

1 DESCRIPTION

Magnetic sensors series "FM 158" allow to detect the magnetic piston position inside pneumatic cylinders. The magnetic field generated in the cylinder is used to signal electrical circuits as required. It's possible to choose between the two types of switches currently available: Reed switch (this switch can work both with AC or DC circuits and it has a mechanical and electrical life of the order of 10 million impulses); Hall effect switch (that is suitable for DC circuits only and it has an extended functional life up to 1 billion impulses).
Magnetic sensors have a LED that signals the insertion as standard.

NOTICE

The magnetic sensor is a switch that has to be assembled in series with an inductive, resistive or capacitive load. Do not use several standard switches in series; to do this use a suitable 3 wires Reed switch sensors (contact our commercial office for details).
Use the shortest possible connection cable to reduce self-capacitance to a minimum.
In borderline cases, measures should be taken to cancel the effect of cable capacitance using a repetition relay (4 W) in series.
Avoid close proximity to external magnetic fields such as electric motors or large iron masses, as they could effect the switch.
The sensors are able to detect a magnetic signal at speeds up to 1 m/s.

MAGNETIC SENSORS TYPE FM158 - FM158E - FM158/C - FM158E/C

TECHNICAL DATA

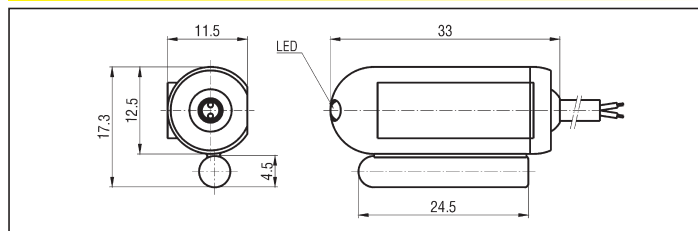
TYPE	FM158 - FM158/C	FM158E - FM158E/C
Working temperature	-20 ÷ + 80 °C	
Protection class	IP65	
Contacts	N.O.	
Voltage AC/DC	3 ÷ 115 V	6 ÷ 30 V
Model	Reed switch	Hall effect switch
Max. current at 25 °C	0,3 A	0,25 A
Max. power	10 VA	6 W
Switch-on time	0,5 ms	0,8 µs
Switch-off time	0,1 ms	0,3 µs
Electrical life	10 million impulses	1 billion impulses
Contact resistance	0,1 Ω	-
Direct voltage drop	3 V	0,7 V

MATERIALS

Body	PA 6 G +
Cable	PVC CEI 2022 2x0,25 mm
Connector	PVC
Contact carrier	PA 6 G
Ring nut	Brass

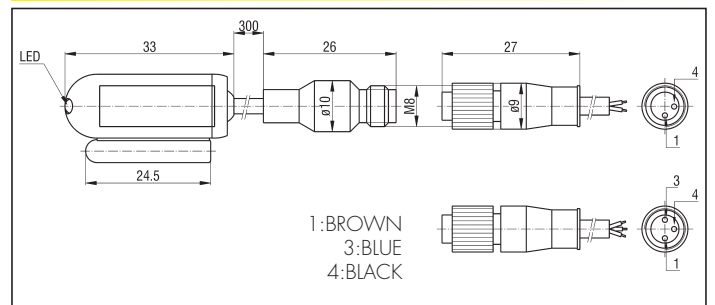


FM158 - FM158E



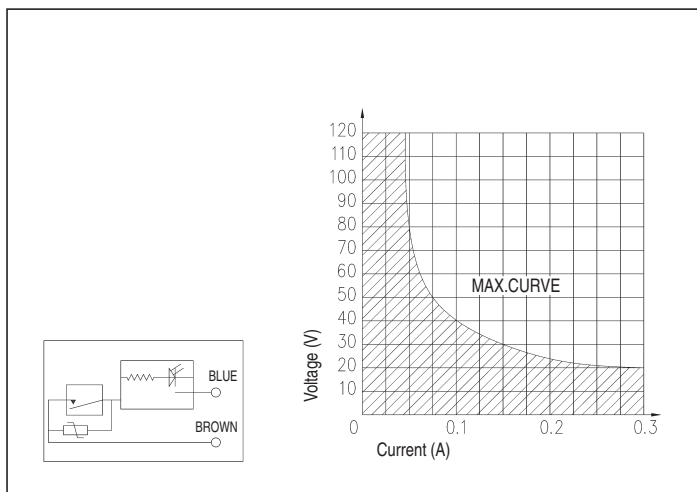
DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	36	FM158
Hall effect switch version PNP with LED and 3 wires cable 2,5 m length	40	FM158E

FM158/C - FM158E/C

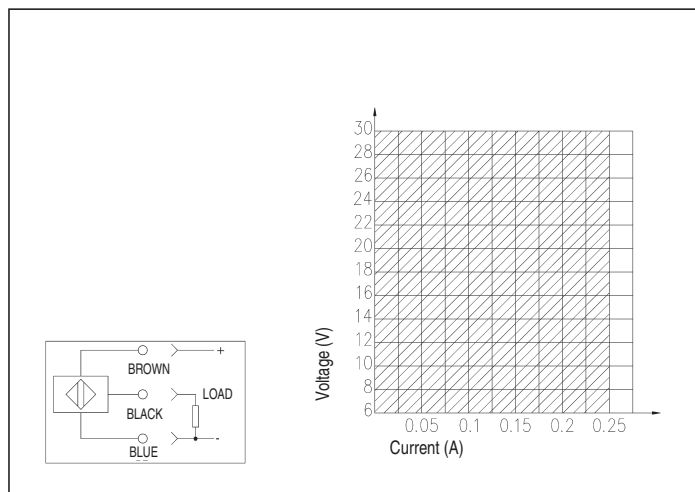


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M 8 and 2 wires cable 2,5 m length	48	FM158/C
Hall effect switch version PNP with LED, connector M 8 and 3 wires cable 2,5 m length	51	FM158E/C

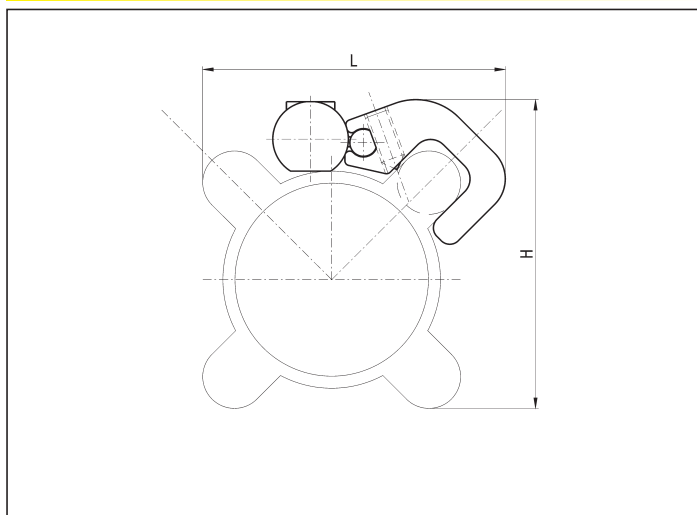
ELECTRIC CIRCUIT AND DIAGRAM REED SWITCH



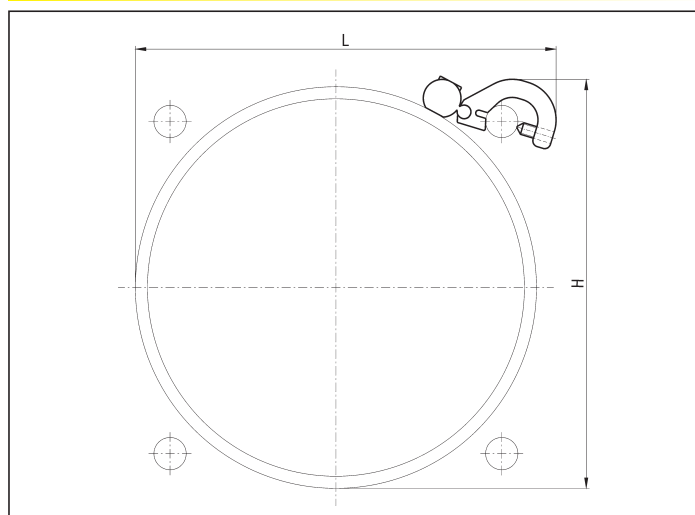
ELECTRIC CIRCUIT AND DIAGRAM HALL EFFECT SWITCH



SENSOR FIXING BRACKET - ALUMINIUM - SQ



SENSOR FIXING BRACKET - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDER

H	L	CYLINDER SERIES Ø		TYPE
		CPUJ		
51,5	50	32		SQ32-40A
59	56	40		
70	69	50		
81,5	80	63		SQ50-63A
98,5	96	80		SQ80-100A
115	113	100		

MAXIMUM DIMENSIONS WITH CYLINDER

H	L	CYLINDER SERIES Ø			TYPE
		CPUJ	CPU	CX	
33	33	-	32	32	ST3456
37,5	33	-	40	40	
40	35	-	50	50	
49	39	-	63	63	
57	48	-	80	80	ST810260
61	54	-	100	100	
71	69	125	-	125	
92	90	160	-	160	
120	118	200	-	200	

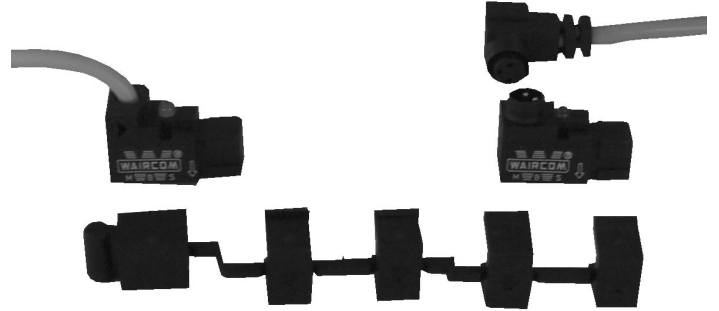
1 MAGNETIC SENSORS TYPE FM102B - FM102B/C - FM102BE/C

TECHNICAL DATA

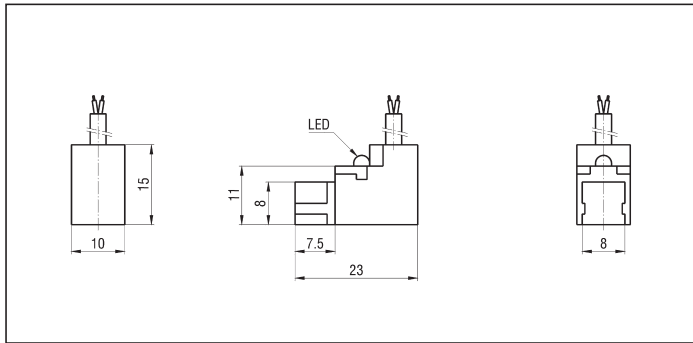
TYPE	FM102B - FM102B/C	FM102BE/C
Working temperature	-20 ÷ +80 °C	
Protection class	IP65	
Contacts	N.O.	
Voltage AC/DC	3-115 V	6-30 V
Model	Reed switch	Hall effect switch
Max. current at 25 °C	0,3 A	0,25 A
Max. power	10 VA	6 W
Switch-on time	0,6 ms	0,8 µs
Switch-off time	0,1 ms	0,3 µs
Electrical life	10 million impulses	1 billion impulses
Contact resistance	0,1 Ω	-
Direct voltage drop	3 V	0,7 V

MATERIALS

Body	PA 6 G +
Cable	PVC CEI 2022 2x0,25 mm
Connector	PVC
Contact carrier	PA 6 G

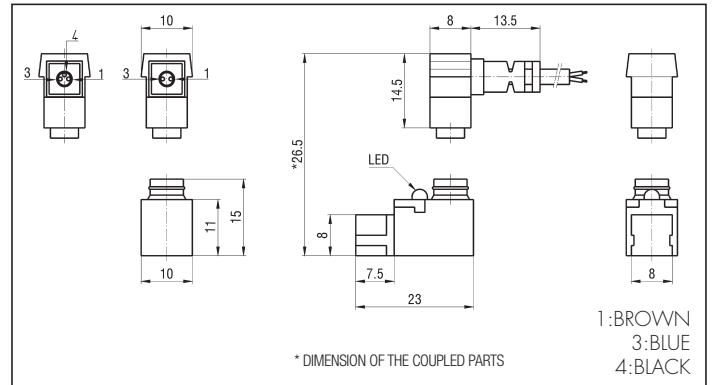


FM102B



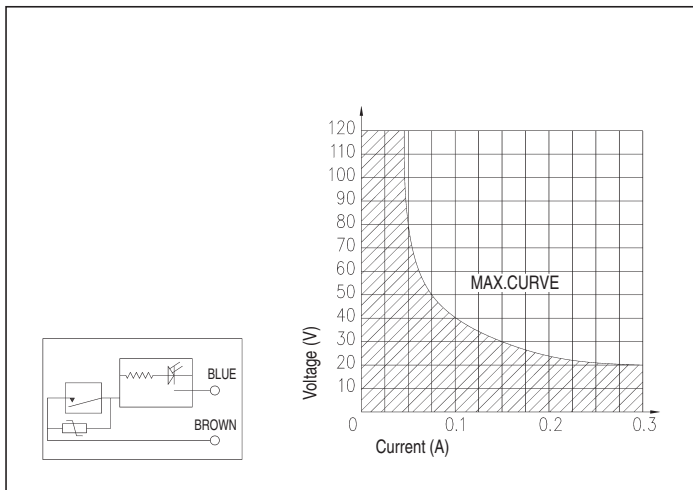
DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	52	FM102B

FM102B/C - FM102BE/C

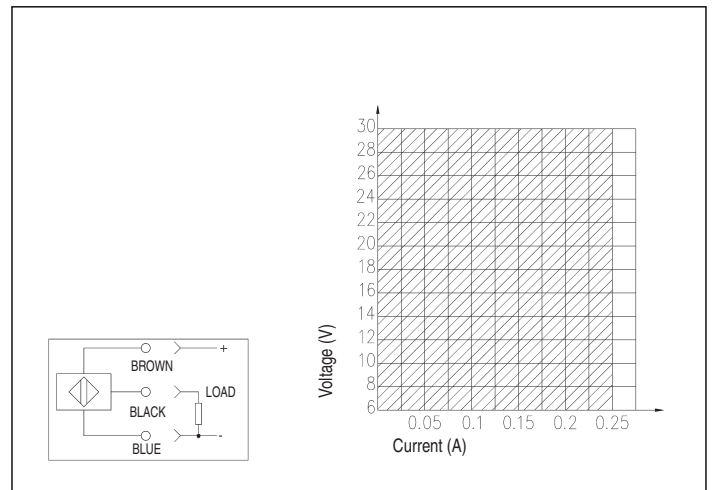


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M 8 and 2 wires cable 2,5 m length	63	FM102B/C
Hall effect switch version PNP with LED, connector M 8 and 3 wires cable 2,5 m length	63	FM102BE/C

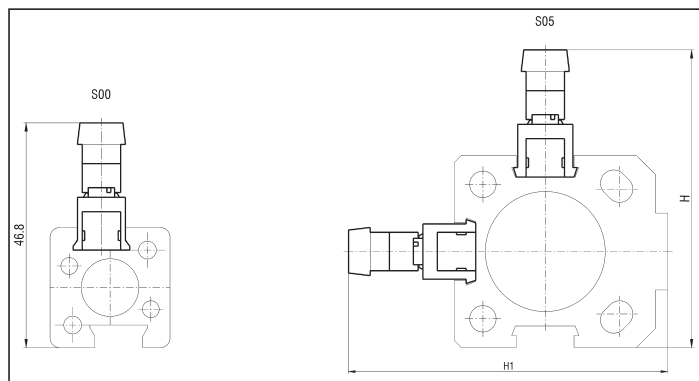
ELECTRIC CIRCUIT AND DIAGRAM REED SWITCH



ELECTRIC CIRCUIT AND DIAGRAM HALL EFFECT SWITCH



FIXING ADAPTER - PLASTIC

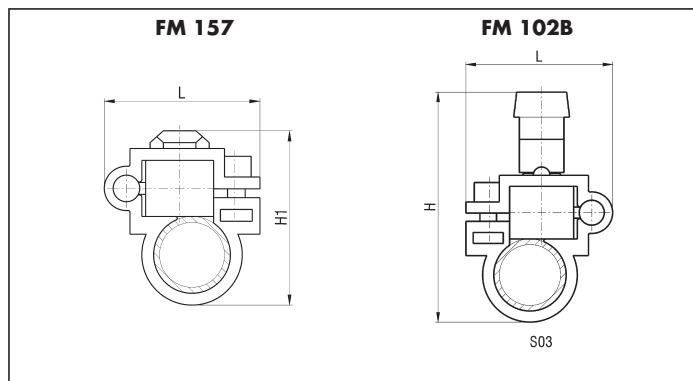


P.S.: THE ADAPTER IS SUPPLIED AS STANDARD WITH THE SENSOR

MAXIMUM DIMENSIONS WITH CYLINDER

H	H1	CYLINDER SERIES Ø
		B
52,5	56,5	16
56,8	60,8	20
62	66,5	25
68,5	73,5	32
77,5	80,5	40
87,5	92,5	50
101,5	107,5	63
120,5	125,5	80
143	150	100

BRACKET AND FIXING ADAPTER - PLASTIC - FG



P.S.: THE ADAPTER IS SUPPLIED AS STANDARD WITH THE SENSOR

MAXIMUM DIMENSIONS WITH CYLINDER

H1	H	L	CYLINDER SERIES Ø		TYPE
			U	P	
26	38	23	8	-	FG/050
28	40	28	10	-	FG/051
31	42	27	12	-	FG/052
33	45	28,5	16	-	FG/053
38	52	32	20	-	FG/054
43	58	32	25	-	FG/055
51	65	32	-	32	FG/056
60	73	32	-	40	FG/057
70	83	32,5	-	50	FG/058
84	97	32,5	-	63	FG/059

MAGNETIC SENSORS TYPE FM102BU - FM102BU/C - FM102BUE/C

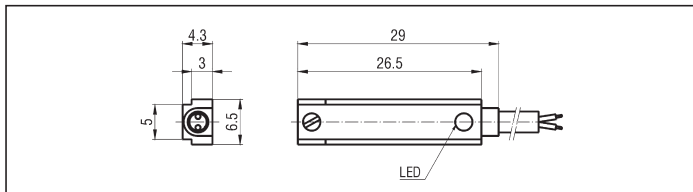
TECHNICAL DATA

TYPE	FM102BU - FM102BU/C	FM102BUE/C
Working temperature	-20 ÷ +80 °C	
Protection class	IP65	
Contacts	N.O.	
Voltage AC/DC	3 ÷ 30 V	6 ÷ 30 V
Model	Reed switch	Hall effect switch
Max. current at 25 °C	0,1 A	0,20 A
Max. power	6 VA	4 W
Switch-on time	0,5 ms	0,8 µs
Switch-off time	0,1 ms	0,3 µs
Electrical life	10 million impulses	1 billion impulses
Contact resistance	0,1 Ω	-
Direct voltage drop	3 V	1 V

MATERIALS

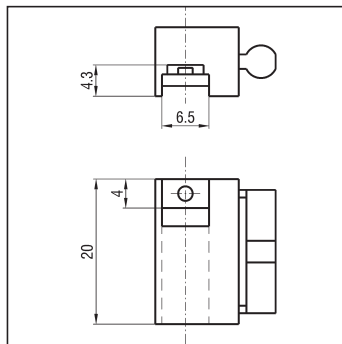
Body	PA 6 G +
Cable	PVC CEI 2022 2x0,25 mm
Connector	PVC
Contact carrier	PA 6 G
Ring nut	Bra

FM102BU

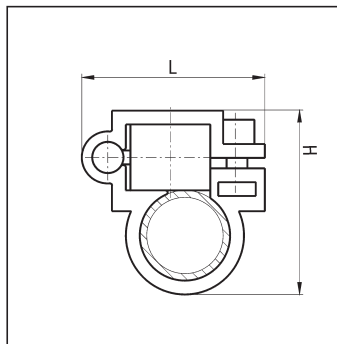


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	34	FM102BU

FIXING ADAPTER – AFMBU02

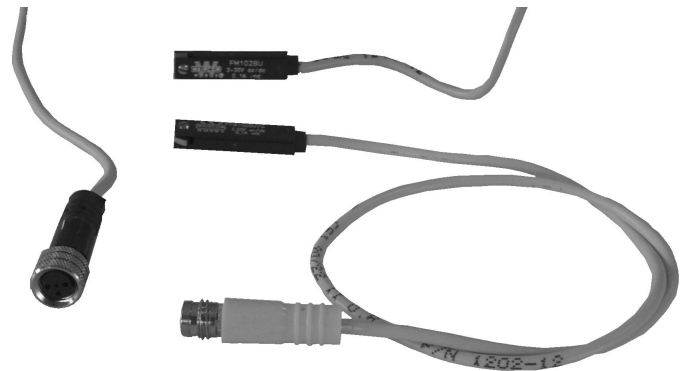


SENSOR FIXING BRACKET - FG

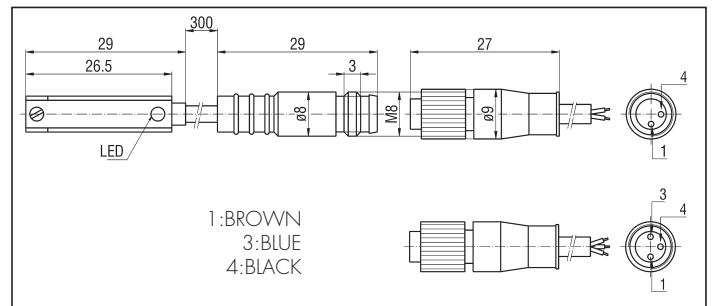


MAXIMUM DIMENSIONS WITH CYLINDER

H	L	CYLINDER SERIES Ø		TYPE
		U	P	
22	23	8	-	FG/050
24	28	10	-	FG/051
27	27	12	-	FG/052
29	28,5	16	-	FG/053
34	32	20	-	FG/054
39	32	25	-	FG/055
47	32	-	32	FG/056
56	32	-	40	FG/057
76	32,5	-	50	FG/058
78	32,5	-	63	FG/059

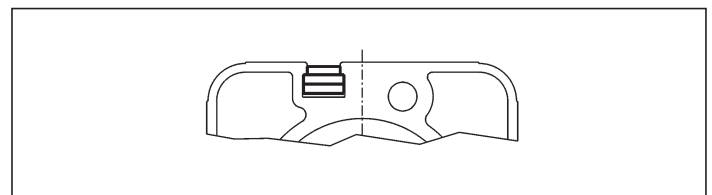


FM102BU/C - FM102BUE/C

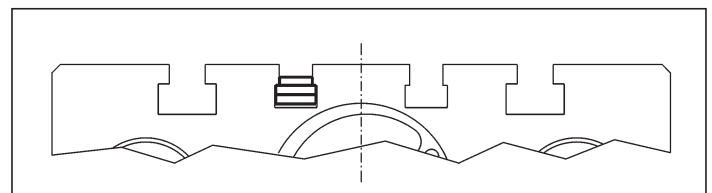


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M 8 and 2 wires cable 2,5 m length	45	FM102BU/C
Hall effect switch version PNP with LED, connector M 8 and 3 wires cable 2,5 m length	47	FM102BUE/C

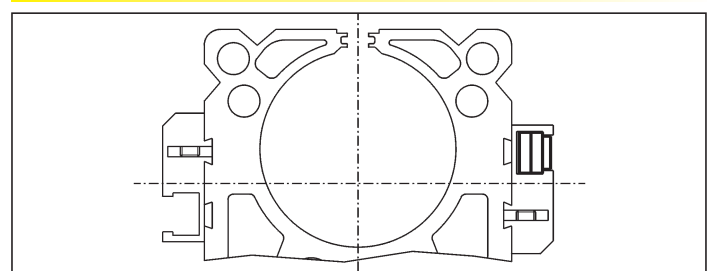
EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES BU



EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES BG



EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES Z WITH BRACKET TYPE SQZ



MAGNETIC SENSORS TYPE FM103 - FM103/C - FM103E/C

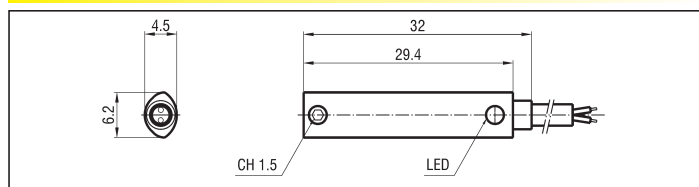
TECHNICAL DATA

TYPE	FM103 - FM103/C	FM103E/C
Working temperature	-20 ÷ +80 °C	
Protection class	IP65	
Contacts	N.O.	
Voltage AC/DC	3 ÷ 30 V	6 ÷ 30 V
Model	Reed switch	Hall effect switch
Max. current at 25 °C	0,1 A	0,20 A
Max. power	6 VA	4 W
Switch-on time	0,5 ms	0,8 µs
Switch-off time	0,1 ms	0,3 µs
Electrical life	10 million impulses	1 billion impulses
Contact resistance	0,1 Ω	-
Direct voltage drop	3 V	1 V

MATERIALS

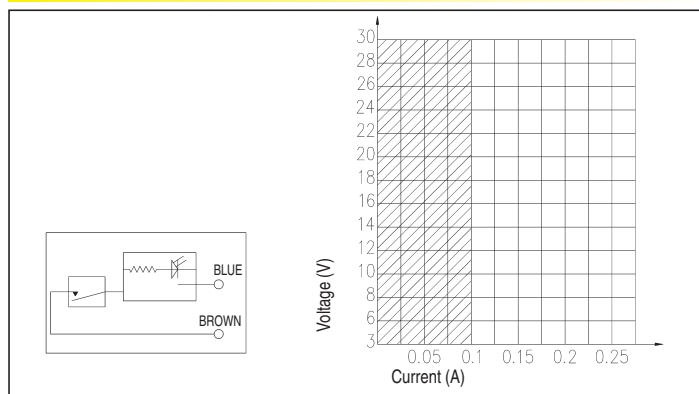
Body	PA 6 G +
Cable	PVC CEI 2022 2x0,25 mm
Connector	PVC
Contact carrier	PA 6 G
Ring nut	Bra

FM103

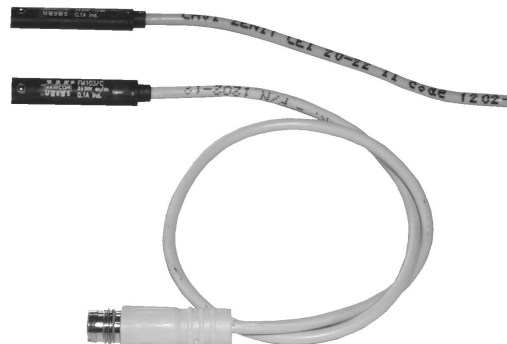
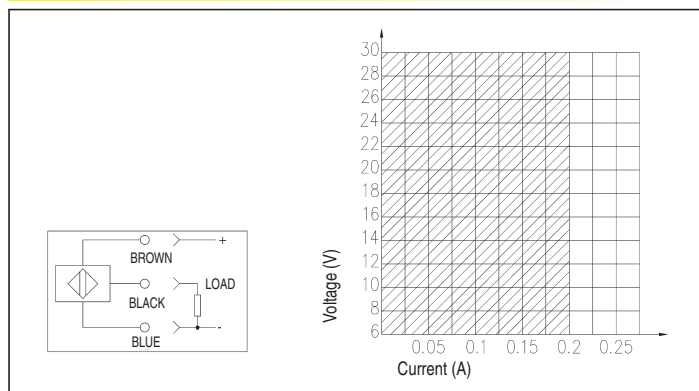


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	34	FM103

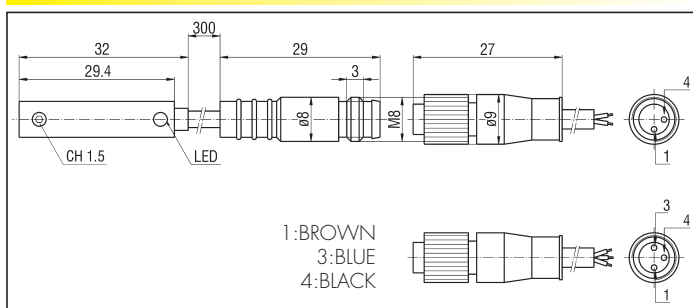
ELECTRIC CIRCUIT AND DIAGRAM REED SWITCH FM102 BU - FM103



ELECTRIC CIRCUIT AND DIAGRAM HALL EFFECT SWITCH FM102 BU - FM103

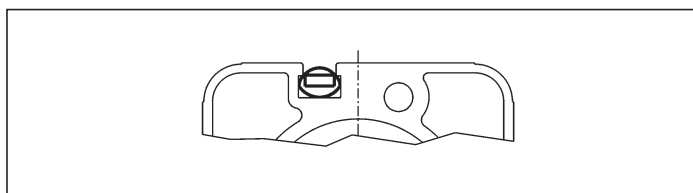


FM103/C - FM103E/C

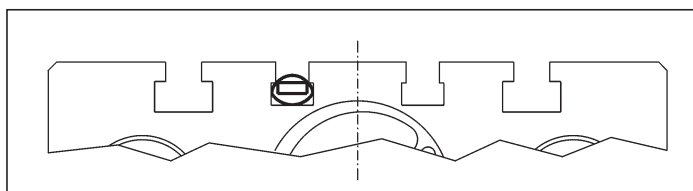


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED,, connector M 8 and 2 wires cable 2,5 m length	45	FM103/C
Hall effect switch version PNP with LED connector M 8 and 3 wires cable 2,5 m length	47	FM103E/C

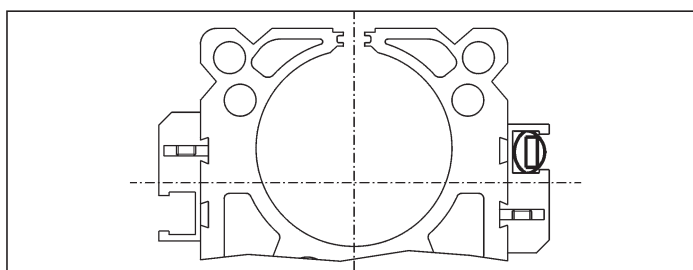
EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES BU



EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES BG



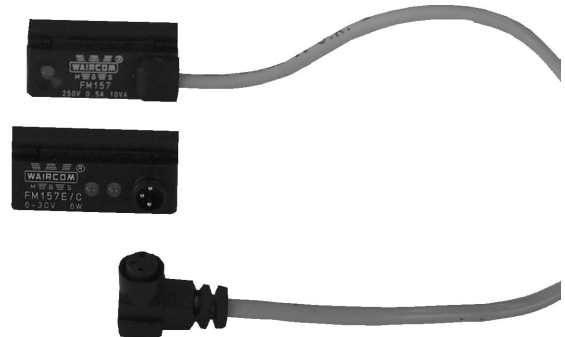
EXAMPLE OF SENSOR MOUNTING ON CYLINDER SERIES Z WITH BRACKET TYPE SQZ



MAGNETIC SENSORS TYPE FM157 - FM157/C - FM157E/C

TECHNICAL DATA

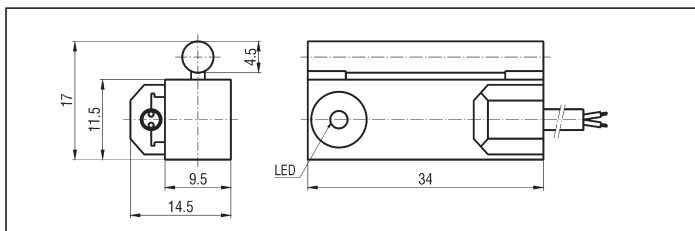
TYPE	FM157 - FM157/C	FM157E/C
Working temperature	-20 ÷ +80 °C	
Protection class	IP65	
Contacts	N.O.	
Voltage AC/DC	3-230 V	6-30 V
Model	Reed switch	Hall effect switch
Max. current at 25 °C	0,5 A	0,25 A
Max. power	10 VA	6 W
Switch-on time	0,5 ms	0,8 µs
Switch-off time	0,1 ms	0,3 µs
Electrical life	10 million impulses	1 billion impulses
Contact resistance	0,1 Ω	-
Direct voltage drop	3 V	0,7 V



MATERIALS

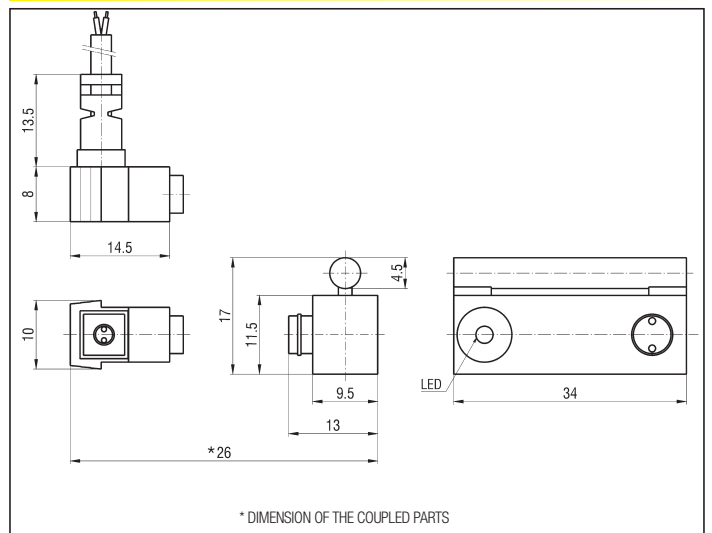
Body	PA 6 G +
Cable	PVC CEI 2022 2x0,25 mm
Connector	PVC
Contact carrier	PA 6 G

FM157



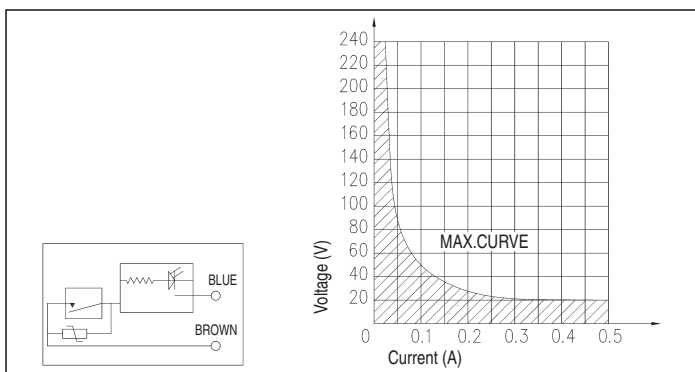
DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, and 2 wires cable 2,5 m length	55	FM157
Hall effect switch version PNP with LED, and 3 wires cable 2,5 m length	58	FM157E

FM157/C - FM157E/C

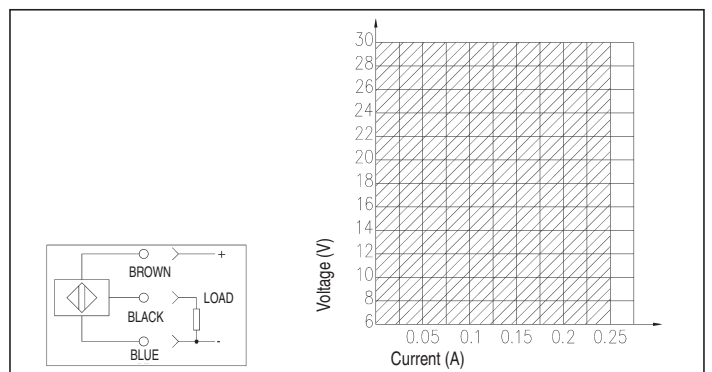


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M 8 and 2 wires cable 2,5 m length	58	FM157/C
Hall effect switch version PNP with LED, connector M 8 and 3 wires cable 2,5 m length	61	FM157E/C

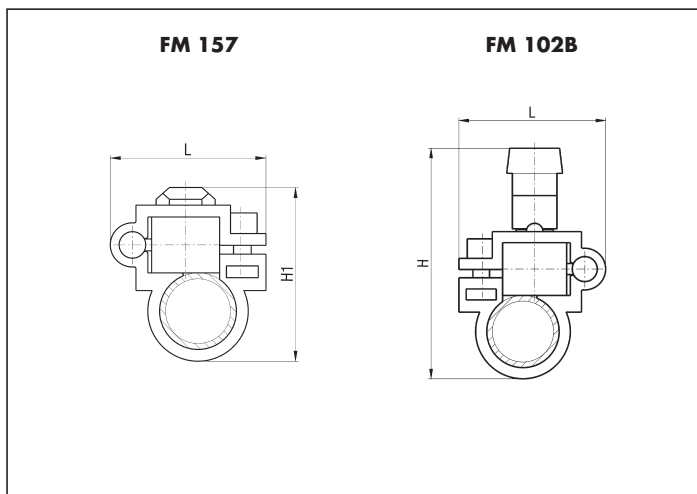
ELECTRIC CIRCUIT AND DIAGRAM REED SWITCH



ELECTRIC CIRCUIT AND DIAGRAM HALL EFFECT SWITCH



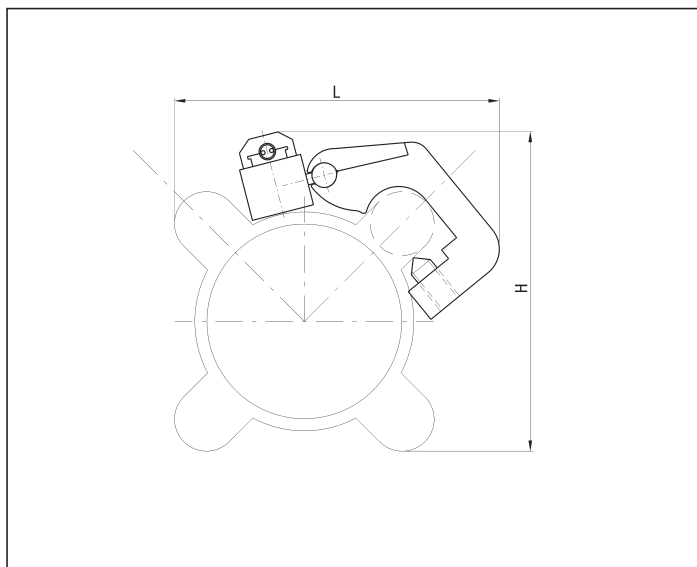
SENSOR FIXING BRACKET - PLASTIC - FG



MAXIMUM DIMENSIONS WITH CYLINDER

H1	H	L	CYLINDER SERIES Ø		TYPE
			U	P	
26	38	23	8	-	FG/050
28	40	28	10	-	FG/051
31	42	27	12	-	FG/052
33	45	28,5	16	-	FG/053
38	52	32	20	-	FG/054
43	58	32	25	-	FG/055
51	65	32	-	32	FG/056
60	73	32	-	40	FG/057
70	83	32,5	-	50	FG/058
84	97	32,5	-	63	FG/059

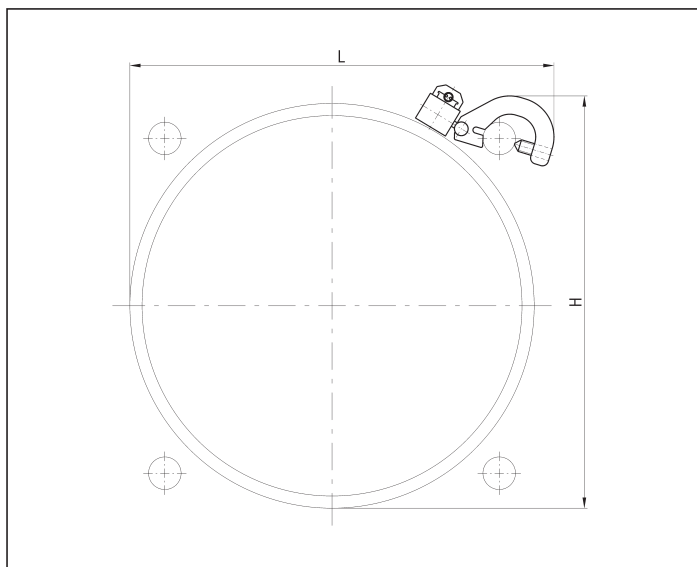
SENSOR FIXING BRACKET - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDER

H	L	CYLINDER SERIES Ø	TYPE
		CPUI	
55	63	32	ST34
65	60	40	
77	72	50	
87	82	63	ST56
102	101	80	ST80
120	117	100	ST102
147	131	125	

SENSOR FIXING BRACKET - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDER

H	L	CYLINDER SERIES Ø			TYPE
		CPUI	CPU	CX	
33	33	-	32	32	ST3456
37,5	33	-	40	40	
40	35	-	50	50	
49	39	-	63	63	
57	48	-	80	80	ST810260
61	54	-	100	100	
71	69	125	-	125	
92	90	160	-	160	
120	118	200	-	200	



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