

Sensori fotoelettrici M18 Serie FF per applicazioni alimentari

M18 photoelectric sensors – FF Series for food and beverage applications



Caratteristiche principali

Main features

- > Corpo in acciaio inox AISI 316L (DIN 1.4404)
- > AISI 316L (DIN 1.4404) stainless steel housing
- > Indicatori LED: giallo (uscita), verde (funzione di teach-in)
- > LED status indicators: yellow (output), green (teach-in function)
- > Grado di protezione IP67 – IP68 – IP69K
- > IP67 – IP68 – IP69K protection degree
- > Totalmente protetti contro danneggiamenti di tipo elettrico
- > Complete protection against electrical damages
- > Modelli a diffusione diretta, polarizzati, a proiettore e ricevitore
- > Models with direct diffuse, polarised, through beam
- > Funzione di teach-in innovativa attraverso in tubo della fotocellula
- > Innovative teach-in function through sensor's housing

Descrizione del codice - Code structure

FF R 3 / B P - 1 E V 5

Sensore fotoelettrico M18 per applicazioni alimentari <i>M18 photoelectric sensor for food + beverage applications</i>	FF									V5	Corpo liscio <i>Smooth housing</i>
Emissione a LED rosso visibile <i>Visible red LED emission</i>	R									E	Uscita connettore M12 <i>M12 plug exit</i>
Emissione a LED infrarosso <i>Infrared LED emission</i>	I									1	Corpo in acciaio inox, ottica assiale <i>Stainless steel housing, axial optic</i>
Diffusione diretta 100 mm con regolazione <i>100 mm direct diffuse with sens. adjust.</i>	3									p	Uscita PNP <i>PNP output</i>
Diffusione diretta 400 mm con regolazione <i>400 mm direct diffuse with sens. adjust.</i>	7									N	Uscita NPN <i>NPN output</i>
Diffusione diretta 800 mm con regolazione <i>800 mm direct diffuse with sens. adjust.</i>	8									O	Emettitore <i>Emitter</i>
Polarizzata 4 m con regolazione <i>4 m polarised with sens. adjust.</i>	N									B	Uscite complementari NO+NC, 4 fili <i>NO+NC complementary output, 4 wires</i>
Polarizzata 4 m senza regolazione <i>4 m polarised without sens. adjust.</i>	p									O	Uscita selezionabile NO/NC, 4 fili - Emittitore <i>NO/NC selectable output, 4 wires - Emitter</i>
A catarifrangente 1 m per ogg. trasp. con reg. <i>1 m retrorefl. for transp. objects with sens. adjust.</i>	L									X	Emettitore con Check <i>Emitter with Check</i>
Emettitore <i>Emitter</i>	H										
Ricevitore 20 m senza regolazione <i>20 m receiver without sens. adjust.</i>	Z										

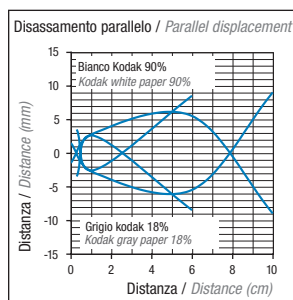
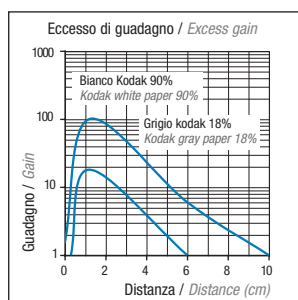
Modelli disponibili

Available models

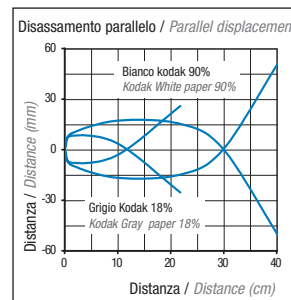
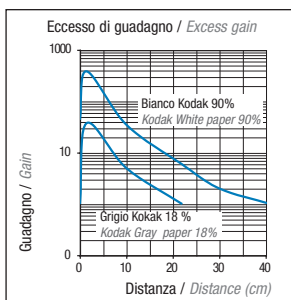
Modelli Models	Corpo Housing	Regolazione Adjustment	Portata Distance	4 fili/Wires NPN LO/DO	4 fili/Wires PNP LO/DO	4 fili/Wires NPN NO+NC	4 fili/Wires PNP NO+NC
Diffusione diretta Direct diffuse	AISI 316L (DIN 1.4404)	Teach-in	100 mm	FFR3/ON-1E	FFR3/OP-1E	FFR3/BN-1E	FFR3/BP-1E
			400 mm	FFI7/ON-1E	FFI7/OP-1E	FFI7/BN-1E	FFI7/BP-1E
			800 mm	FFI8/ON-1E	FFI8/OP-1E	FFI8/BN-1E	FFI8/BP-1E
Polarizzata Polarised	AISI 316L (DIN 1.4404)	Teach-in	4 m	FFRN/ON-1E	FFRN/OP-1E	FFRN/BN-1E	FFRN/BP-1E
		No	4 m	FFRP/ON-1E	FFRP/OP-1E	FFRP/BN-1E	FFRP/BP-1E
Catarifrangente per trasparenti Retroreflector for transparent objects	AISI 316L (DIN 1.4404)	Teach-in	1 m	FFRL/ON-1E	FFRL/OP-1E	FFRL/BN-1E	FFRL/BP-1E
Ricevitore Receiver	AISI 316L (DIN 1.4404)	No	20 m	FFIZ/ON-1E	FFIZ/OP-1E	FFIZ/BN-1E	FFIZ/BP-1E
Emettitore Emitter	AISI 316L (DIN 1.4404)	No	20 m	Senza / Without CHECK		Con / With CHECK	
				FFIH/00-1E		FFIH/X0-1E	

Curva di risposta - Response diagram

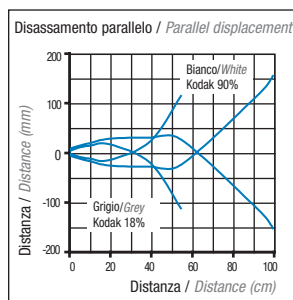
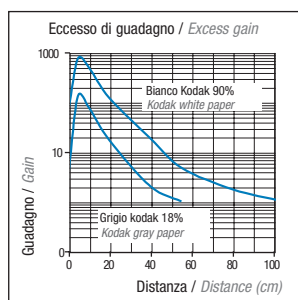
FFR3/**-1E



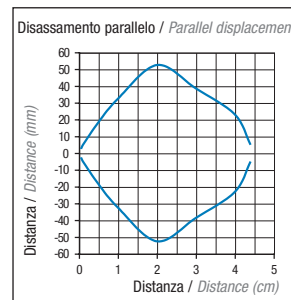
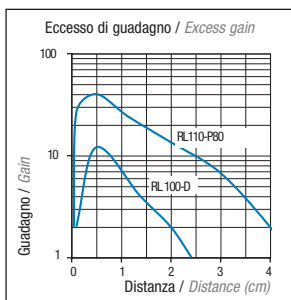
FFI7/**-1E



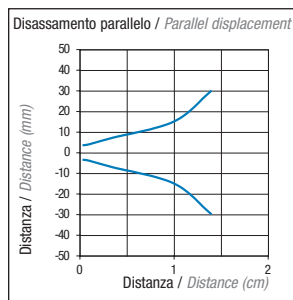
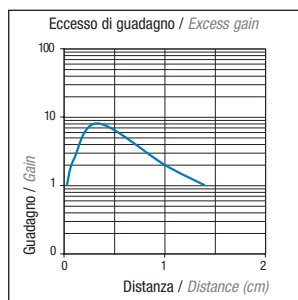
FFI8/**-1E



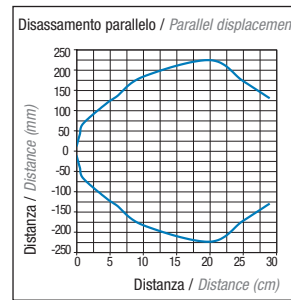
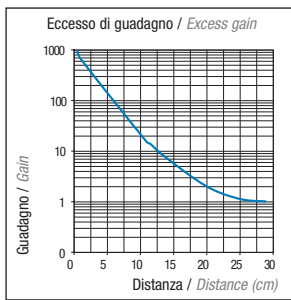
FFRN/**-1E ; FFRP/**-1E



FFRL/**-1E



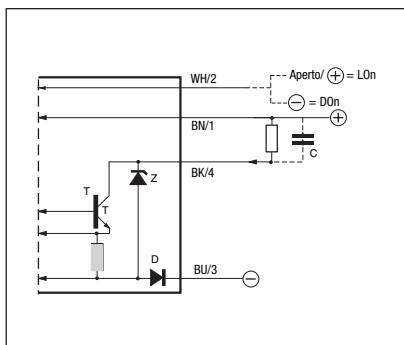
FFIH/**-1E + FFIZ/**-1E



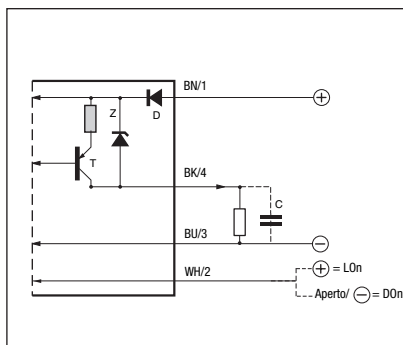
Schema di collegamento - Wiring diagram

> Uscita selezionabile LO/DO - LO/DO selectable output

NPN uscita / NPN output



PNP uscita / PNP output



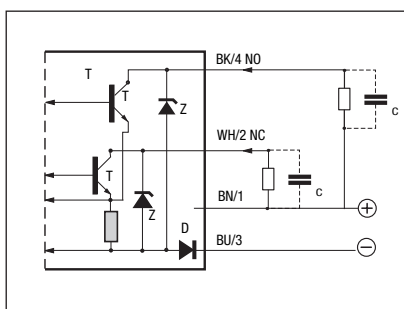
Legenda Legend

BN → marrone/brown
BK → nero/black
BU → blu/blue
WH → bianco/white

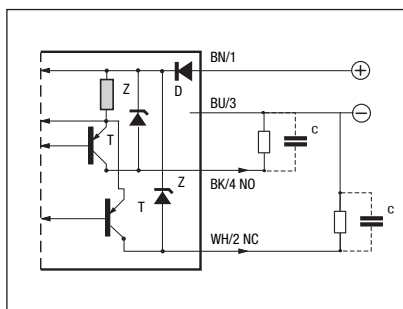
> Uscita complementare NO+NC

NO+NC complementary output

NPN uscita / NPN output

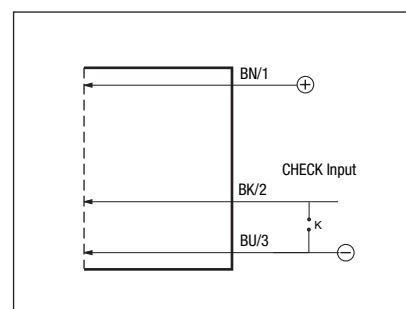


PNP uscita / PNP output



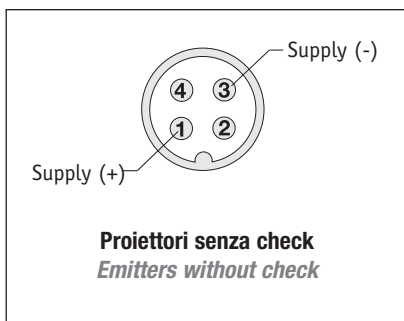
> Emettitori con Check

Emitters with Check

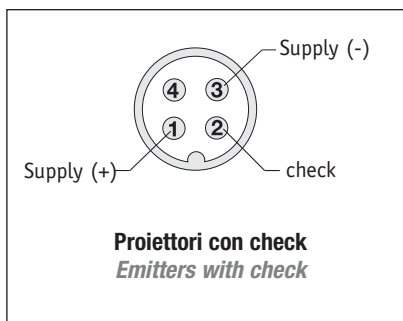


Connettori - Plugs

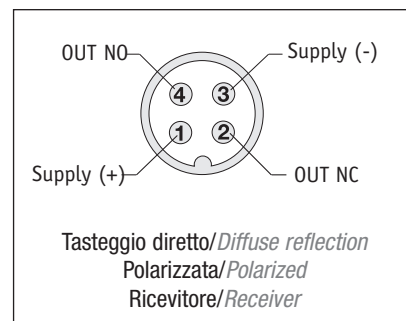
M12



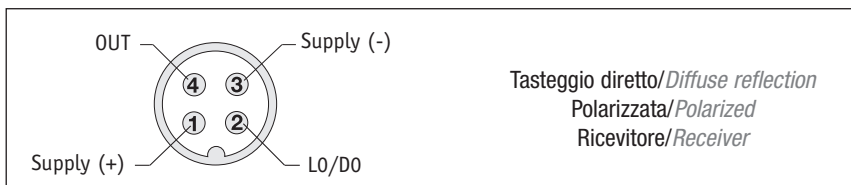
M12



M12 - Modelli/Models FF**/B***



M12 - Modelli/Models FF**/O***



Specifiche (In accordo con IECEN 60947-5-2 / DIN 44030)

Specifications (Acc. to IECEN 60947-5-2 / DIN 44030)

Modelli / Models	Diffusione diretta Direct diffuse			Catalfrangente Retroreflective			Barriera Through beam	
	FFR3	FFI7	FFI8	FFRN	FFRP	FFRL	FFIZ	FFIH
Distanza di rilevamento nominale (Sn) Nominal sensing distance (Sn)	100 mm (1)	400 mm (2)	800 mm (3)	4 m (4)	1 m (5)		20 m	
Emissione / Emission	660 nm	880 nm		660 nm			-	880 nm
Corsa differenziale / Differential travel	≤ 10%							
Ripetibilità / Repeat accuracy	5%							
Tolleranza / Tolerance	+15/-5% Sn							
Tensione di alimentazione Operating voltage	10-30 Vdc							
Ondulazione residua / Ripple	≤ 10%							
Corrente assorbita No load supply current	max 35mA (at Val=30V)						25 mA	40 mA
Corrente di uscita / Load current	100 mA						-	-
Corrente di perdita / Leakage current	≤ 10 µA @ Vmax						-	-
Caduta di tensione in uscita Output voltage drop	2 Vmax. IL =100mA						-	-
Tipo di uscita / Output type	NPN o / or PNP Uscita selezionabile / selectable output LO/DO o / or uscita complementare / complementary output NO+NC						-	-
Frequenza di commutazione Switching frequency	500 Hz						250 Hz	-
Ritardo alla disponibilità Time delay before availability	200 ms							
Protezioni elettriche alimentazione Supply electrical protections	Inversioni di polarità, transienti Polarity reversal, transient							
Protezioni elettriche uscita Supply electrical output	Corto circuito (autoripristinante) Short circuit (autoreset)						-	-
Regolazione di sensibilità Sensitivity adjustment	Teach			NO	Teach	NO	NO	NO
Limiti di temperature operativa Temperature range	-25°...+80° (senza ghiaccio / without freeze)							
Deriva termica / Temperature drift	10% Sr							
Interferenza alla luce esterna Interference external light	5000 lux (Lampada incandescente / Incandescent lamp) 10000 lux (luce solare / sunlight)							
Grado di protezione / Protection degree	IP67; IP68 (1m , 7 giorni / days); IP69K (secondo / according to DIN 40050 part 9)							
Indicatori LED LED indicators	Verde / Green ON : funzione di teach disponibile / teach function available OFF : funzione di teach bloccata / teach function blocked Lampeggio veloce / Fast flashing: teach fine attivo / fine teach active Lampeggio lento / Slow flashing: teach in corso / teach in progress Giallo / Yellow Stato dell'uscita – Eccesso di guadagno / Output state - Excess gain (*) (0 modelli / models) Stato luce – Eccesso di guadagno / Light State / Excess gain (*) (B modelli / models)						Giallo Yellow: Stato uscita Output state (0 modelli models); Stato luce Light State (B modelli models)	Giallo Yellow: Alimentazione attiva Supply on
Materiale corpo / Housing material	Acciaio inox / Stainless steel AISI316L (DIN 1.4404)							
Uscita a connettore / Exit Connector	Grilamid							
Material ottica / Optic material	Ottica piana / Flat plane PMMA, FDA certificata / certified							
Coppia di serraggio / Tightening torque	107 Nm							
Approvazioni / Approvals	CE, cULus, IP68, IP69K, ECOLAB, Johnson Diversey							
Peso (appross.) / Weight (approx)	120gr							

(1) Con ostacolo bianco Kodak 90% 100x100 mm / White target Kodak 90% reflectcion 100 x 100 mm

(2) Con ostacolo bianco Kodak 90% 200x200 mm / White target Kodak 90% reflectcion 200 x 200 mm

(3) Con ostacolo bianco Kodak 90% 400x400 mm / White target Kodak 90% reflectcion 400 x 400 mm

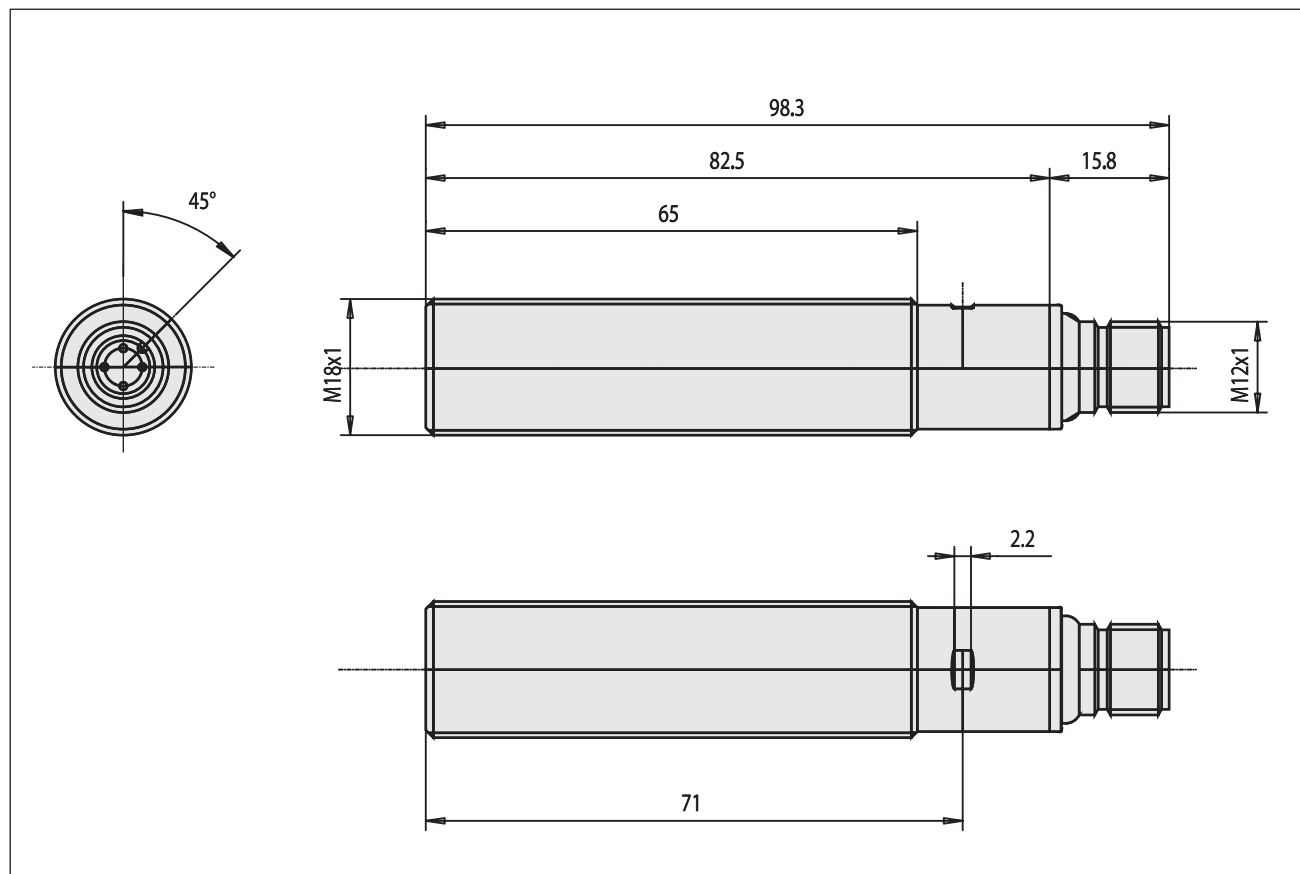
(4) Con riflettore RL110 / With RL110 reflector

(5) Con riflettore RL113G o RL116 / With RL113G or RL116 reflector

(*) LED giallo ON fisso: eccesso di guadagno >=2 / Yellow LED Fixed On: Excess Gain >=2

LED giallo lampeggiante: eccesso di guadagno <2 / Yellow LED flashing: Excess Gain <2

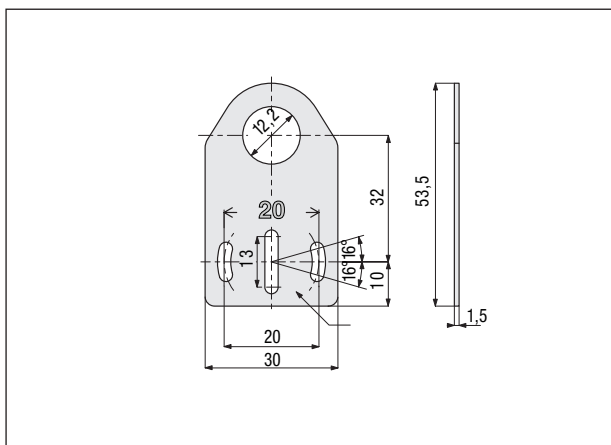
Dimensioni - Dimensions



ST12-A7W

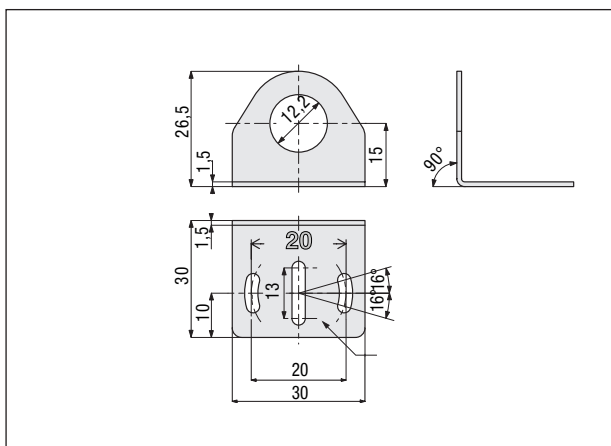
Staffa di fissaggio assiale M12 in acciaio inox
AISI316L (DIN 1.4404)

*M12 stainless steel AISI316L (DIN 1.4404) axial
fixing bracket*

**ST12-C7W**

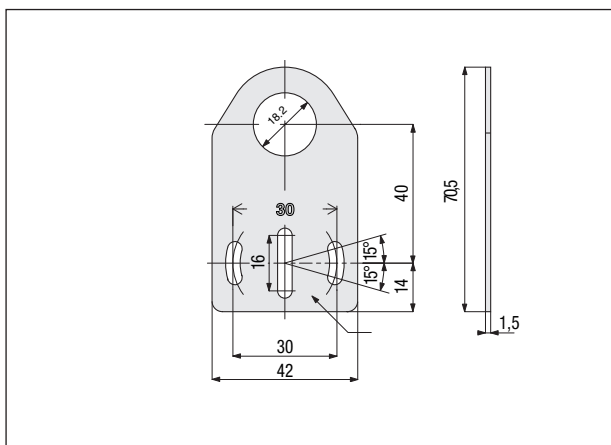
Staffa di fissaggio radiale M12 in acciaio inox
AISI316L (DIN 1.4404)

*M12 stainless steel AISI316L (DIN 1.4404) right
angle fixing bracket*

**ST18-A7W**

Staffa di fissaggio assiale M18 in acciaio inox
AISI316L (DIN 1.4404)

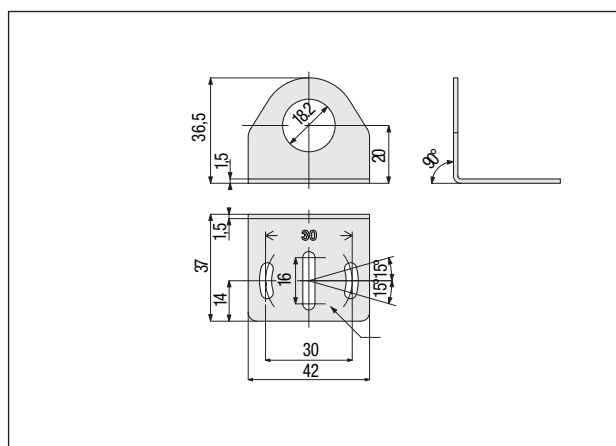
*M18 stainless steel AISI316L (DIN 1.4404) axial
fixing bracket*



ST18-C7W

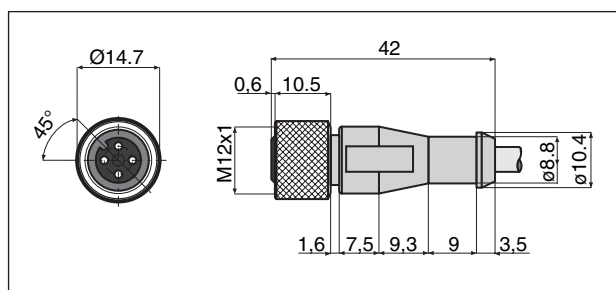
Staffa di fissaggio radiale M18 in acciaio inox
AISI316L (DIN 1.4404)

*M18 stainless steel AISI316L (DIN 1.4404) right
angle fixing bracket*

**CD12F/0B-050A1**

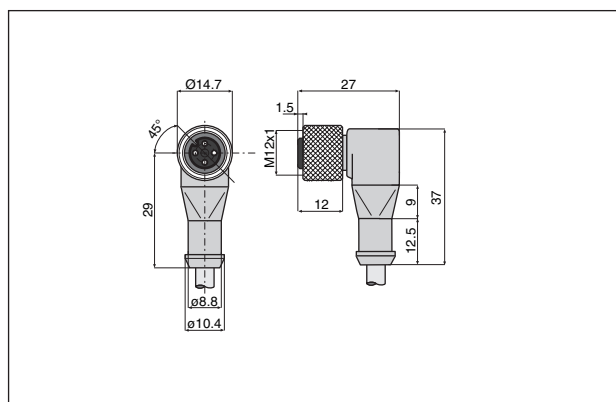
Connettori assiali M12, 4 poli, 5m, PVC

M12 4 poles, 5m, PVC axial connectors

**CD12F/0B-050C1**

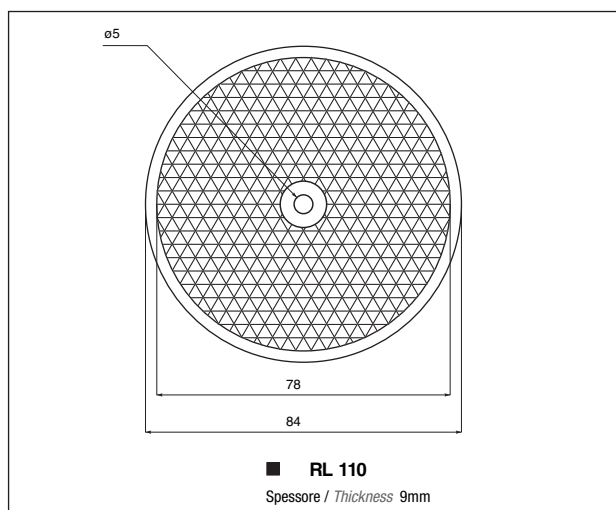
Connettori radiali M12, 4 poli, 5m, PVC

M12 4 poles, 5m, PVC right angle connectors

**RL 110**

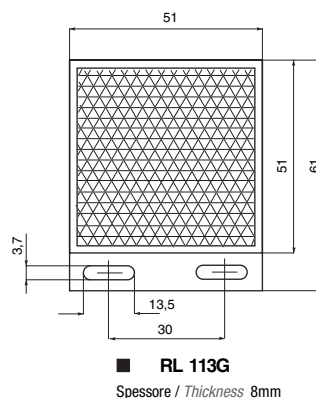
Riflettore per fotocellule a catarifrangente e
polarizzate

*Reflector for retroreflective and polarised
photoelectric sensors*

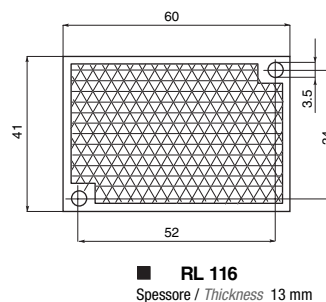


RL 113G

Riflettore per fotocellule a catarifrangente,
polarizzate e per materiali trasparenti
*Reflector for retroreflective, polarised and for
transparent object detection photoelectric sensors*

**RL 116**

Riflettore per fotocellule a catarifrangente,
polarizzate e per materiali trasparenti
*Reflector for retroreflective, polarised and for
transparent object detection photoelectric sensors*

**RL 103**

Riflettore per fotocellule a catarifrangente e
polarizzate
*Reflector for retroreflective and polarised
photoelectric sensors*

