

Sensori fotoelettrici M18 DC serie FA

M18 photoelectric sensors DC FA series



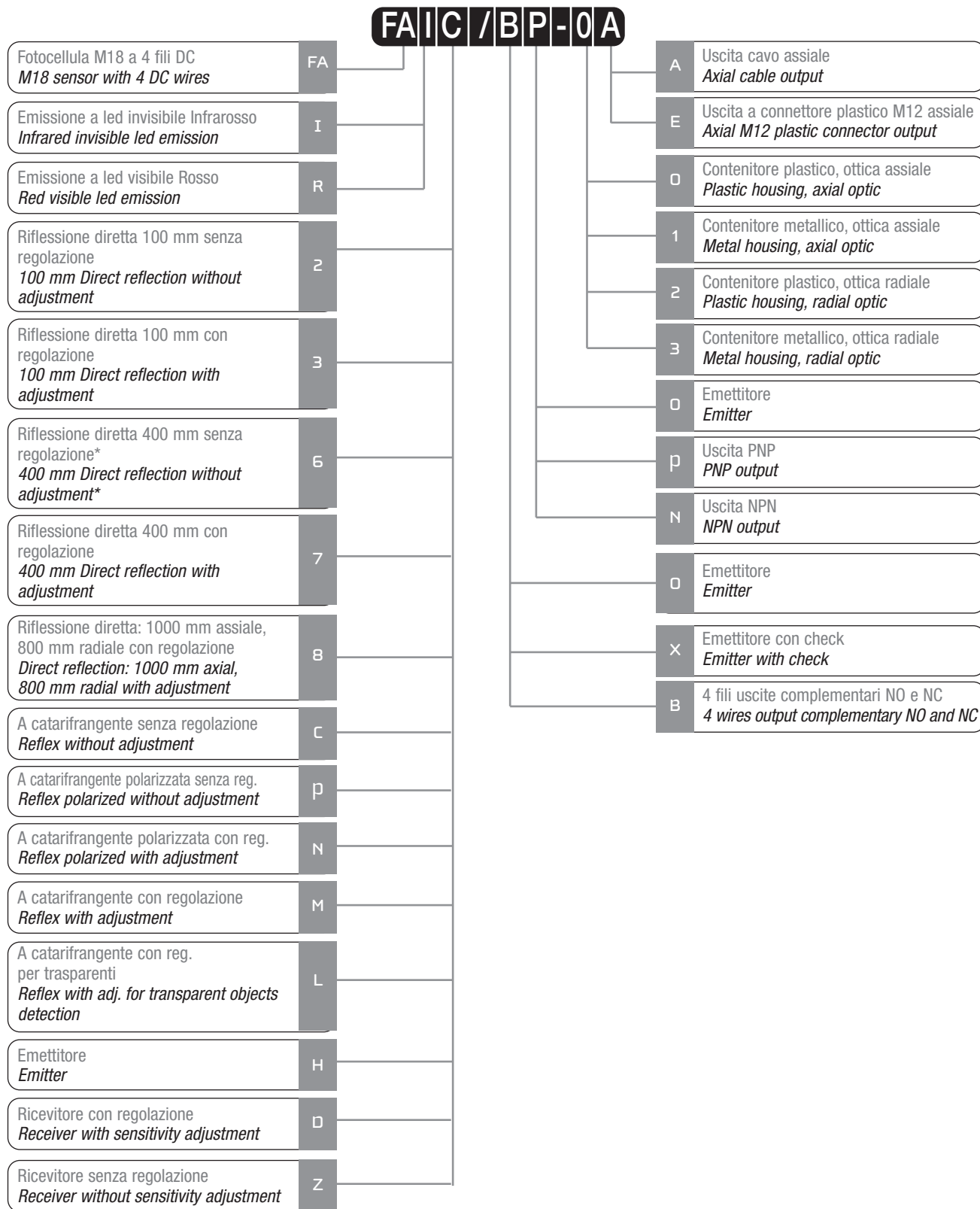
Caratteristiche principali Main features

- > Serie completa di sensori M18 con alimentazione 10-30 Vcc
- > *Complete range of M18 sensors with 10-30 Vdc power supply*
- > Ottica assiale e radiale con superficie piatta
- > *Axial and radial optic with flat surface*
- > Modelli a riflessione per la lettura di oggetti trasparenti, ad emissione rossa
- > *Retro-reflective models for transparent objects detection, with red emission*
- > Grado di protezione IP67
- > *IP67 protection*

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

- > Corpo metallico o plastico
- > *Metallic or plastic housing*
- > Regolazione di sensibilità disponibile per tutti i modelli
- > *Sensitivity adjustment available for all models*
- > Protezione totale contro i danneggiamenti di tipo elettrico
- > *Total protection against any type of electric damages*
- > Approvazioni: CE e cULus listed
- > *Approvals: CE and cULus listed*

Descrizione del codice - Code structure



SENSORI FOTOELETTRICI CILINDRICI - SERIE FA

FA SERIES - CYLINDRICAL PHOTOELECTRIC SENSORS

Modelli disponibili - Available models

Fotocellule a cavo / Cable exit photoelectric sensors

Funzione Model	Portata Distance	Corpo Housing	Regol. Adj.	Optica assiale / Axial optic		Optica radiale / Right angle optic		
				4 fili / 4 wires NPN NO+NC	4 fili / 4 wires PNP NO+NC	4 fili / 4 wires NPN NO+NC	4 fili / 4 wires PNP NO+NC	
Tasteggio diretto Diffuse reflection	100 mm	Plastico	No	FAR2/BN-0A	FAR2/BP-0A	FAR2/BN-2A	FAR2/BP-2A	
		Plastic	Si / Yes	FAR3/BN-0A	FAR3/BP-0A	FAR3/BN-2A	FAR3/BP-2A	
		Metallico	No	FAR2/BN-1A	FAR2/BP-1A	FAR2/BN-3A	FAR2/BP-3A	
		Metal	Si / Yes	FAR3/BN-1A	FAR3/BP-1A	FAR3/BN-3A	FAR3/BP-3A	
	400 mm	Plastico	No	FAI6/BN-0A	FAI6/BP-0A	FAI6/BN-2A	FAI6/BP-2A	
		Plastic	Si / Yes	FAI7/BN-0A	FAI7/BP-0A	FAI7/BN-2A	FAI7/BP-2A	
		Metallico	No	FAI6/BN-1A	FAI6/BP-1A	FAI6/BN-3A	FAI6/BP-3A	
		Metal	Si / Yes	FAI7/BN-1A	FAI7/BP-1A	FAI7/BN-3A	FAI7/BP-3A	
	1000 mm (assiale/axial) 800 mm (90°)	Plastico	Si / Yes	FAI8/BN-0A	FAI8/BP-0A	FAI8/BN-2A	FAI8/BP-2A	
		Metallico	Si / Yes	FAI8/BN-1A	FAI8/BP-1A	FAI8/BN-3A	FAI8/BP-3A	
	Catarifrangente Retroreflective	4 m	Plastico	No	FAIC/BN-0A	FAIC/BP-0A	FAIC/BN-2A	FAIC/BP-2A
			Plastic	Si / Yes	FAIM/BN-0A	FAIM/BP-0A	FAIM/BN-2A	FAIM/BP-2A
Metallico			No	FAIC/BN-1A	FAIC/BP-1A	FAIC/BN-3A	FAIC/BP-3A	
Metal			Si / Yes	FAIM/BN-1A	FAIM/BP-1A	FAIM/BN-3A	FAIM/BP-3A	
Polarizzata Polarized	3 m	Plastico	No	FARP/BN-0A	FARP/BP-0A	FARP/BN-2A	FARP/BP-2A	
		Plastic	Si / Yes	FARN/BN-0A	FARN/BP-0A	FARN/BN-2A	FARN/BP-2A	
		Metallico	No	FARP/BN-1A	FARP/BP-1A	FARP/BN-3A	FARP/BP-3A	
		Metal	Si / Yes	FARN/BN-1A	FARN/BP-1A	FARN/BN-3A	FARN/BP-3A	
Trasparenti Transparents	0,1...1 m	Plastico / Plastic	Si / Yes	FARL/BN-0A	FARL/BP-0A	FARL/BN-2A	FARL/BP-2A	
		Metallico / Metal	Si / Yes	FARL/BN-1A	FARL/BP-1A	FARL/BN-3A	FARL/BP-3A	
Barriera Through-beam	20 m (assiale/axial)	Plastico Plastic	Emettit.	FAIH/00-0A		FAIH/00-2A		
			Em+check	FAIH/X0-0A		FAIH/X0-2A		
			Ricev.	FAIZ/BN-0A	FAIZ/BP-0A	FAIZ/BN-2A	FAIZ/BP-2A	
			Receiv. reg.	FAID/BN-0A	FAID/BP-0A	FAID/BN-2A	FAID/BP-2A	
	15 m (90°)	Metallico Metal	Emettit.	FAIH/00-1A		FAIH/00-3A		
			Em+check	FAIH/X0-1A		FAIH/X0-3A		
			Ricev.	FAIZ/BN-1A	FAIZ/BP-1A	FAIZ/BN-3A	FAIZ/BP-3A	
			Receiv. reg.	FAID/BN-1A	FAID/BP-1A	FAID/BN-3A	FAID/BP-3A	

Fotocellule a connettore / Plug cable exit photoelectric sensors

Funzione Model	Portata Distance	Corpo Housing	Regol. Adj.	Ottica assiale / Axial optic		Ottica radiale / Right angle optic		
				4 fili / 4 wires NPN NO+NC	4 fili / 4 wires PNP NO+NC	4 fili / 4 wires NPN NO+NC	4 fili / 4 wires PNP NO+NC	
Tasteggio diretto Diffuse reflection	100 mm	Plastico Plastic	No	FAR2/BN-0E	FAR2/BP-0E	FAR2/BN-2E	FAR2/BP-2E	
			Si / Yes	FAR3/BN-0E	FAR3/BP-0E	FAR3/BN-2E	FAR3/BP-2E	
		Metallico Metal	No	FAR2/BN-1E	FAR2/BP-1E	FAR2/BN-3E	FAR2/BP-3E	
			Si / Yes	FAR3/BN-1E	FAR3/BP-1E	FAR3/BN-3E	FAR3/BP-3E	
	400 mm	Plastico Plastic	No	FAI6/BN-0E	FAI6/BP-0E	FAI6/BN-2E	FAI6/BP-2E	
			Si / Yes	FAI7/BN-0E	FAI7/BP-0E	FAI7/BN-2E	FAI7/BP-2E	
		Metallico Metal	Si / Yes	FAI7/BN-1E	FAI7/BP-1E	FAI6/BN-3E	FAI6/BP-3E	
	1000 mm (assiale/axial) 800 mm (90°)	Plastico Plastic	Si / Yes	FAI8/BN-0E	FAI8/BP-0E	FAI8/BN-2E	FAI8/BP-2E	
		Metallico Metal	Si / Yes	FAI8/BN-1E	FAI8/BP-1E	FAI8/BN-3E	FAI8/BP-3E	
	Catarifrangente Retroreflective	4 m	Plastico Plastic	No	FAIC/BN-0E	FAIC/BP-0E	FAIC/BN-2E	FAIC/BP-2E
				Si / Yes	FAIM/BN-0E	FAIM/BP-0E	FAIM/BN-2E	FAIM/BP-2E
Metallico Metal			No	FAIC/BN-1E	FAIC/BP-1E	FAIC/BN-3E	FAIC/BP-3E	
			Si / Yes	FAIM/BN-1E	FAIM/BP-1E	FAIM/BN-3E	FAIM/BP-3E	
Polarizzata Polarized	3 m	Plastico Plastic	No	FARP/BN-0E	FARP/BP-0E	FARP/BN-2E	FARP/BP-2E	
			Si / Yes	FARN/BN-0E	FARN/BP-0E	FARN/BN-2E	FARN/BP-2E	
		Metallico Metal	No	FARP/BN-1E	FARP/BP-1E	FARP/BN-3E	FARP/BP-3E	
			Si / Yes	FARN/BN-1E	FARN/BP-1E	FARN/BN-3E	FARN/BP-3E	
Trasparenti Transparents	0,1...1 m	Plastico / Plastic	Si / Yes	FARL/BN-0E	FARL/BP-0E	FARL/BN-2E	FARL/BP-2E	
		Metallico / Metal	Si / Yes	FARL/BN-1E	FARL/BP-1E	FARL/BN-3E	FARL/BP-3E	
Barriera Through-beam	20 m (Assiale / Axial)	Plastico Plastic	Emettit.	FAIH/00-0E		FAIH/00-2E		
			Em+check	FAIH/X0-0E		FAIH/X0-2E		
			Ricev. Receiv. reg.	FAIZ/BN-0E	FAIZ/BP-0E	FAIZ/BN-2E	FAIZ/BP-2E	
		Metallico Metal	Emettit.	FAIH/00-1E		FAIH/00-3E		
			Em+check	FAIH/X0-1E		FAIH/X0-3E		
			Ricev. Receiv. reg.	FAIZ/BN-1E	FAIZ/BP-1E	FAIZ/BN-3E	FAIZ/BP-3E	
	15 m (90°)	Metallico Metal	Ricev. Receiv. reg.	FAID/BN-1E	FAID/BP-1E	FAID/BN-3E	FAID/BP-3E	

SENSORI FOTOELETTRICI CILINDRICI - SERIE FA

FA SERIES - CYLINDRICAL PHOTOELECTRIC SENSORS

Fotocellula M18 a catarifrangente per oggetti trasparenti
M18 retroreflective photoelectric sensor for transparent objects

Funzione / Model	Portata Distance	Corpo / Housing	4 fili / 4 wires NO+NC NPN		4 fili / 4 wires NO+NC PNP	
			Cavo Cable	Connettore Plug	Cavo Cable	Connettore Plug
Catarifrangente Retro-reflective	0,1...1 m	Plastico assiale / Axial plastic	FARL/BN-0A	FARL/BN-0E	FARL/BP-0A	FARL/BP-0E
		Metallico assiale / Axial metal	FARL/BN-1A	FARL/BN-1E	FARL/BP-1A	FARL/BP-1E
		Plastico 90° / 90° plastic	FARL/BN-2A	FARL/BN-2E	FARL/BP-2A	FARL/BP-2E
		Metallico 90° / 90° metal	FARL/BN-3A	FARL/BN-3E	FARL/BP-3A	FARL/BP-3E

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

Modelli a riflessione diretta / Direct reflection models

Modello / Model	Emissione LED rossa / Red LED emission		Emissione LED infrarossa / Infrared Led emission		
	FAR2/B*..**	FAR3/B*..**	FAI6/B*..**	FAI7/B*..**	FAI8/B*..**
Distanza di rilevazione nominale Nominal sensing distance	100 mm ⁽¹⁾	100 mm ⁽¹⁾	400 mm ⁽²⁾	400 mm ⁽²⁾	1000 mm ⁽³⁾ (assiale / axial) 800 mm ⁽³⁾ (90°)
Emissione / Emission	Rosso / Red (660 nm)		Infrarosso / Infrared (880 nm)		
Corsa differenziale / Differential travel	≤ 10%				
Ripetibilità / Repeat accuracy	5%				
Tensione alimentazione / Operating voltage	10-30 Vc.c./Vd.c.				
Ondulazione residua / Ripple	≤ 10%				
Corrente assorbita / No load supply current	30 mA				
Corrente di uscita / Load current	100 mA				
Corrente di perdita / Leakage current	10 µA				
Caduta di tensione in uscita / Output voltage drop	2 Vmax. IL = 100 mA				
Tipo uscita / Output type	NPN 0 / or PNP NO+NC				
Frequenza di commutazione / Switching frequency	250 Hz				
Ritardo alla disponibilità / Time delay before availability	200 ms				
Protezione elettriche alimentazione Supply electrical protections	Inversione di polarità, sovratensioni impulsive Polarity reversal, impulsive overvoltage				
Protezione elettriche uscita / Protection electrical output	Cortocircuito (autoripristinante) / Short circuit (autoreset) Overvoltage				
Regolazione di sensibilità / Sensitivity adjustment	No	Si / Yes	NO	Si / Yes	Si / Yes
Limiti di temperatura operativa / Operative temperature range	-25°C... +70°C (senza condensa / without freeze)				
Deriva termica / Temperature drift	10% Sr				
Interferenza alla luce esterna Interference external light	5000 lux (lampada ad incandescenza) - 10000 lux (luce solare) 5000 lux (incandescence lamp) - 10000 lux (sun light)				
Grado di protezione / Protection degree	IP67 (EN60529) ⁽⁴⁾				
Compatibilità elettromagnetica EMC	Accordo / According to EN50082-2; 1995; EN60947-5-2; 1999 Accordo / According to EN50081-1; 1993				
Indicatori LED LED indicators	Giallo (Stato luce) o (stato dell'uscita nelle versioni speciali LO/DO) Yellow (Light status) or (output status in the LO/DO special versions)				
Materiale contenitore Housing material	PBT (plastico / plastic) / Ottone nichelato-nicked plated brass (metallico / metallic) / PC (passacavo / cable exit)				
Materiale ottica / Optic material	PC				
Coppia serraggio / Tightening torque	1 Nm (plastico / plastic) 40 Nm (metallico / metallic)				
Peso (appros.) / Weight (approx)	100 gr				

⁽¹⁾ Con ostacolo bianco kodak 90% 100 x 100 mm / White target kodak 90% reflection 100 x 100 mm

⁽²⁾ Con ostacolo bianco kodak 90% 200 x 200 mm / White target kodak 90% reflection 200 x 200 mm

⁽³⁾ Con ostacolo bianco kodak 90% 400 x 400 mm / White target kodak 90% reflection 400 x 400 mm

⁽⁴⁾ Protezione garantita solo con il cavo a connettore correttamente montato / Protection guaranteed only with plug cable well mounted

Modelli a catarifrangente e polarizzati / Reflex and polarized models

Modelli / Models	Catarifrangente Retroreflective		Polarizzata Polarized		Letture trasparente Transparent objects detection
	FAIC/B*-** (1)	FAIM/B*-** (1)	FARP/B*-** (1)	FARN/B*-** (1)	FARL*/B*-** (2)
Distanza di rilevazione nominale <i>Nominal sensing distance</i>	4 m		3 m assiali / axial 2 m radiale / radial		1 m
Emissione / Emission	Infrarosso / Infrared (880 nm)		Rosso / Red (660 nm)		
Corsa differenziale / Differential travel	≤ 10%				
Ripetibilità / Repeat accuracy	5%				
Tensione alimentazione / Operating voltage	10-30 Vcc / Vdc				
Ondulazione residua / Ripple	≤10%				
Corrente assorbita / No load supply current	30 mA				
Corrente di uscita / Load current	100 mA				
Corrente di perdita / Leakage current	≤10 µA				
Caduta di tensione in uscita / Output voltage drop	2 Vmax. I _L =100mA				
Tipo uscita / Output type	NPN o / or PNP NO+NC				
Frequenza di commutazione / Switching frequency	250 Hz				
Ritardo alla disponibilità / Time delay before availability	200 ms				
Protezione elettriche alimentazione <i>Supply electrical protections</i>	Inversione di polarità, sovratensioni impulsive <i>Polarity reversal, transient</i>				
Protezione elettriche uscita / Protection electrical output	Cortocircuito (autoripristinante) / Short circuit (autoreset) Overvoltage				
Regolazione di sensibilità <i>Sensitivity adjustment</i>	No	Si / Yes Trimmer	No	Si / Yes Trimmer	Si / Yes Trimmer
Limiti di temperatura operativa / Operative temperature range	-25° ... +70° (senza condensa / without freeze)				
Deriva termica / Temperature drift	10% Sr				
Compatibilità elettromagnetica <i>EMC</i>	Accordo / According to EN50082-2; 1995; EN60647-5-2; 1999 Accordo / According to EN50081-1; 1993				
Interferenza alla luce esterna <i>Interference external light</i>	5000 lux (lampada ad incandescenza / incandescence lamp) 10000 lux (luce solare / sunlight)				
Grado di protezione / Protection degree	IP67 (EN60529) (3)				
Indicatori LED <i>LED indicators</i>	Giallo / Yellow (Stato luce o stato dell'uscita nelle versioni speciali LO/DO / Light state or status of the LO/DO output in special versions)				
Materiale contenitore <i>Housing material</i>	PBT (plastico / plastic) / Ottone nichelato-Nicked plated brass (metallico / metallic) PC (passacavo / cable exit)				
Materiale ottica / Optic material	PC		Plastico / Plastic		PC
Coppia serraggio / Tightening torque	1 Nm (plastico / plastic) 40 Nm (metallico / metallic)				
Peso (appros.) / Weight (approx)	100 gr				

(1) Con riflettore RL 110 / With RL 110 reflector

(2) Con riflettore RL 113G o RL 116 / With RL 113G or RL 116 reflector

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

Modelli a barriera / Throug beam models

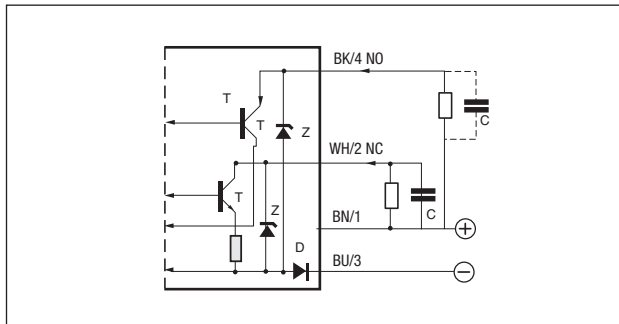
Modelli / Models	Proiettore / Emitter		Ricevitore / Receiver	
	FAIH/X0-**	FAIH/O0-**	FAIZ/B*-**	FAID/B*-**
Distanza di rilevazione nominale <i>Nominal sensing distance</i>	20 m modello assiale / 15 m modello radiale <i>20 m axial model / 15 m right angle model</i>			
Emissione / Emission	Infrarosso (880 nm) / Infrared (880 nm)			
Corsa differenziale / Differential travel	≤ 10%			
Ripetibilità / Repeat accuracy	5%			
Tensione alimentazione / Operating voltage	10-30 Vcc / 10-30 Vdc			
Ondulazione residua / Ripple	≤ 10%			
Corrente assorbita / No load supply current	25 mA			
Corrente di uscita / Load current	100 mA			
Corrente di perdita / Leakage current	≤ 10 µA a Vmax			
Caduta di tensione in uscita / Output voltage drop	2 Vmax. I _L = 100mA			
Tipo uscita / Output type	NPN o / or PNP NO+NC			
Frequenza di commutazione / Switching frequency	250 Hz			
Ritardo alla disponibilità <i>Time delay before availability</i>	200 ms			
Protezione elettriche alimentazione <i>Supply electrical protections</i>	Inversione di polarità, sovratensioni impulsive <i>Impulsive overvoltage polarity reversal</i>			
Protezione elettriche uscita <i>Protection electrical output</i>	Cortocircuito (autoripristinante) <i>Short circuit (autoreset) - Overvoltage</i>			
Regolazione di sensibilità / Sensitivity adjustment	No	No	Si / Yes trimmer	
Limiti di temperatura operativa / Operative Temperature range	-25°C ... +70°C (senza condensa / without freeze)			
Deriva termica / Temperature drift	10% sr			
Ingresso di test <i>Check input</i>	BK/2 collegato a 0 V spegne l'emissione <i>BK/2 connected to 0 V switches off the emission</i>			
Compatibilità elettromagnetica <i>EMC</i>	Accordo / According to EN50082-2; 1995/EN60947-5-2; 1999 Accordo / According to EN50081-1; 1993			
Interferenza alla luce esterna <i>Interference external light</i>	5000 lux (lampada ad incandescenza / incandescence lamp) 10000 lux (luce solare / sunlight)			
Grado di protezione / Protection degree	IP67 (EN60529) ⁽¹⁾			
Indicatori LED / LED indicators	Verde (alimentazione ON) <i>Green (power ON)</i>		Giallo (stato luce o stato dell'uscita nelle versioni LO/DO) <i>Yellow (light state or output status in the special LO/DO versions)</i>	
Materiale contenitore <i>Housing material</i>	PBT (plastico / plastic) / Ottone nichelato - nicked plated brass (metallico / metallic) PC (passacavo / cable exit)			
Materiale ottica / Optic material	PC			
Coppia serraggio / Tightening torque	1 Nm (plastico / plastic) 40 Nm (metallico / metallic)			
Peso (appros.) / Weight (approx)	100 gr			

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

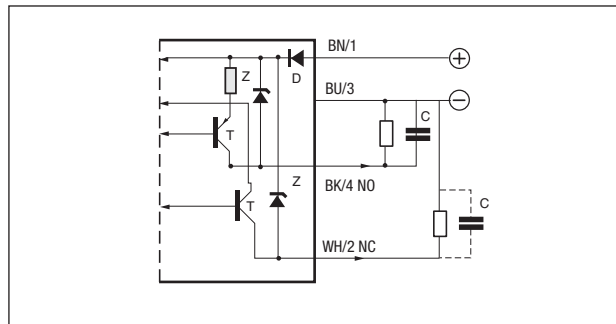
Schemi elettrici delle connessioni - Electrical diagrams of the connections

> Uscita complementare NO + NC - NO + NC Complementary output

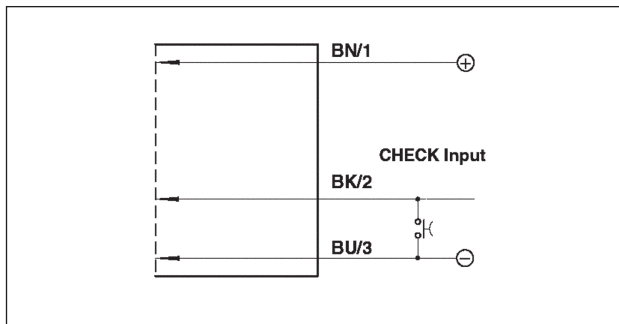
Uscita NPN / NPN output



Uscita PNP / PNP output



Emettitore con check / Emitter with check

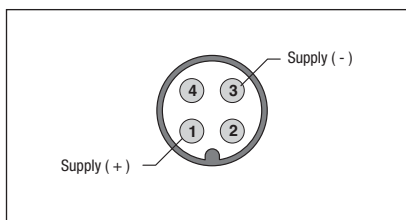


Legenda Key

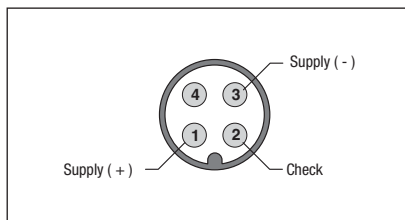
BN → marrone/brown
 BK → nero/black
 PK → rosa/pink
 BU → blu/blue
 WH → bianco/white
 GY → grigio/gray

Connettore - Plug

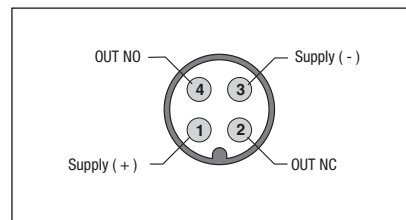
M12 Emittitore senza check
 Emitter without check



M12 Emittitore con check
 Emitter with check



M12 Modello / Model FA**/B***
 Tasteggio diretto / Diffuse reflection
 Polarizzata / Polarized
 Ricevitore / Receiver

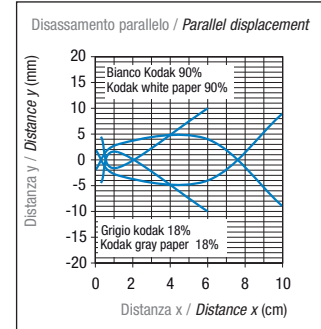
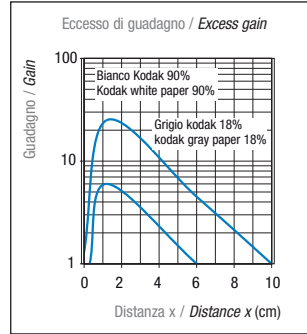
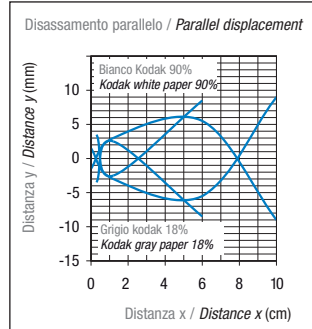
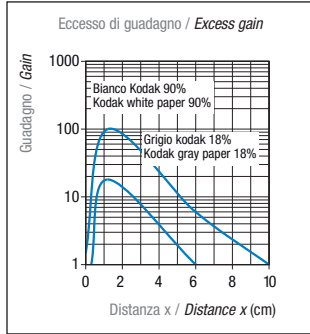


Curva di risposta - Response diagram

> Modelli a diffusione diretta - Direct diffuse models

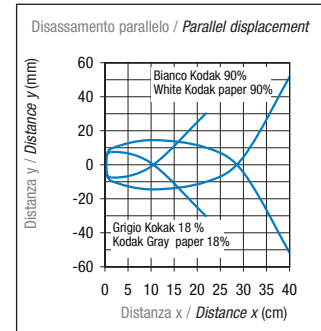
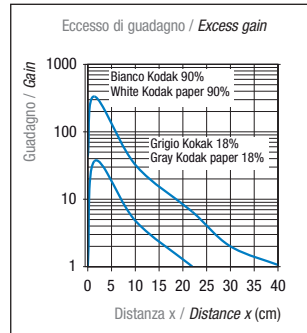
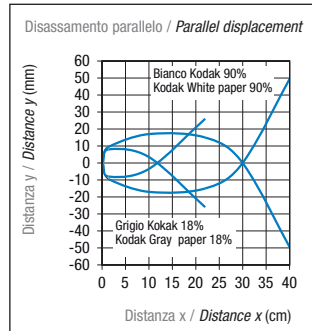
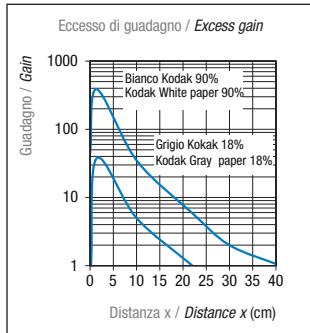
Modelli / Models: FAR2/**_** FAR3/**_**
assiale / axial

Modelli / Models: FAR2/**_** FAR3/**_**
radiale / right angle



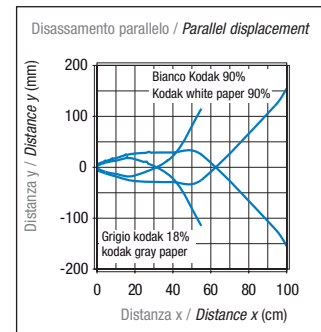
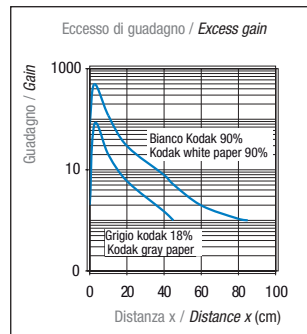
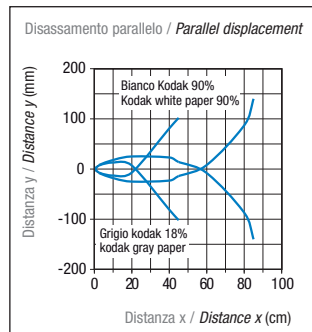
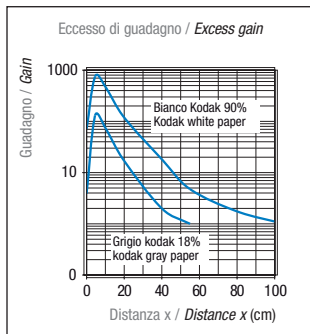
Modelli / Models: FAI6/**_** FAI7/**_**
assiale / axial

Modelli / Models: FAI6/**_** FAI7/**_**
radiale / right angle



Modelli / Models: FAI8/**_**
assiale / axial

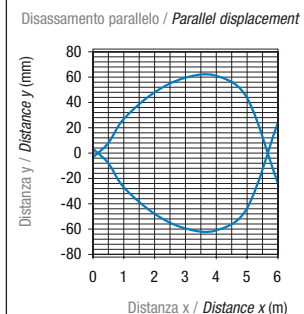
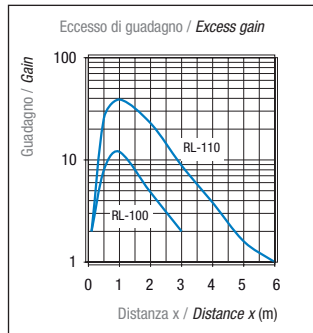
Modelli / Models: FAI8/**_**
radiale / right angle



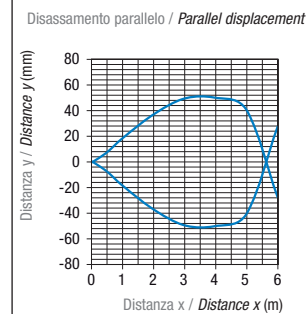
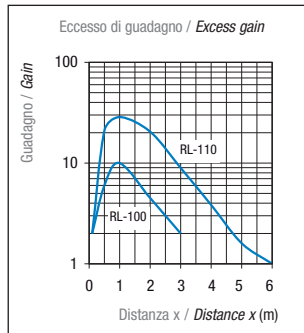
FA SERIES - CYLINDRICAL PHOTOELECTRIC SENSORS

> Modelli a catarifrangente e polarizzati - *Retro-reflective and polarized models*

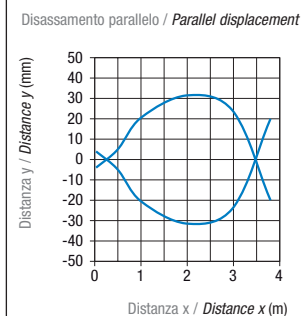
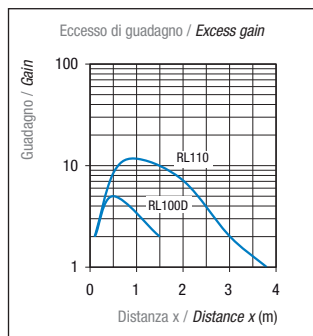
Modelli / Models: FAIC/**_** FAIM/**_**
assiale / axial



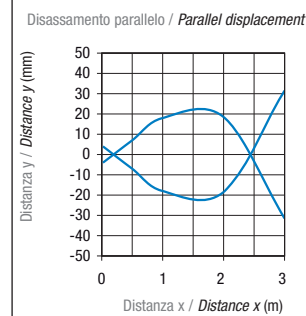
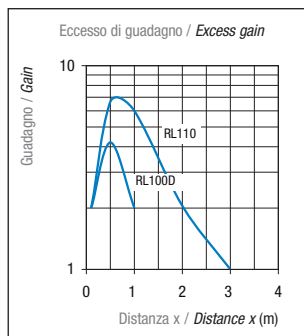
Modelli / Models: FAIC/**_** FAIM/**_**
radiale / right angle



Modelli / Models: FARP/**_** FARN/**_**
assiale / axial

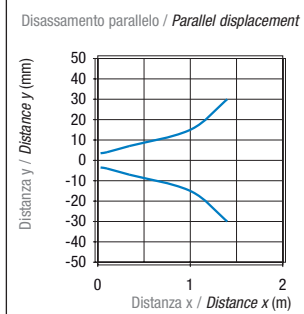
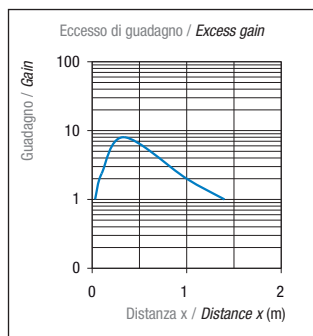


Modelli / Models: FARP/**_** FARN/**_**
radiale / right angle



> Modelli a catarifrangente per oggetti trasparenti - *Retro-reflective photoelectric models for transparent objects*

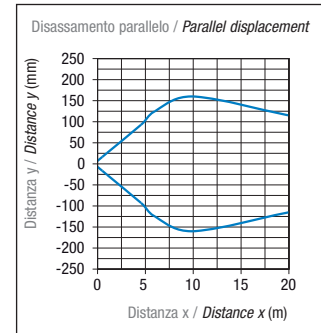
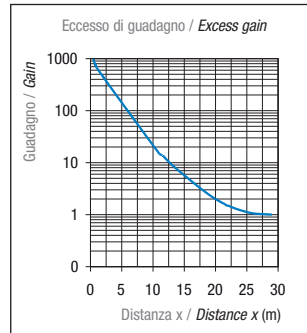
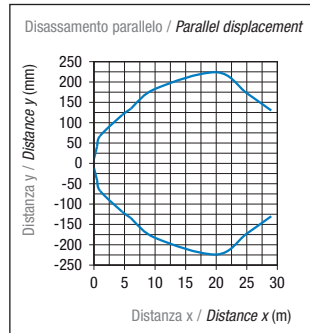
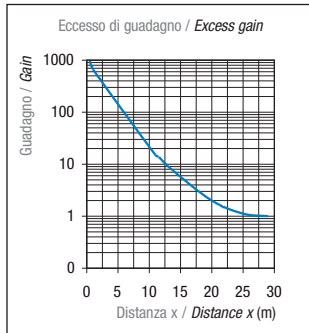
Modelli / Models: FARL/**_**



> Modelli a barriera - Through beam models

Modelli / Models: FAIH/**_** FAID/**_**
FAIZ/**_** assiale / axial

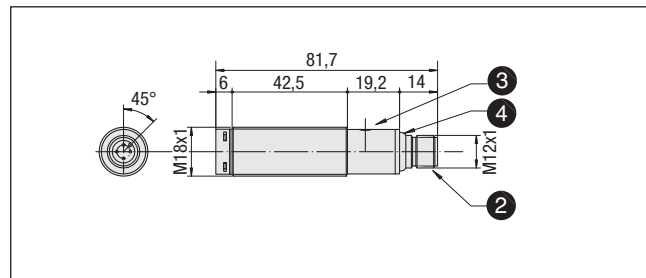
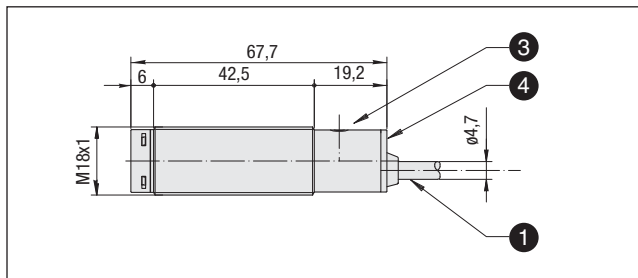
Modelli / Models: FAIH/**_** FAID/**_**
FAIZ/**_** radiale / right angle



Dimensioni - Dimensions

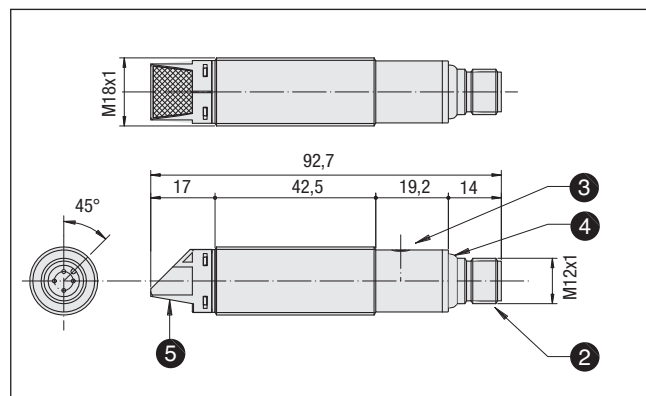
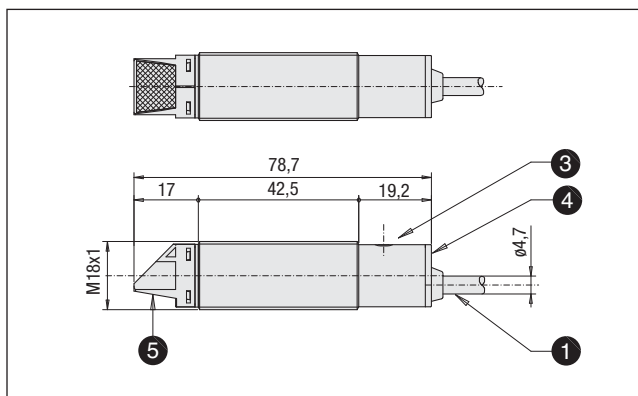
Ottica assiale e cavo assiale
Axial optic and axial cable

Ottica assiale e connettore assiale
Axial optic and axial plug



Ottica radiale e cavo assiale
Radial optic and axial cable

Ottica radiale e connettore assiale
Radial optic and axial plug



Legenda / Key

- ① Uscita cavo assiale
Axial cable exit
- ② Connettore assiale M12
Axial M12 plug cable exit
- ③ Trimmer per la regolazione di sensibilità
Trimmer for sensitivity adjustment
- ④ LED / LED
- ⑤ Asse ottica radiale / Radial optic axis
- ⑥ Uscita cavo radiale / Radial cable exit
- ⑦ Connettore radiale M12 / M12 radial plug