

INTERRUTTORI DI PROSSIMITA' INDUTTIVI AD USCITA ANALOGICA

**SERIE
*SERIES***

B50

***INDUCTIVE PROXIMITY SWITCHES
WITH ANALOG OUTPUT***

INTERRUTTORI DI PROSSIMITA' INDUTTIVI AD USCITA ANALOGICA INDUCTIVE PROXIMITY SWITCHES WITH ANALOG OUTPUT



**INTERRUTTORI DI PROSSIMITA' INDUTTIVI
CILINDRICI E PARALLELEPIPEDI
AD USCITA ANALOGICA
CUSTODIA IN OTTONE NICHELATO
USCITA CAVO O CONNETTORE M12**

**INDUCTIVE PROXIMITY SWITCHES
CYLINDRIC OR BLOCK TYPE
WITH ANALOG OUTPUT
NICKEL PLATED BRASS HOUSING
CABLE OUTPUT OR CONNECTOR OUTPUT**

COME ORDINARE

HOW TO ORDER

SERIE SERIES	B50	-	E	G	12	4	V010	-	CONNESSIONE LINK
B50 = Uscita analogica Analog output									
FORMA SHAPE									
[-] = Cilindrico / Cylindric type Q = Parallelepipedo / Block type									[-] = uscita cavo 2 mt 2 mt cable output
MONTAGGIO MOUNTING									
[-] = Schermato / Shielded E = Non schermato / Unshielded									C5 = Connettore M12 M12Connector
CONNESSIONE LINK									
[-] = connettore connector G = uscita cavo cable output N = uscita cavo con codolino shank type cable output									
DIAMETRO SENSORE SENSOR DIAMETER									
12 = M12 mm filettato / threaded 18 = M18 mm filettato / threaded 30 = M30 mm filettato / threaded 80 = Ø80 mm parall. / block type									
									USCITA OUTPUT
									V010 = 0÷10V V03 = 0÷3V A420 = 0÷16V / 4÷20mA
									CAMPO DI VARIAZIONE WORKING RANGE
									2 = 0,2 ÷ 2 mm 4 = 0,2 ÷ 4 mm (in M12) / 0 ÷ 5 (in M18) 9 = 0 ÷ 9 mm 8 = 0 ÷ 8 mm 10 = 0 ÷ 10 mm 15 = 0 ÷ 15 mm 60 = 0 ÷ 60 mm

PLEASE NOTE: this matrix is intended only to aid you in identifying sensor catalog listing. It is not all-inclusive and must not be used to form new listings
NOTA BENE: questo schema è fornito solo per aiutare a identificare le caratteristiche dei prodotti a catalogo. Non è onnicomprensivo e pertanto non deve essere usato per creare nuovi riferimenti di prodotti.

CARATTERISTICHE ELETTRICHE
ELECTRICAL FEATURES
USCITA IN TENSIONE 0 ÷ 10 V
VOLTAGE OUTPUT 0 ÷ 10 V

ALIMENTAZIONE	17 ÷ 28 Vdc	SUPPLY VOLTAGE
ONDULAZIONE RESIDUA	≤ 10%	RIPPLE
CARICO	> 100 k	LOAD
ASSORBIMENTO	≤ 15 mA	POWER CONSUMPTION
RIPETIBILITA'	≤ 0,02 mm	REPEATABILITY
PROTEZIONE C.C.	NO	SHORT CIRCUIT PROTECTION
COMPATIBILITA' ELETTROMAGNETICA CE	EN60947-5-2/EN61010-1	CE COMPLIANCE
CERTIFICAZIONE	CE	CERTIFICATION

USCITA IN TENSIONE 0 ÷ 3 V
VOLTAGE OUTPUT 0 ÷ 3 V

ALIMENTAZIONE	12 ÷ 24 Vdc	SUPPLY VOLTAGE
ONDULAZIONE RESIDUA	≤ 10%	RIPPLE
CARICO	10 ÷ 100 k	LOAD
ASSORBIMENTO	≤ 15 mA	POWER CONSUMPTION
RIPETIBILITA'	≤ 0,02 mm	REPEATABILITY
PROTEZIONE C.C.	NO	SHORT CIRCUIT PROTECTION
COMPATIBILITA' ELETTROMAGNETICA CE	EN60947-5-2/EN61010-1	CE COMPLIANCE
CERTIFICAZIONE	CE	CERTIFICATION

USCITA IN CORRENTE 0 ÷ 10 mA
CURRENT OUTPUT 0 ÷ 10 mA

ALIMENTAZIONE	17 ÷ 28 Vdc	SUPPLY VOLTAGE
ONDULAZIONE RESIDUA	≤ 10%	RIPPLE
CARICO	≤ 1 k	LOAD
ASSORBIMENTO	≤ 15 mA	POWER CONSUMPTION
RIPETIBILITA'	≤ 0,02 mm	REPEATABILITY
PROTEZIONE C.C.	NO	SHORT CIRCUIT PROTECTION
COMPATIBILITA' ELETTROMAGNETICA CE	EN60947-5-2/EN61010-1	CE COMPLIANCE
CERTIFICAZIONE	CE	CERTIFICATION

USCITA IN CORRENTE 4 ÷ 20 mA
CURRENT OUTPUT 4 ÷ 20 mA

ALIMENTAZIONE	24 Vdc/ 15 ÷ 30 Vdc *	SUPPLY VOLTAGE
ONDULAZIONE RESIDUA	≤ 10%	RIPPLE
CARICO	≤ 430 / ≤ 410 *	LOAD
ASSORBIMENTO	≤ 15 mA/ 40mA@24Vdc *	POWER CONSUMPTION
RIPETIBILITA'	≤ 0,02 mm	REPEATABILITY
PROTEZIONE C.C.	NO	SHORT CIRCUIT PROTECTION
COMPATIBILITA' ELETTROMAGNETICA CE	EN60947-5-2/EN61010-1	CE COMPLIANCE
CERTIFICAZIONE	CE	CERTIFICATION

* SOLO PER B50QE8060A420

USCITA IN CORRENTE 0 ÷ 16 V
CURRENT OUTPUT 0 ÷ 16 V

ALIMENTAZIONE	24 Vdc	SUPPLY VOLTAGE
ONDULAZIONE RESIDUA	≤ 10%	RIPPLE
CARICO	≤ 1 k	LOAD
ASSORBIMENTO	≤ 15 mA	POWER CONSUMPTION
RIPETIBILITA'	≤ 0,02 mm	REPEATABILITY
PROTEZIONE C.C.	NO	SHORT CIRCUIT PROTECTION
COMPATIBILITA' ELETTROMAGNETICA CE	EN60947-5-2/EN61010-1	CE COMPLIANCE
CERTIFICAZIONE	CE	CERTIFICATION

CARATTERISTICHE TECNICHE
TECHNICAL FEATURES
DIAMETRO 12mm - USCITA 0 ÷ 10 V/0 ÷ 10 mA
12 mm DIAMETER - OUTPUT 0 ÷ 10 V/0 ÷ 10 mA

SCHERMATO	•		<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	0,2 ÷ 2 mm	0,2 ÷ 4 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	0,2 ÷ 2 mm	0,5 ÷ 2,5 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA	≤ 10%		<i>CURVE BEHAVIOUR</i>
TENSIONE	14 V / 14 mA		<i>VOLTAGE</i>
CORRENTE MASSIMA D'USCITA			<i>MAX. OUTPUT CURRENT</i>
TEMPERATURA DI LAVORO	0°C ÷ +55°C		<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO	3x0,35 mm ² – 2m		<i>CABLE</i>
CONNETTORE M12 (C5)	C5-C6-C7-L7		<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI	1/2		<i>CONNECTIONS</i>

DIAMETRO 18mm - USCITA 0 ÷ 10 V/0 ÷ 10 mA
18 mm DIAMETER - OUTPUT 0 ÷ 10 V/0 ÷ 10 mA

SCHERMATO	•		<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	0 ÷ 5 mm	0 ÷ 9 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	0 ÷ 3 mm	1,5 ÷ 5 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA	≤ 10%		<i>CURVE BEHAVIOUR</i>
TENSIONE	14 V / 14 mA		<i>VOLTAGE</i>
CORRENTE MASSIMA D'USCITA			<i>MAX. OUTPUT CURRENT</i>
TEMPERATURA DI LAVORO	0°C ÷ +55°C		<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO	3x0,35 mm ² – 2m		<i>CABLE</i>
CONNETTORE M12 (C5)	C5-C6-C7-L7		<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI	1/2		<i>CONNECTIONS</i>

DIAMETRO 18mm - USCITA 0 ÷ 3 V
18 mm DIAMETER - OUTPUT 0 ÷ 3 V

SCHERMATO			<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	-	0 ÷ 7 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	-	0 ÷ 5 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA	≤ 10%		<i>CURVE BEHAVIOUR</i>
TENSIONE MASSIMA A 12 V	1,5 V		<i>MAX. VOLTAGE AT 12V</i>
TEMPERATURA DI LAVORO	0°C ÷ +55°C		<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO CON CODOLINO	3x0,35 mm ²		<i>CABLE SHANK TYPE</i>
CONNETTORE M12 (C5)	C5-C6-C7-L7		<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI	1		<i>CONNECTIONS</i>

DIAMETRO 18mm - USCITA 4 ÷ 20 mA/0 ÷ 16 mA
18 mm DIAMETER - OUTPUT 4 ÷ 20 mA/0 ÷ 16 mA

SCHERMATO			<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	-	0 ÷ 8 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	-	1 ÷ 6 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA		≤10%	<i>CURVE BEHAVIOUR</i>
TEMPERATURA DI LAVORO		0°C ÷ +55°C	<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO		3x0,35 mm ² – 2 m	<i>CABLE</i>
CONNETTORE M12 (C5)		C5-C6-C7-L7	<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI		2/3	<i>CONNECTIONS</i>

DIAMETRO 30mm - USCITA 0 ÷ 10 V/0 ÷ 10 mA
30 mm DIAMETER - OUTPUT 0 ÷ 10 V/0 ÷ 10 mA

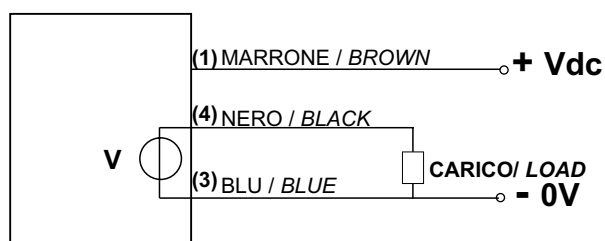
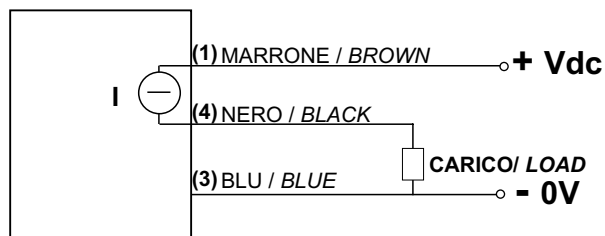
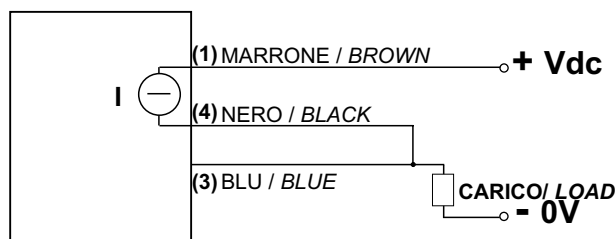
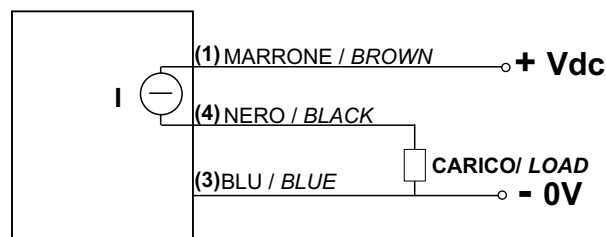
SCHERMATO		•	<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	0 ÷ 10 mm	0 ÷ 15 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	1,5 ÷ 8 mm	1,5 ÷ 10,5 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA		≤10%	<i>CURVE BEHAVIOUR</i>
TENSIONE		14 V / 14 Ma	<i>VOLTAGE</i>
CORRENTE MASSIMA D'USCITA			<i>MAX. OUTPUT CURRENT</i>
TEMPERATURA DI LAVORO		0°C ÷ +55°C	<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO		3x0,35 mm ² – 2 m	<i>CABLE</i>
CONNETTORE M12 (C5)		C5-C6-C7-L7	<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI		1/2	<i>CONNECTIONS</i>

DIAMETRO 30mm - USCITA 4 ÷ 20 mA/0 ÷ 16 mA
30 mm DIAMETER - OUTPUT 4 ÷ 20 mA/0 ÷ 16 mA

SCHERMATO		•	<i>SHIELDED</i>
NON SCHERMATO			<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	0 ÷ 10 mm	-	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	1,5 ÷ 8 mm	-	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA		≤10%	<i>CURVE BEHAVIOUR</i>
TEMPERATURA DI LAVORO		0°C ÷ +55°C	<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO	OTTONE NICHELATO – <i>NICKEL PLATED BRASS</i>		<i>BODY MATERIAL</i>
PROTEZIONE	IP67 (con connettore montato/ <i>with connector mounted</i>)		<i>PROTECTION RATING</i>
CAVO		3x0,35 mm ² – 2 m	<i>CABLE</i>
CONNETTORE M12 (C5)		C5-C6-C7-L7	<i>(C5) M12 CONNECTOR</i>
COLLEGAMENTI		2/3	<i>CONNECTIONS</i>

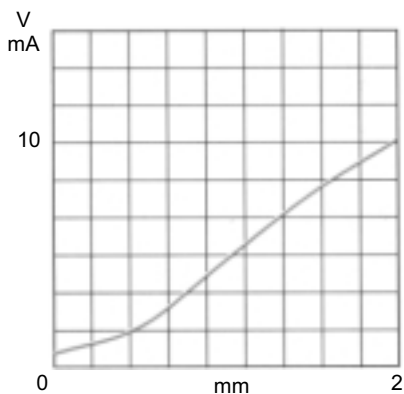
PARALLELEPIPEDO - USCITA 4 ÷ 20 mA
BLOCK TYPE - OUTPUT 4 ÷ 20 mA

SCHERMATO			<i>SHIELDED</i>
NON SCHERMATO		•	<i>UNSHIELDED</i>
CAMPO DI VARIAZIONE	-	0 ÷ 60 mm	<i>WORKING RANGE</i>
CAMPO VARIAZ. LINEARE	-	9 ÷ 40 mm	<i>LINEAR WORKING RANGE</i>
DERIVA DELLA CURVA		≤10%	<i>CURVE BEHAVIOUR</i>
TEMPERATURA DI LAVORO		0°C ÷ +55°C	<i>WORKING TEMPERATURE</i>
MAT.CORPO METALLICO		PVC	<i>BODY MATERIAL</i>
PROTEZIONE		IP67	<i>PROTECTION RATING</i>
CAVO		3x0,35 mm ² – 2 m	<i>CABLE</i>
COLLEGAMENTI		4	<i>CONNECTIONS</i>

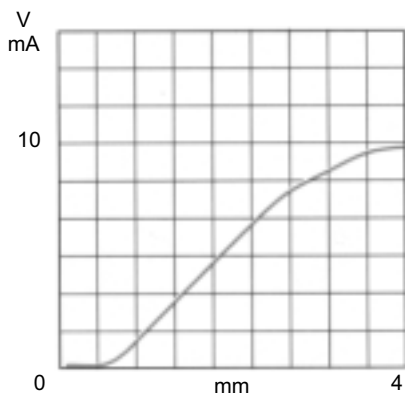
COLLEGAMENTI
CONNECTIONS
1) USCITA IN TENSIONE 0 ÷ 10 V/0 ÷ 3 V VOLTAGE OUTPUT

2) USCITA IN CORRENTE 0 ÷ 10mA/0 ÷ 16 mA a 3 FILI / 0 ÷ 10mA/0 ÷ 16 mA CURRENT OUTPUT 3 wires

3) USCITA IN CORRENTE 4 ÷ 20mA a 2 FILI / 4 ÷ 20mA CURRENT OUTPUT 2 wires

4) USCITA IN CORRENTE 4 ÷ 20mA a 3 FILI / 4 ÷ 20mA CURRENT OUTPUT 3 wires


CURVE D'USCITA
OUTPUT CURVES

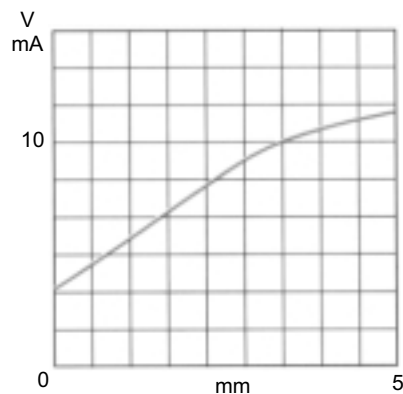
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B50G122A010
B50122V010C5
B50122A010C5**



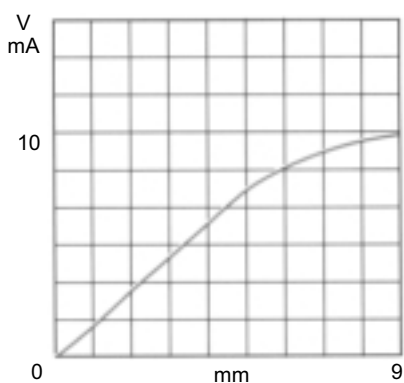
**B50EG124V010
B50EG124A010
B50E124V010C5
B50E124A010C5**



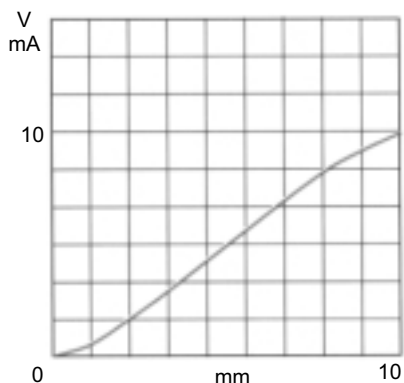
**B50G184V010
B50G184A010
B50184V010C5
B50184A010C5**



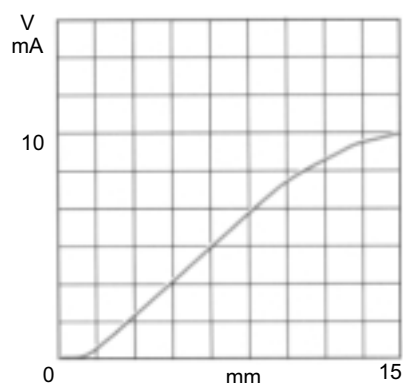
**B50EG189V010
B50EG189A010
B50E189V010C5
B50E189A010C5**

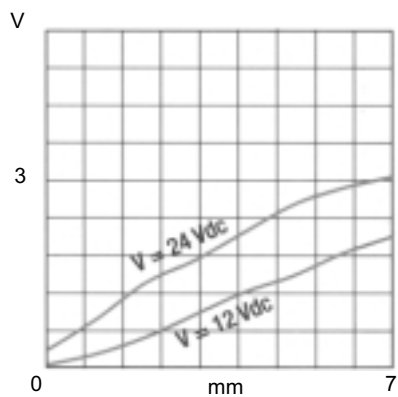
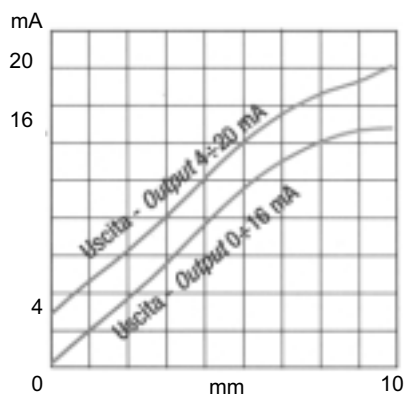
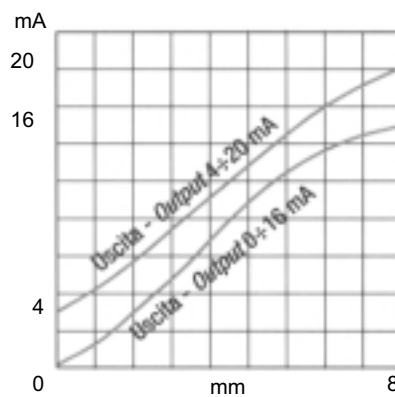
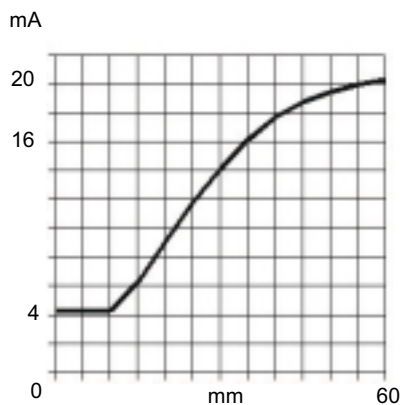


**B50G3010V010
B50G3010A010
B503010V010C5
B503010A010C5**

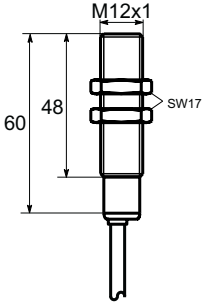
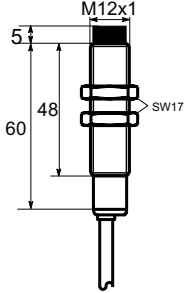
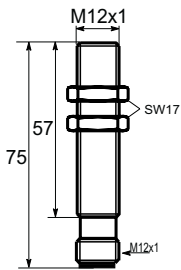
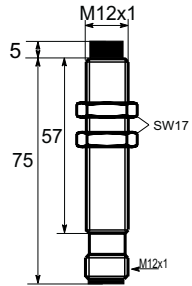


**B50EG3015V010
B50EG3015A010
B50E3015V010C5
B50E3015A010C5**

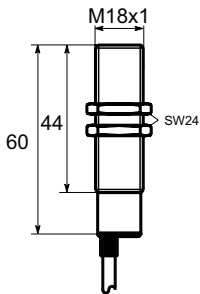
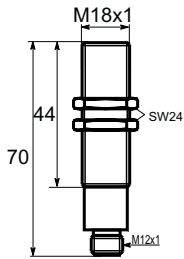
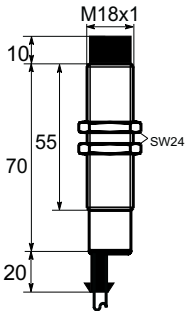
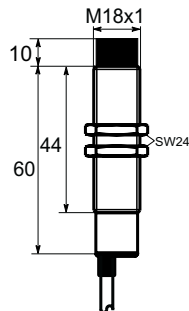
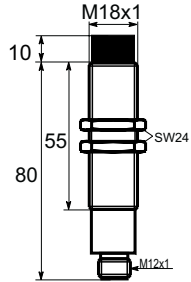


**B50EN187V03
B50187V03C5**

**B50EG3010A420
B50E3010A420C5**

**B50EG188A420
B50E188A420C5**

B50QE8060A420


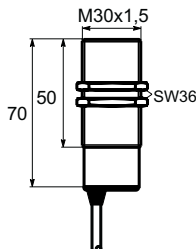
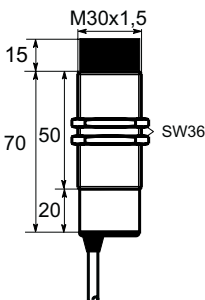
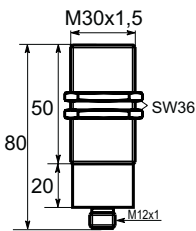
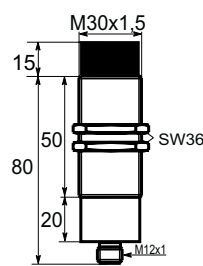
DIMENSIONI MECCANICHE
MECHANICAL SIZE
DIAMETRO 12 mm
12 mm DIAMETER

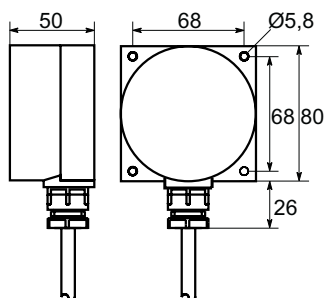
B50G122_	B50EG124_	B50122_C5	B50E124_C5
			

DIAMETRO 18 mm
18 mm DIAMETER

B50G184_	B50184_C5	B50EN187V03	B50EG189_ B50EG188A420	B50E187_C5 B50E188_C5 B50E189_C5
				

DIAMETRO 30 mm
30 mm DIAMETER

B50G3010V010 B50G3010A010 B50G3010A420	B50EG3015V010 B50EG3015A010	B503010V010C5 B503010A010C5 B503010A420C5	B50E3015V010C5 B50E3015A010C5
			

PARALLELEPIPEDO
BLOCK TYPE
B50QE8060A420

ELENCO PRODOTTI
PRODUCTS LIST
DIAMETRO 12 mm
12 mm DIAMETER

	USCITA CAVO / CABLE OUTPUT		USCITA CONNETTORE / CONNECTOR OUTPUT	
	SCHERMATO SHIELDED	NON SCHERMATO UNSHIELDED	SCHERMATO SHIELDED	NON SCHERMATO UNSHIELDED
USCITA OUTPUT 0 ÷ 10 V	B50G122V010	B50EG124V010	B50122V010C5	B50E124V010C5
USCITA OUTPUT 0 ÷ 10 mA	B50G122A010	B50EG124A010	B50122A010C5	B50E124A010C5

DIAMETRO 18 mm
18 mm DIAMETER

	USCITA CAVO / CABLE OUTPUT		USCITA CONNETTORE / CONNECTOR OUTPUT	
	SCHERMATO SHIELDED	NON SCHERMATO UNSHIELDED	SCHERMATO SHIELDED	NON SCHERMATO UNSHIELDED
USCITA OUTPUT 0 ÷ 10 V	B50G184V010	B50EG189V010	B50184V010C5	B50E189V010C5
USCITA OUTPUT 0 ÷ 10 mA	B50G184A010	B50EG189A010	B50184A010C5	B50E189A010C5
USCITA OUTPUT 0 ÷ 3 V	-	B50EN187V03*	-	B50E187V03C5
USCITA OUTPUT 4 ÷ 20 mA	-	B50EG188A420	-	B50E188A420C5
USCITA OUTPUT 0 ÷ 16 mA**	-		-	

* VERSIONE CAVO CON CODOLINO IN PLASTICA / PLASTIC CABLE SHANK TYPE VERSION

** STESSO PRODOTTO: CON COLLEGAMENTO A 3 FILI (SCHEMA 2) USCITA 0 ÷ 16mA
 CON COLLEGAMENTO A 2 FILI (SCHEMA 3) USCITA 4 ÷ 20 mA
 SAME PRODUCT: 3 WIRES CONNECTION (SCHEMA 2) 0 ÷ 16 mA OUTPUT
 2 WIRES CONNECTION (SCHEMA 3) 4 ÷ 20 mA OUTPUT

DIAMETRO 30 mm
30 mm DIAMETER

	USCITA CAVO / <i>CABLE OUTPUT</i>		USCITA CONNETTORE / <i>CONNECTOR OUTPUT</i>	
	SCHERMATO <i>SHIELDED</i>	NON SCHERMATO <i>UNSHIELDED</i>	SCHERMATO <i>SHIELDED</i>	NON SCHERMATO <i>UNSHIELDED</i>
USCITA <i>OUTPUT</i> 0 ÷ 10 V	B50G3010V010	B50EG3015V010	B503010V010C5	B50E3015V010C5
USCITA <i>OUTPUT</i> 0 ÷ 10 mA	B50G3010A010	B50EG3015A010	B503010A010C5	B50E3015A010C5
USCITA <i>OUTPUT</i> 4 ÷ 20 mA USCITA <i>OUTPUT</i> 0 ÷ 16 mA**	B50G3010A420	-	B503010A420C5	-

**** STESSO PRODOTTO: CON COLLEGAMENTO A 3 FILI (SCHEMA2) USCITA 0 ÷ 16mA**
CON COLLEGAMENTO A 2 FILI (SCHEMA 3) USCITA 4 ÷ 20 mA
SAME PRODUCT: 3 WIRES CONNECTION (SCHEMA 2) 0 ÷ 16 mA OUTPUT
2 WIRES CONNECTION (SCHEMA 3) 4 ÷ 20 mA OUTPUT

PARALLELEPIPEDO
BLOCK TYPE

	USCITA CAVO / <i>CABLE OUTPUT</i>		USCITA CONNETTORE / <i>CONNECTOR OUTPUT</i>	
	SCHERMATO <i>SHIELDED</i>	NON SCHERMATO <i>UNSHIELDED</i>	SCHERMATO <i>SHIELDED</i>	NON SCHERMATO <i>UNSHIELDED</i>
USCITA <i>OUTPUT</i> 4 ÷ 20 mA	-	B50QE8060A420	-	-

CON COLLEGAMENTO A 3 FILI (SCHEMA 4) USCITA 4 ÷ 20mA
3 WIRES CONNECTION (SCHEMA 4) 4 ÷ 20 mA OUTPUT

Altri prodotti

- interruttori di prossimità induttivi;
- interruttori di prossimità capacitivi;
- interruttori di prossimità magnetici;
- interruttori di prossimità fotoelettrici;

- connettori e cassette di connessione per sensori;

- encoder incrementali ed assoluti;

- alimentatori / interfacce per sensori;
- alimentatori da rete e da secondario per uso generico;

- voltmetri, amperometri, contagiri, visualizzatori a pannello;
- contaimpulsi mono e bidirezionali, contaproduzione, contagiri;
- termometri e termoregolatori

- schede logiche programmabili per uso OEM;

- pulsanteria e finecorsa meccanici;

Other products:

- *inductive proximity switches;*
- *capacitive proximity switches;*
- *magnetic proximity switches;*
- *photo-electric sensors & proximity switches;*

- *connectors & connection boxes for sensor;*

- *incremental & absolute encoders;*

- *supply units / interfaces for sensors;*
- *power supply units for general purpose;*

- *voltmeters, ammeters, revolution counters, panel displays;*
- *counters mono & bi-directional, timers, revolution counters;*
- *thermometers & temperature controllers;*

- *OEM programmable logic cards;*

- *push-button & mechanical limit switches;*