

DESCRIPTION

Magnetic sensors series "FM" 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 electromechanical switch can work with both AC or DC circuits)
- Hall effect switch (electronic switch suitable for DC circuits only)

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 a load (inductive, resistive or capacitive). 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 of the piston up to 1 m/s.

MAGNETIC SENSORS SERIES FM100

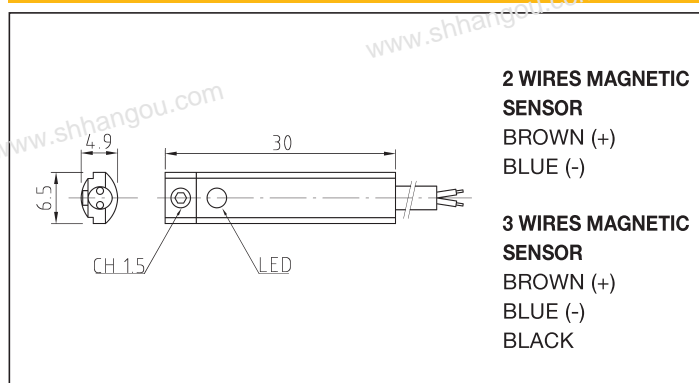
TECHNICAL DATA

TYPE	FM100	FM100R	FM100N	FM100E	FM100EN
	FM100/C	FM100R/C	FM100N/C	FM100E/C	FM100EN/C
Working temperature	-10 ÷ +70 °C				
Protection class	IP 67				
Model	REED SWITCH			HALL EFFECT	
Contacts	N.O.		N.C.	PNP	NPN
Voltage AC/DC	5 ÷ 220 V	10 ÷ 30 VDC	5 ÷ 110 V	10 ÷ 30 VDC	
Max voltage drop	3 V	0.1 V	3 V	2 V	
Max exchange current	100 mA				
Max power	10 W			3 W	
Operating frequency	200 Hz			1000 Hz	

MATERIALS

Body	Polyamide
Cable	Polyurethane
Connector	Polypropylene
Contacts	Gold-plated brass
Contact carrier	Nickel-plated brass
Ring nut	Brass

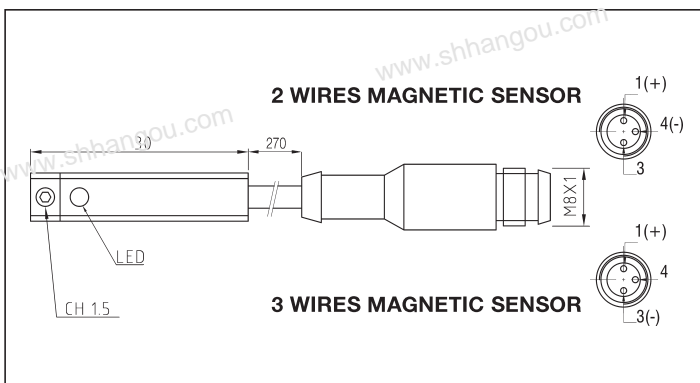
FM100 - FM100R - FM100N - FM100E - FM100EN



DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires cable 3 m length	33	FM100
N.O. reed switch with LED and 3 wires cable 3 m length	33	FM100R
N.C. reed switch with LED and 2 wires cable 3 m length	33	FM100N
Hall effect switch version PNP with LED and 3 wires cable 3 m length	37	FM100E
Hall effect switch version NPN with LED and 3 wires cable 3 m length	37	FM100EN



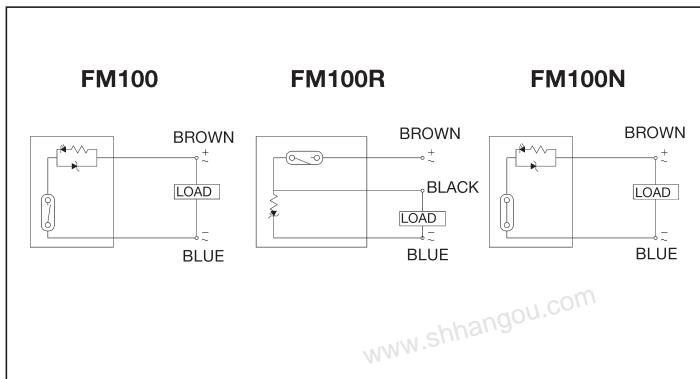
FM100/C - FM100R/C - FM100N/C - FM100E/C - FM100EN/C



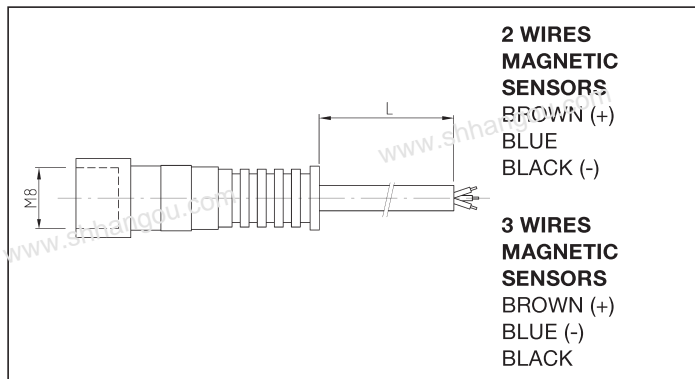
DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires ring nut connector M8	45	FM100/C
N.O. reed switch with LED and 3 wires ring nut connector M8	45	FM100R/C
N.C. reed switch with LED and 2 wires ring nut connector M8	45	FM100N/C
Hall effect switch version PNP with LED and 3 wires ring nut connector M8	49	FM100E/C
Hall effect switch version NPN with LED and 3 wires ring nut connector M8	49	FM100EN/C

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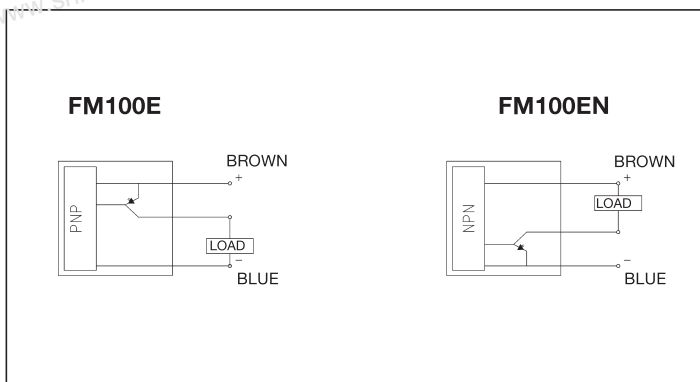
ELECTRIC CIRCUITS REED SWITCH



EXTENSION WITH FEMALE CONNECTOR M8

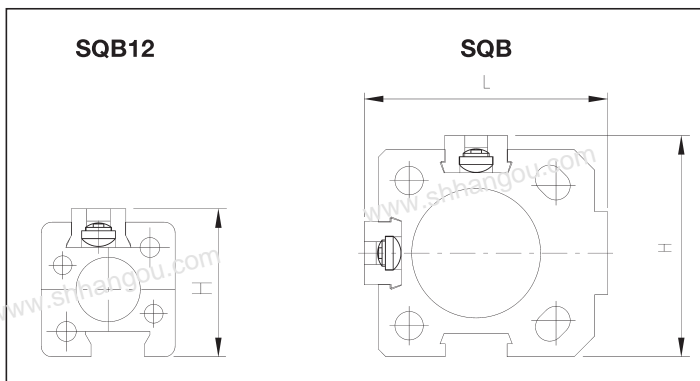


ELECTRIC CIRCUITS HALL EFFECT SWITCH

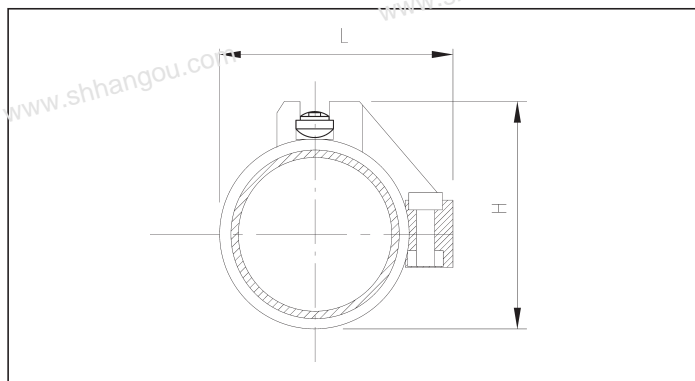


DESCRIPTION	WEIGHT (g)	L (m)	TYPE
Extension 3 m length with female connector M8	40	3	CNT3
Extension 5 m length with female connector M8	60	5	CNT5

FIXING ADAPTER - PLASTIC - SQB12 - SQB



FIXING ADAPTER - PLASTIC- FG



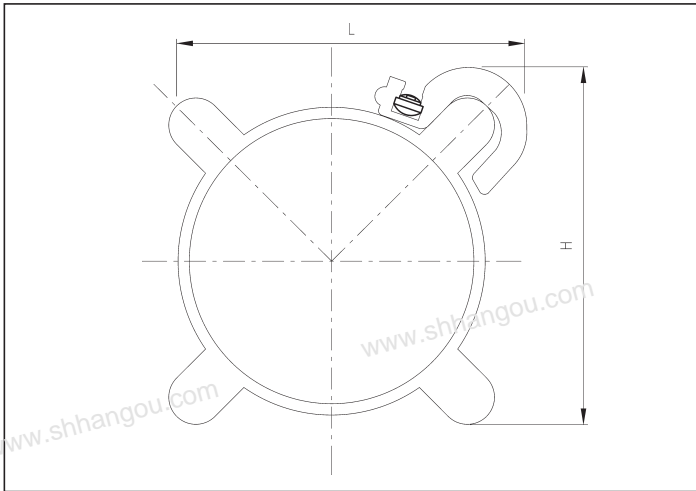
MAXIMUM DIMENSIONS WITH CYLINDER SERIES "B"

H	L	Ø CYLINDER	TYPE
27	-	12	SQB12
32	36	16	SQB
37	41	20	
49	53	32	
58	61	40	
68	73	50	
81	89	63	
101	107	80	
124	132	100	

MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	CYLINDER SERIES and Ø			TYPE
		U	P	UP	
20	22	8	-	-	FG8
22	24	10	-	-	FG10
23	25	12	-	-	FG12
26	28	16	-	16	FG16
27	29	20	-	20	FG20
36	38	25	-	25	FG25
44	46	-	32	32	FG32
52	54	-	40	40	FG40
62	64	-	50	50	FG50
76	78	-	63	-	FG63

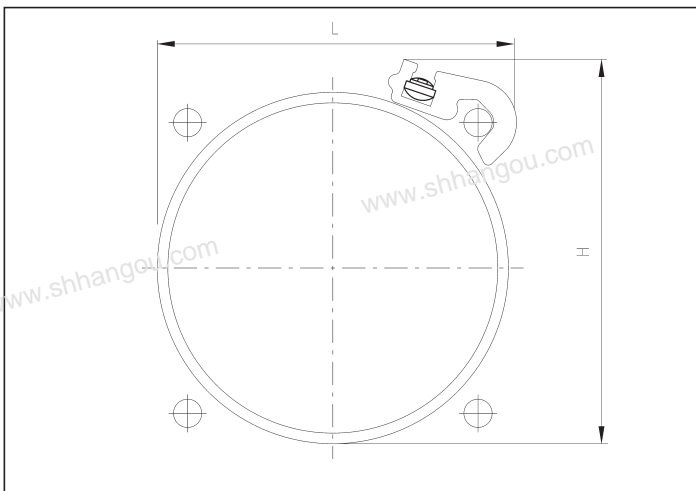
SENSOR FIXING BRACKETS - ALUMINIUM - FS



MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	CYLINDER SERIES and Ø			TYPE
		CPUI	CPA	WR	
50	51	32	32	32	FS34
57	57	40	40	40	
69	69	50	50	50	
79	79	63	63	63	FS56
97	96	80	-	80	
113	113	100	-	100	FS81
140	141	125	-	125	

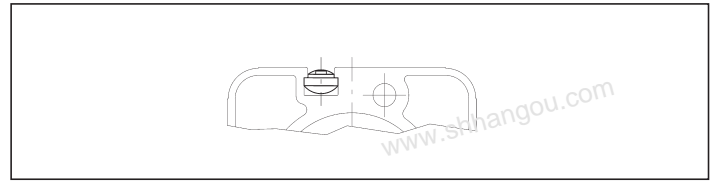
SENSOR FIXING BRACKETS WITH TIE RODS - ALUMINIUM - FS



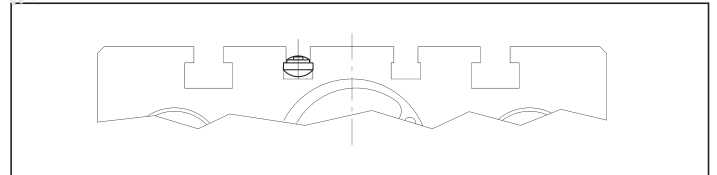
MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	SERIES CYLINDERS and Ø				TYPE
		WR	CPUI	CPA	CX	
45	46	-	-	32	32	FS345
52	53	-	-	40	40	
61	62	-	-	50	50	
76	75	-	-	63	63	
92	91	-	-	80	80	FS681
106	105	-	-	100	100	
144	141	125	125	-	125	FS112
170	173	-	160	-	160	
225	223	-	200	-	200	

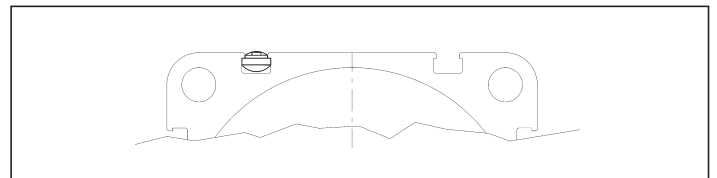
EXAMPLE OF SENSOR MOUNTING ON CYLINDERS SERIES "BU"



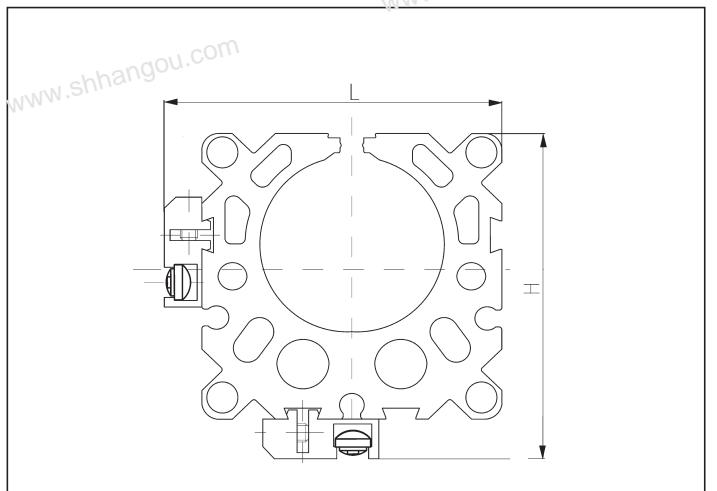
EXAMPLE OF SENSOR MOUNTING ON CYLINDERS SERIES "BG"



EXAMPLE OF SENSOR MOUNTING ON CYLINDERS SERIES "X"



SENSOR FIXING BRACKET - ALUMINIUM - SQZ



MAXIMUM DIMENSIONS WITH CYLINDERS SERIES "Z"

H	L	Ø CYLINDER	TYPE
36,5	36,6	18	SQZ
48,5	48,6	25	
58,5	58,6	32	
69,5	69,6	40	
84,5	84,6	50	
99,5	99,6	63	

P.S.: Sensor fixing bracket "SQZ" can not be fixed on the same side of the guides on the versions "ZSF" - "ZSFF" - "ZKF"; for this need use the "hidden" series FM101 (see page 1.96)

MAGNETIC SENSORS SERIES FM101

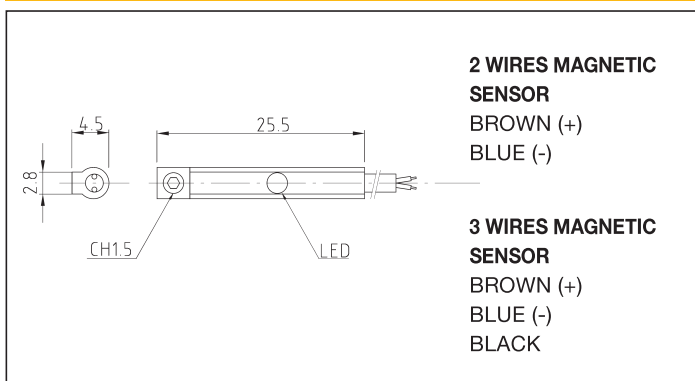
TECHNICAL DATA

TYPE	FM101 - FM101/C	FM101E - FM101E/C
Working temperature	-10 ÷ +70 °C	
Protection class	IP 67	
Model	REED SWITCH	HALL EFFECT
Contacts	N.O.	PNP
Voltage AC/DC	5 ÷ 220 V	5 ÷ 30 V DC
Max voltage drop	3 V	0.5 V
Max exchange current	100 mA	200 mA
Max power	6 W	
Operating frequency	200 Hz	1000 Hz

MATERIALS

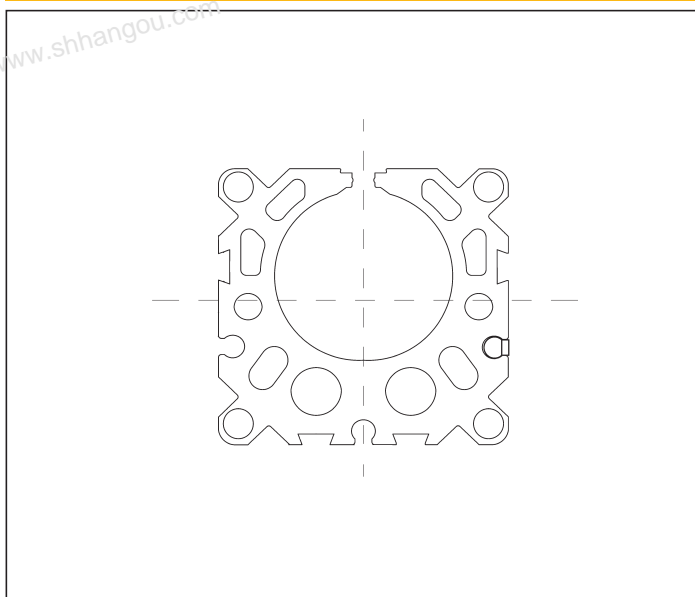
Body	Polyamide
Cable	Polyurethane
Connector	Polypropylene
Contacts	Gold-plated brass
Contact carrier	Nickel-plated brass
Ring nut	Brass

FM101 - FM101E



DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires cable 3 m length	28	FM101
Hall effect switch version PNP with LED and 3 wires cable 3 m length	28	FM101E

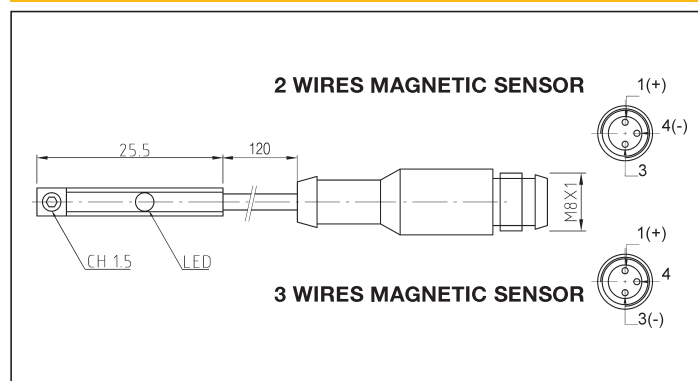
EXAMPLE OF SENSOR MOUNTING ON CYLINDERS SERIES "Z"



P.S.: For bore Ø 18, mount the sensors series "FM100" (page 1.93) with sensor fixing bracket "SQZ" (page 1.95)

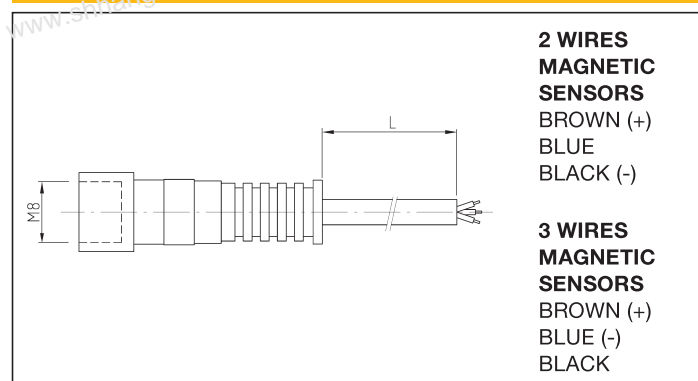


FM101/C - FM101E/C



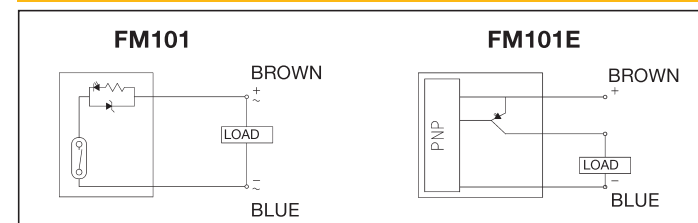
DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires ring nut connector M8	40	FM101/C
Hall effect switch version PNP with LED and 3 wires ring nut connector M8	40	FM101E/C

EXTENSION WITH FEMALE CONNECTOR M8



DESCRIPTION	WEIGHT (g)	L (m)	TYPE
Extension 3 m length with female connector M8	40	3	CNT3
Extension 5 m length with female connector M8	60	5	CNT5

ELECTRIC CIRCUITS REED SWITCH - HALL EFFECT SWITCH



MAGNETIC SENSORS SERIES FM157

TECHNICAL DATA

TYPE	FM157 - FM157/C	FM157E/C
Working temperature	-20 ÷ +80 °C	
Protection class	IP65	
Model	REED SWITCH	HALL EFFECT
Contacts	N.O.	
Voltage AC/DC	3 ÷ 230 V	6 ÷ 30 V
Max voltage drop	3 V	0,7 V
Max exchange current	500 mA	250 mA
Max power	10 VA	6 W
Operating frequency	200 Hz	1000 Hz

MATERIALS

Body	Polyamide
Cable	Polyvinyl chloride
Connector	Polyvinyl chloride
Contact carrier	Polyamide

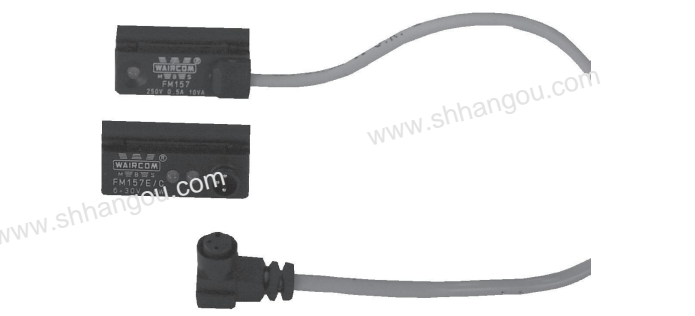
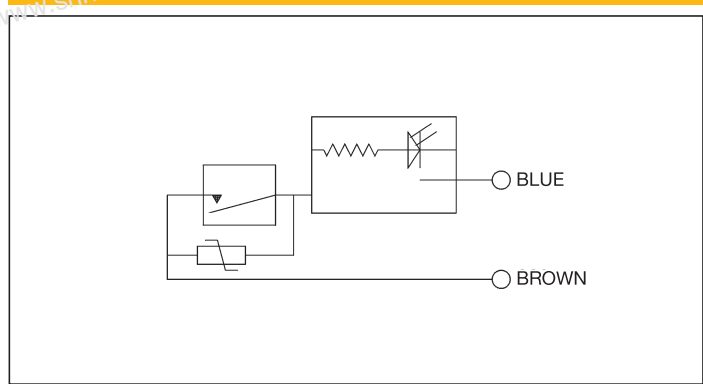
FM157 - FM157E

2 WIRES MAGNETIC SENSOR
BROWN (+)
BLUE (-)

3 WIRES MAGNETIC SENSOR
BROWN (+)
BLUE (-)
BLACK

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

ELECTRIC CIRCUIT REED SWITCH



FM157/C - FM157E/C

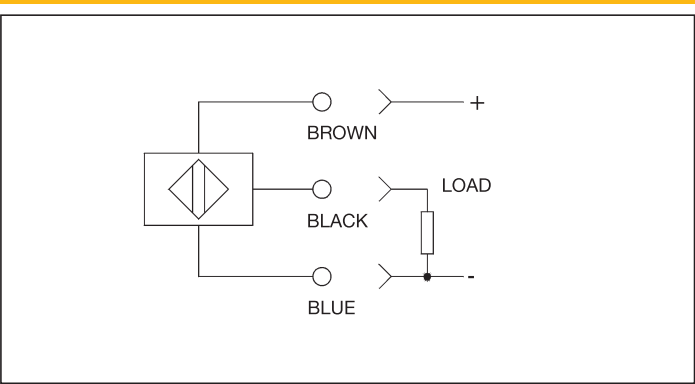
2 WIRES MAGNETIC SENSORS
BROWN (+)
BLUE (-)
BLACK (-)

3 WIRES MAGNETIC SENSORS
BROWN (+)
BLUE (-)
BLACK

* DIMENSION OF THE COUPLED PARTS

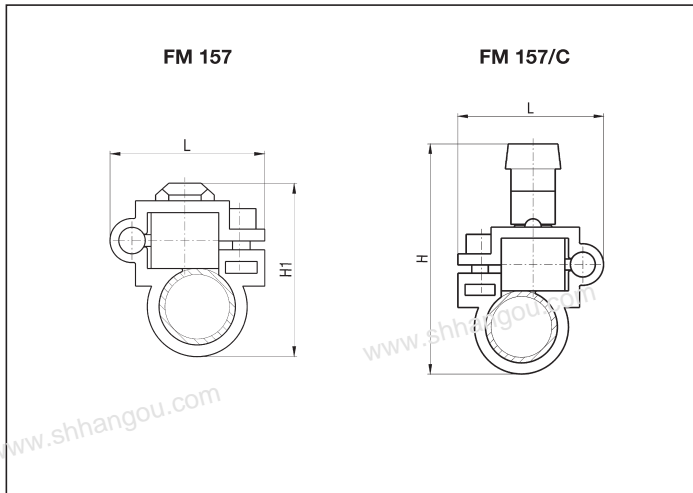
DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M8 and 2 wires cable 2,5 m length	58	FM157/C
Hall effect switch version PNP with LED, connector M8 and 3 wires cable 2,5 m length	61	FM157E/C

ELECTRIC CIRCUIT HALL EFFECT SWITCH



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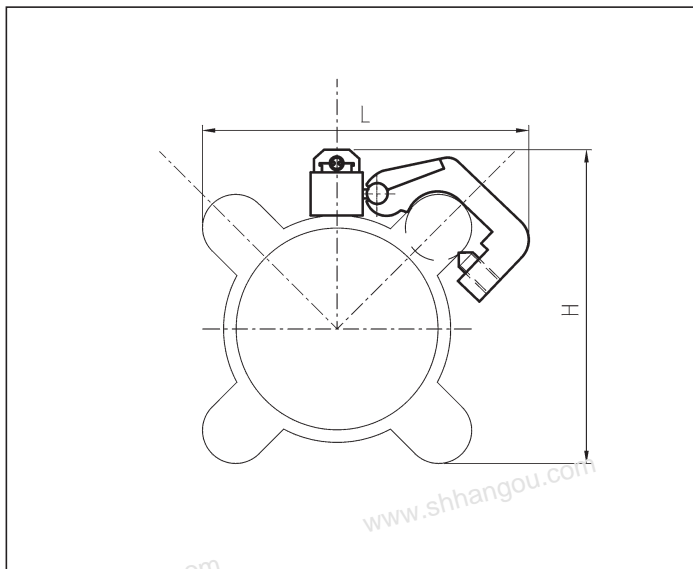
SENSOR FIXING BRACKETS - PLASTIC - FG



MAXIMUM DIMENSIONS WITH CYLINDERS

H1	H	L	SERIES CYLINDER and 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

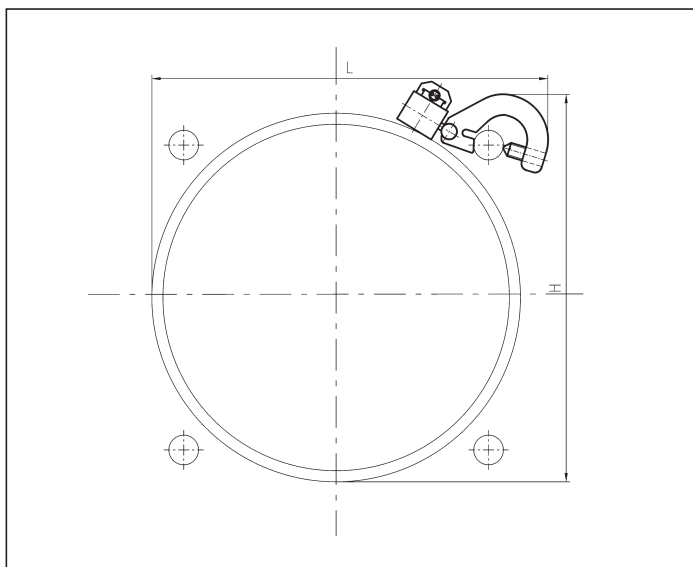
SENSOR FIXING BRACKETS - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDERS SERIES "CPU1"

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

SENSOR FIXING BRACKETS - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	SERIES CYLINDER and 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	SQ32-40/A
61	54	-	100	100	SQ125/A
71	69	125	-	125	
92	90	160	-	160	
120	118	200	-	200	SQ80-100/A

MAGNETIC SENSORS SERIES FM158

TECHNICAL DATA

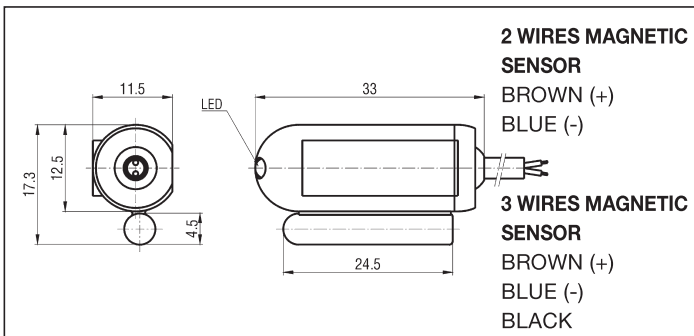
TYPE	FM158 - FM158/C	FM158E - FM158E/C
Working temperature	-20 ÷ + 80 °C	
Protection class	IP65	
Model	REED SWITCH	HALL EFFECT
Contacts	N.O.	
Voltage AC/DC	3 ÷ 115 V	6 ÷ 30 V
Max voltage drop	3 V	0,7 V
Max exchange current	500 mA	250 mA
Max power	10 VA	6 W
Operating frequency	200 Hz	1000 Hz

MATERIALS

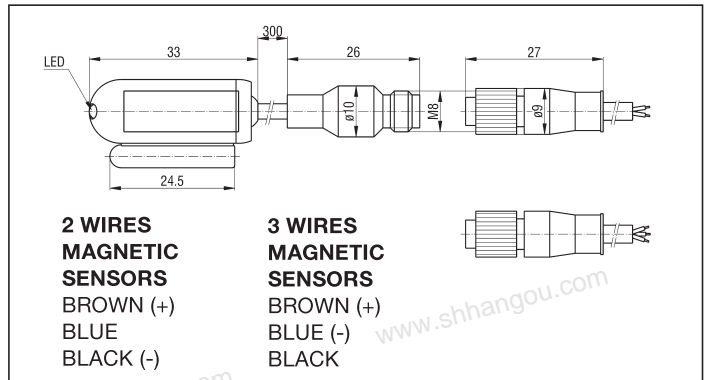
Body	Polyamide
Cable	Polyvinyl chloride
Connector	Polyvinyl chloride
Contact carrier	Polyamide
Ring nut	Brass



FM158 - FM158E



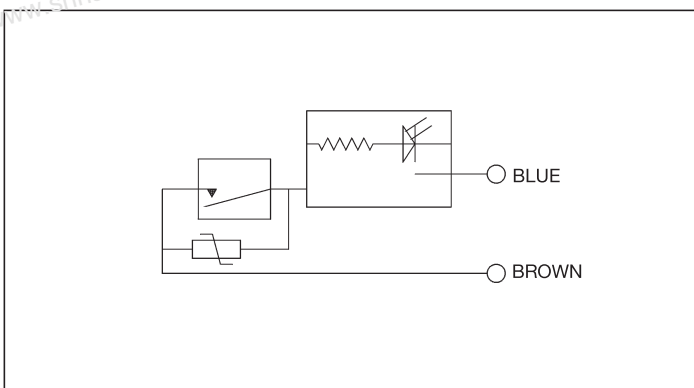
FM158/C - FM158E/C



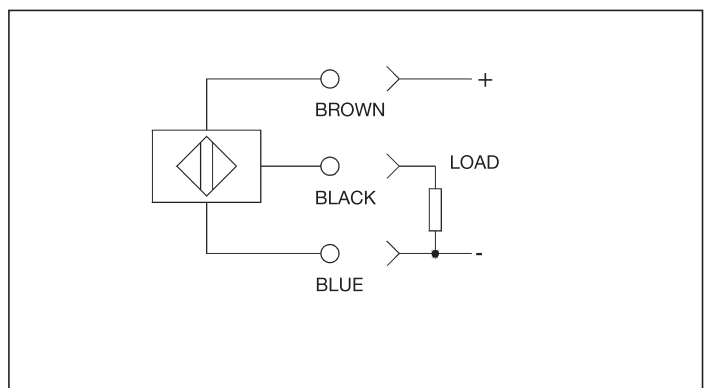
DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	36	FM158
Hall effect switch version PNP with LED and 3 wires cable 2,5 m length	40	FM158E

DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M8 and 2 wires cable 2,5 m length	48	FM158/C
Hall effect switch version PNP with LED, connector M8 and 3 wires cable 2,5 m length	51	FM158E/C

ELECTRIC CIRCUIT REED SWITCH

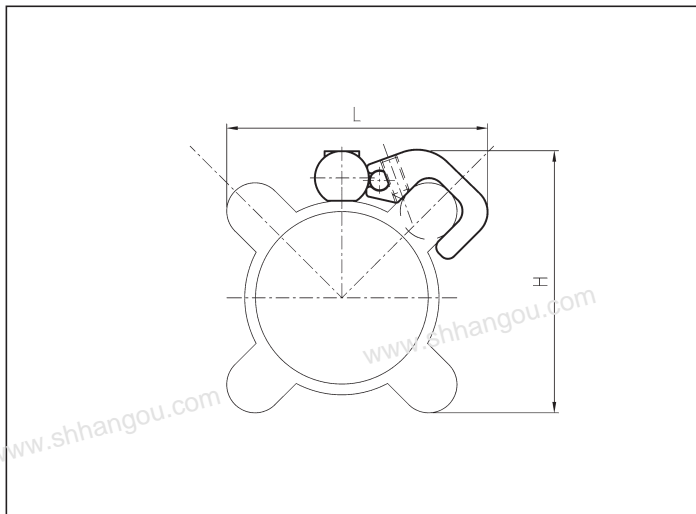


ELECTRIC CIRCUIT HALL EFFECT SWITCH

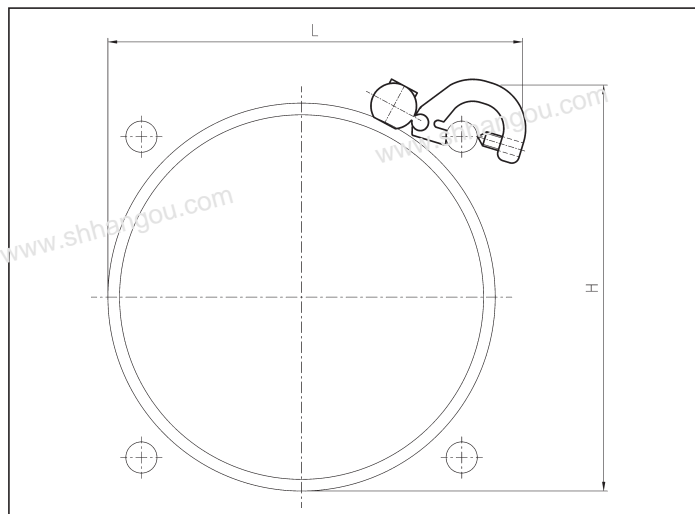


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SENSOR FIXING BRACKETS - ALUMINIUM - SQ



SENSOR FIXING BRACKETS - ALUMINIUM - ST



MAXIMUM DIMENSIONS WITH CYLINDERS SERIES CPUI

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

MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	CYLINDER SERIES and 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	SQ32-40/A
61	54	-	100	100	SQ125/A
71	69	125	-	125	
92	90	160	-	160	
120	118	200	-	200	