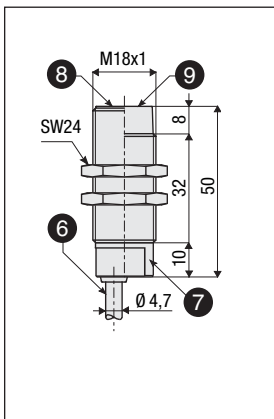


	D4	D1	D2	D3
PKS/**-1*	≥ 3 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
PKS/**-2*	≥ 12 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
PKS/**-3*	≥ 2 mm	≥ 9 mm	≥ 18 mm	≥ 24 mm
PKS/**-4*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm
AK*/**-1* - PK3/00-1*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
AK*/**-2* - PK3/00-2*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
AK1/**-3*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 24 mm
AK1/**-4*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm
PKW*/**-1*	≥ 3.6 mm	≥ 9 mm	≥ 18 mm	≥ 15 mm
PKW*/**-2*	≥ 12 mm	≥ 18 mm	≥ 36 mm	≥ 24 mm
PKW*/**-3*	≥ 1.8 mm ⁽¹⁾	≥ 9 mm	≥ 18 mm	≥ 24 mm
PKW*/**-4*	≥ 16 mm	≥ 18 mm	≥ 36 mm	≥ 36 mm

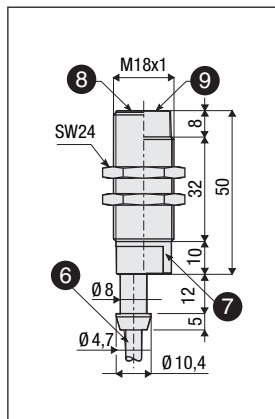
(1) ≥ 5.4 mm per materiali non magnetici / for non magnetic material

Dimensioni - Dimensions

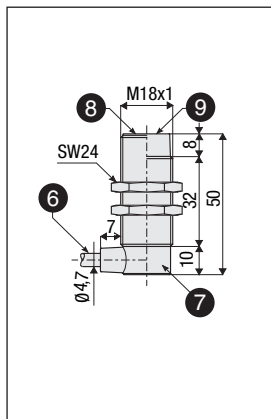
AK1/*N-*A
AK1/*P-*A



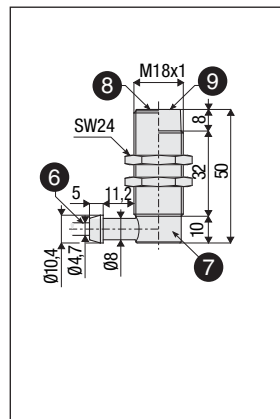
AK1/*N-*B
AK1/*P-*B



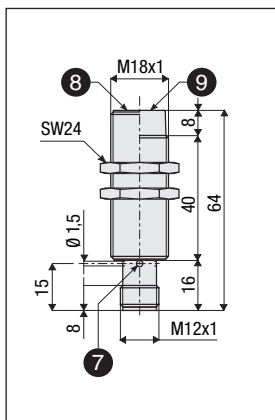
AK1/*N-*C
AK1/*P-*C



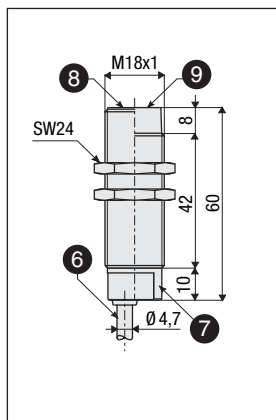
AK1/*N-*D
AK1/*P-*D



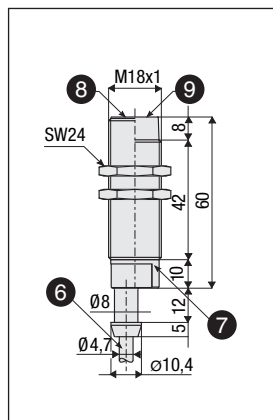
AK1/*N-*H
AK1/*P-*H



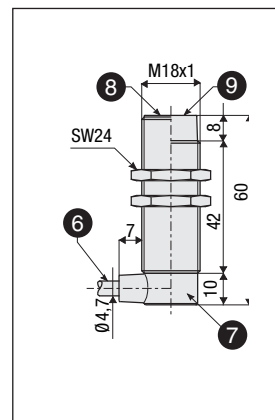
PK3/00-*A
AK1/*0-*A



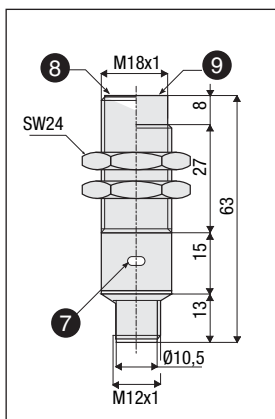
PK3/00-*B



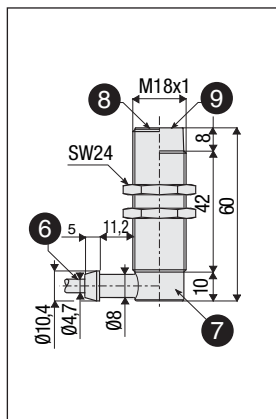
PK3/00-*C
AK1/*0-*C



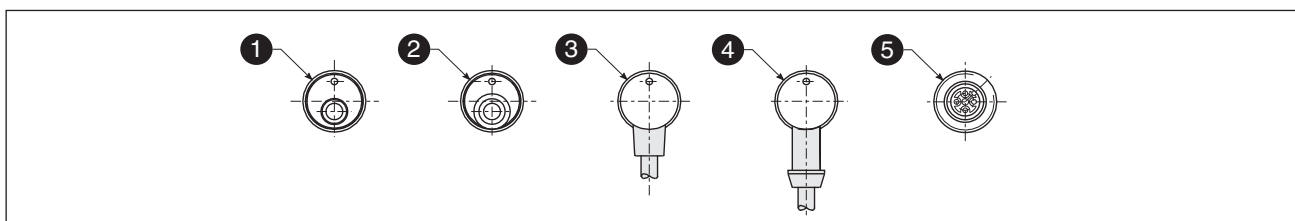
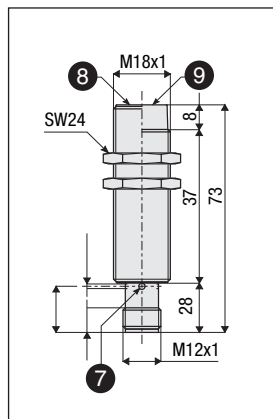
PKS/*0-*H
PKW/*0-*H



PK3/00-*D



PK3/00-*H
AK1/*0-*H



Legenda / Key

- | | |
|--|--|
| <ul style="list-style-type: none"> ① Uscita cavo assiale
<i>Axial cable exit</i> ② Uscita cavo assiale con codolo
<i>Axial cable exit with tang</i> ③ Uscita cavo a 90°
<i>Right angle cable exit</i> ④ Uscita cavo a 90° con codolo
<i>Right angle cable exit with tang</i> ⑤ Uscita connettore M12
<i>M12 plug cable exit</i> | <ul style="list-style-type: none"> ⑥ Cavo 3(4)x0,34 mm², Ø 4,7 mm, PVC, 2 m
<i>Cable 3(4)x0,34 mm², Ø 4,7 mm, PVC, 2 m</i> ⑦ LED indicatore di stato (uscita NO eccitata)
<i>LED status indicators (NO output energized)</i> ⑧ Versione schermata
<i>Shielded version</i> ⑨ Versione non schermata
<i>Unshielded version</i> |
|--|--|