



MFD

Compact Cylinders



Setting a new standard for:

- Quality
- Reliability
- Value
- Global Compatibility



Actuators - Compact Cylinders



How to Order

MODEL	MAGNET	PORTS
MACQ - Compact Cylinder	Blank - No Magnet S - With Magnet	T - See Engineering Specifications

MACQ - 16 X 30 - S - T

BORE (mm)	12	16	20	25	32	40	50	63	80	100
STROKE (mm)	12	16	20	25	32	40	50	63	80	100
5	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X
15	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X	X	X	X	X	X	X
25	X	X	X	X	X	X	X	X	X	X
30	X	X	X	X	X	X	X	X	X	X
40	X	X	X	X	X	X	X	X	X	X
50	X	X	X	X	X	X	X	X	X	X
75			X	X	X	X	X	X	X	X
100			X	X	X	X	X	X	X	X
125					X	X	X	X	X	X
150					X	X	X	X	X	X

Engineering Specifications

Bore Size (mm)		12	16	20	25	32	40	50	63	80	100
Fluid		Air (Clean/Dry)									
Action		Double Acting									
Pressure Range		14 to 145 PSI (0.1 to 1.0 MPa)									
Proof Pressure		215 PSI (1.5 MPa)									
Temperature Range		-4 to 176 °F (-20 to 80 °C)									
Cushion Type		Bumper									
Speed Range		30 to 500 mm/s									
Stroke Tolerance		+1.0 / -0									
Port Size		M5 X 0.8				1/8 NPT		1/4 NPT		3/8 NPT	
Thrust, N (lbs) ¹	Pushing Force	68 (15)	121 (27)	189 (42)	295 (66)	483 (108)	754 (169)	1178 (264)	1870 (420)	3016 (678)	4712 (1059)
	Pulling Force	51 (11)	91 (20)	141 (32)	227 (51)	362 (81)	633 (142)	990 (222)	1682 (378)	2721 (611)	4230 (950)
Sensor Switches ²	Reed Switch Compatibility	MCS1-G									
	Solid State Switch Compatibility	MDS1-G									

¹ Thrust of cylinder at 0.6 MPa (87psi) inlet pressure.

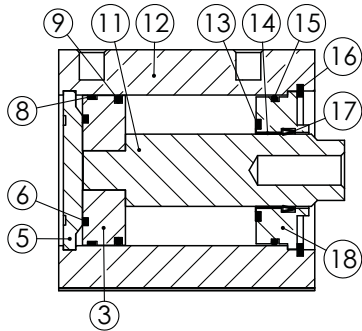
² See page 7 for switch specifications.

Actuators - Compact Cylinders

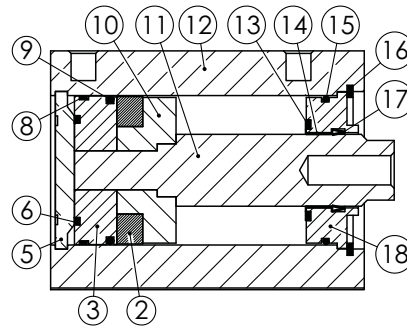
Materials

Number	Item	Material
1	Magnet Washer	No Magnet Washer (Ø12-Ø25 and Ø32-Ø100 with stroke ≤100mm); NBR (Ø32-Ø100 with stroke >100mm)
2	Magnet	Sintered Metal (Neodymium-Iron-Boron) (Ø12-Ø25); Plastic (Ø32-Ø100)
3	Piston	Brass (Ø12, Ø16); Aluminum Alloy (Ø20-Ø100)
4	O-Ring	NBR
5	Back Cap	Cap incorporated into body (Ø12, Ø16); Aluminum Alloy (Ø20-Ø100)
6	Bumper	TPU (Ø12-Ø25); NBR (Ø32-Ø100)
7	Retaining Ring	Spring Steel
8	Wear Ring	No Wear Ring (Ø12-Ø32); Wear Resistant Material (Ø40-Ø100)
9	Piston Seal	NBR
10	Magnet Holder	Brass (Ø12, Ø16); Aluminum Alloy (Ø20-Ø100)
11	Piston Rod	Carbon Steel with 20µm Chrome Plating
12	Body	Aluminum Alloy
13	Bumper	NBR
14	Bushing	No Bearing (Ø12-Ø32); Wear Resistant Material (Ø40-Ø100)
15	O-Ring	NBR
16	Retaining Ring	Spring Steel
17	Block V Seal	NBR
18	Front Cap	Aluminum Alloy

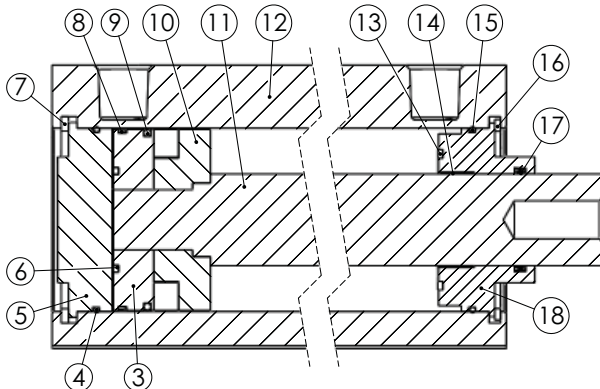
Stroke ≤100mm, No Magnet



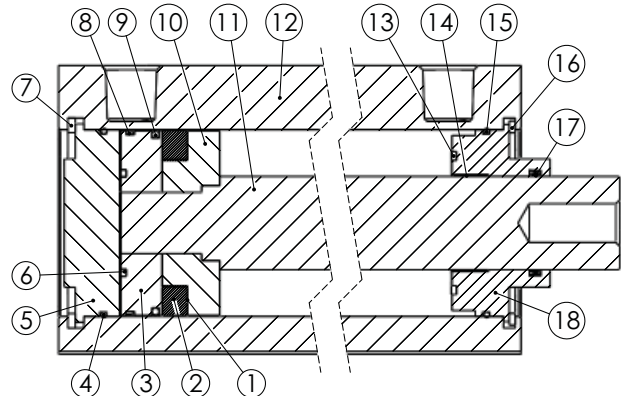
Stroke ≤100mm, With Magnet



Stroke >100mm, No Magnet

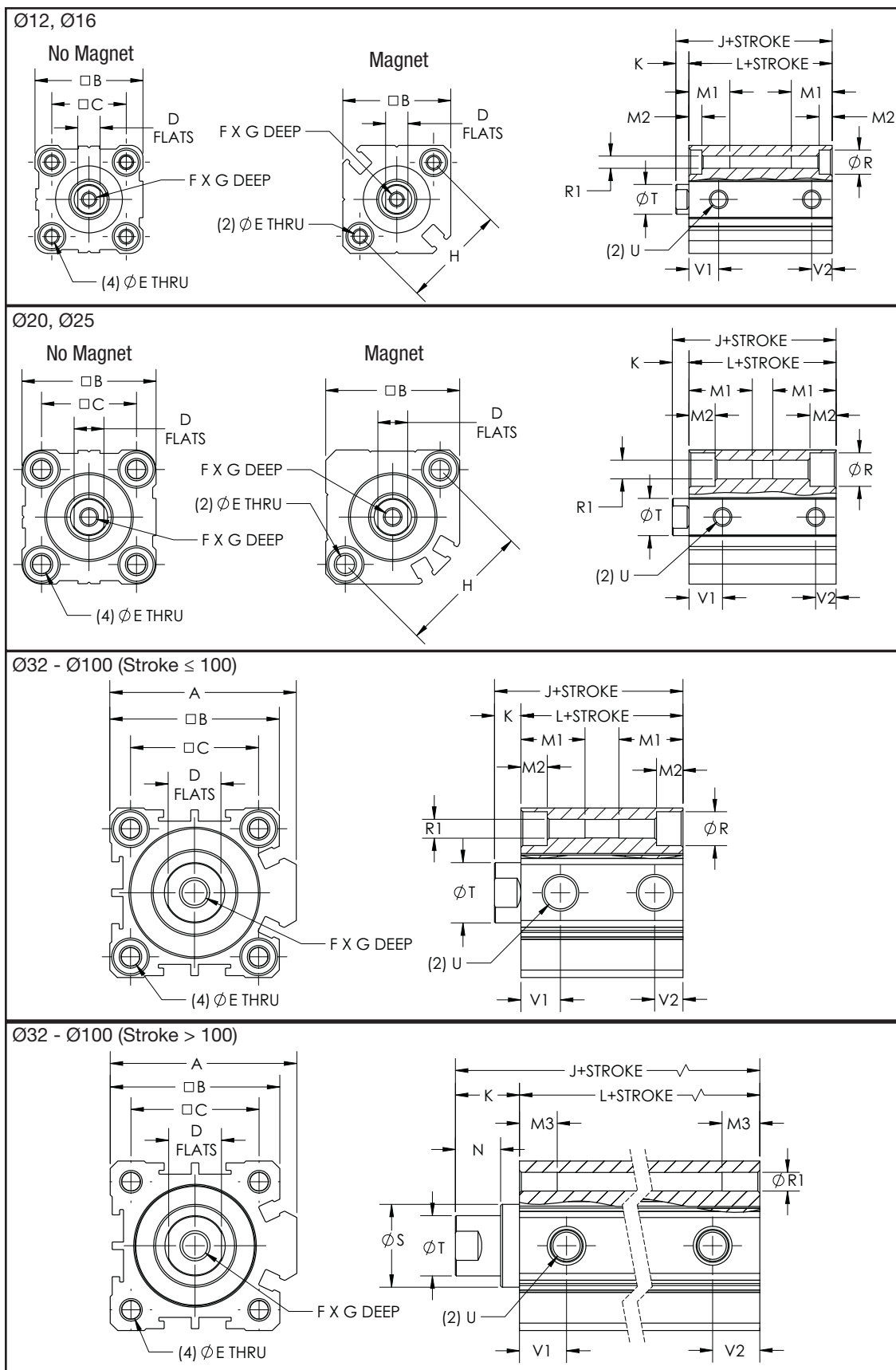


Stroke >100mm, With Magnet



Actuators - Compact Cylinders

Dimensions (mm)



Actuators - Compact Cylinders

Dimensions (mm)

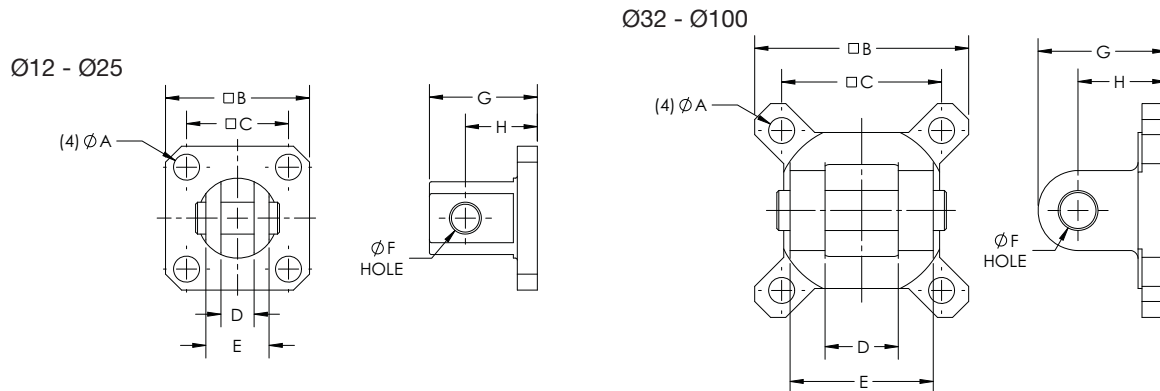
Bore (mm) Stroke (mm)		12	16	20	25	32	40	50	63	80	100
A		-	-	-	-	49.5	57	71	84	104	123.5
B		25	29	36	40	45	53	64	77	98	117
C		15.5	20	25.5	28	34	40	50	60	77	94
D		5	6	8	10	14	14	17	17	22	27
E		3.4	3.4	5.2	5.2	5.2	5.2	6.8	8.5	10.3	10.3
F		M3 X 0.5	M4 X 0.7	M5 X 0.8	M6 X 1.0	M8 X 1.25	M8 X 1.25	M10 X 1.5	M10 X 1.5	M16 X 2.0	M20 X 2.5
G	5-100	6	8	7	12	13	13	15	15	20	26
	125+	-	-	-	-	13	13	15	15	21	27
H		22	28	36	40	-	-	-	-	-	-
J	5-50	20.5* 31.5**	22* 34**	24* 36**	27.5* 37.5**	30* 40**	36.5* 46.5**	38.5* 48.5**	44* 54**	53.5* 63.5**	65* 75**
	75-100	-	-	34* 36**	37.5	40	46.5	48.5	54	63.5	75
	125+	-	-	-	-	62.5	72	73.5	75	86	97.5
K	5-100	3.5	3.5	4.5	5	7	7	8	8	10	12
	125+	-	-	-	-	17	17	18	18	20	22
L	5-50	17* 28**	18.5* 30.5**	19.5* 31.5**	22.5* 32.5**	23* 33**	29.5* 39.5**	30.5* 40.5**	36* 46**	43.5* 53.5**	53* 63**
	75-100	-	-	29.5* 31.5**	32.5	33	39.5	40.5	46	53.5	63
	125+	-	-	-	-	45.5	55	55.5	57	66	75.5
M1		11	11	17	17	17	17	22	28.5	35.5	35.5
M2		3.5	3.5	7	7	7	7	8	10.5	13.5	13.5
M3		-	-	-	-	17	17	22	27	32	33
N	5-100	-	-	-	-	-	-	-	-	-	-
	125+	-	-	-	-	12	12	13	13	15	17
R	5-100	6.5	6.5	9	9	9	9	11	14	17.5	17.5
	125+	-	-	-	-	-	-	-	-	-	-
R1		M4 X 0.7	M4 X 0.7	M6 X 1.0	M6 X 1.0	M6 X 1.0	M6 X 1.0	M8 X 1.25	M10 X 1.5	M12 X 1.75	M12 X 1.75
S	5-100	-	-	-	-	-	-	-	-	-	-
	125+	-	-	-	-	22	28	35	35	43	59
T		6	8	10	12	16	16	20	20	25	32
U		M5 X 0.8	M5 X 0.8	M5 X 0.8	M5 X 0.8	1/8 NPT	1/8 NPT	1/4 NPT	1/4 NPT	3/8 NPT	3/8 NPT
V1	5	7.5* 9**	8* 9.5**	9* 9.5*	11	7.5* 10.5**	11	9* 10.5**	14* 15**	16	20
	10-100	7.5* 9**	8* 9.5**	9* 9.5**	11	10.5	11	10.5	15	16	20
	125+	-	-	-	-	12.5	14	14	16.5	19	23
V2	5	5* 7**	5.5	5.5	5.5	6.5* 7.5**	8	9* 10.5**	9* 10.5**	14	17.5
	10-100	5* 7**	5.5	5.5	5.5	7.5	8	10.5	10.5	14	17.5
	125+	-	-	-	-	12.5	14	14	16.5	19	23

* No Magnet

** With Magnet

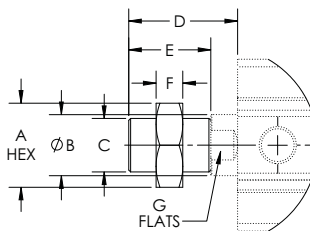
Actuators - Compact Cylinder Accessories

Clevis Brackets for MACQ Series



Model	A	B	C	D	E	F	G	H
F-MACQ-12-CB	4.5	25	15.5	5.3	9.8	5	20	14
F-MACQ-16-CB	4.5	29	20	6.8	11.8	5	21	15
F-MACQ-20-CB	6.5	36	25.5	8.3	15.8	8	27	18
F-MACQ-25-CB	6.5	40	28	10.3	19.8	10	30	20
F-MACQ-32-CB	6.5	45.5	34	18.3	35.8	10	30	20
F-MACQ-40-CB	6.5	53.5	40	18.3	35.8	10	32	22
F-MACQ-50-CB	8.5	64.5	50	22.3	43.8	14	42	28
F-MACQ-63-CB	10.5	77.5	60	22.3	43.8	14	44	30
F-MACQ-80-CB	12.5	98.5	77	28.3	55.8	18	56	38
F-MACQ-100-CB	12.5	117.5	94	32.3	63.8	22	67	45

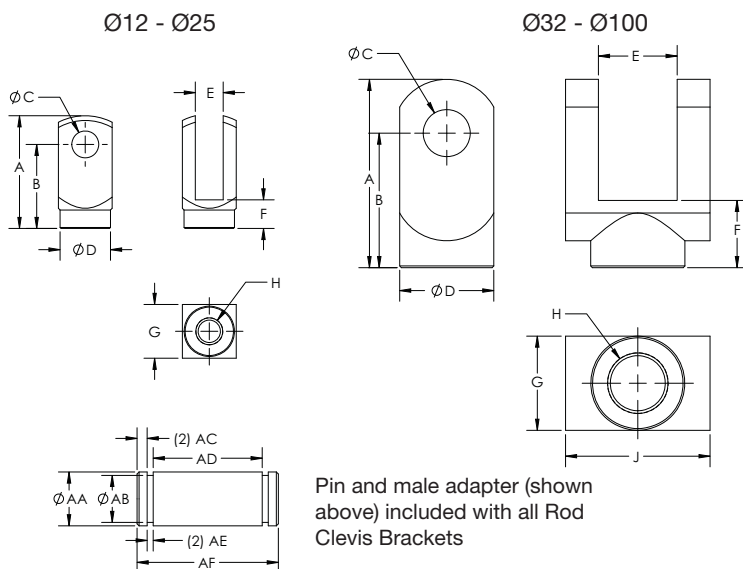
Male Adapter for MACQ Series



Male Adapter includes jam nut (cylinder not included)

Model	A	B	C	D	E	F	G
F-MACQ-12-A	8	6	M5 X 0.8	14	10.5	4	5
F-MACQ-16-A	10	8	M6 X 1.0	15.5	12	5	6
F-MACQ-20-A	12	10	M8 X 1.25	18.5	14	6	8
F-MACQ-25-A	17	12	M10 X 1.25	22.5	17.5	6	10
F-MACQ-32-A	19	16	M14 X 1.5	28.5	21.5	8	14
F-MACQ-40-A	19	16	M14 X 1.5	28.5	21.5	8	14
F-MACQ-50-A	27	20	M18 X 1.5	33.5	25.5	11	17
F-MACQ-63-A	27	20	M18 X 1.5	33.5	25.5	11	17
F-MACQ-80-A	32	25	M22 X 1.5	43.5	33.5	13	22
F-MACQ-100-A	36	32	M26 X 1.5	43.5	31.5	13	27

Rod Clevis Brackets for MACQ Series



Pin and male adapter (shown above) included with all Rod Clevis Brackets

Model	A	B	C	D	E	F	G
F-MACQ-12-Y	22	16	5 +.048/-0	9	5.3±0.1	6	10
F-MACQ-16-Y	28	21	5 +.048/-0	11	66±0.1	11	12
F-MACQ-20-Y	34	25	8 +.058/-0	15	8.3±0.1	8.5	16
F-MACQ-25-Y	41	30	10 +.058/-0	19	10.3±0.1	10.5	20
F-MACQ-32-Y	42	30	10 +.058/-0	22	18.4±0.1	16	22
F-MACQ-40-Y	42	30	10 +.058/-0	22	18.4±0.1	16	22
F-MACQ-50-Y	56	40	14 +.07/-0	28	22.4±0.1	20	28
F-MACQ-63-Y	56	40	14 +.07/-0	28	22.4±0.1	20	28
F-MACQ-80-Y	71	50	18 +.07/-0	38	28.4±0.1	23	38
F-MACQ-100-Y	79	55	22 +.084/-0	44	32.4±0.1	24	44

Model	H	J	AA	AB	AC	AD	AE	AF
F-MACQ-12-Y	M5 X 0.8	-	5 -.03/-0.06	4	1.5	10.2	0.7	14.6
F-MACQ-16-Y	M6 X 1.0	-	5 -.03/-0.06	4	1.5	12.4	0.7	16.8
F-MACQ-20-Y	M8 X 1.25	-	8 -.04/-0.076	7	1.5	16.2	0.9	21
F-MACQ-25-Y	M10 X 1.25	-	10 -.04/-0.076	8	2	20.2	1.1	26.4
F-MACQ-32-Y	M14 X 1.5	36	10 -.04/-0.076	8	2	36.2	1.1	42.4
F-MACQ-40-Y	M14 X 1.5	36	10 -.04/-0.076	8	2	36.2	1.1	42.4
F-MACQ-50-Y	M18 X 1.5	44	14 -.05/-0.093	12	2	44.2	1.1	50.4
F-MACQ-63-Y	M18 X 1.5	44	14 -.05/-0.093	12	2	44.2	1.1	50.4
F-MACQ-80-Y	M22 X 1.5	56	18 -.05/-0.093	15	2	56.2	1.7	63.6
F-MACQ-100-Y	M26 X 1.5	64	22 -.065/-0.117	19	2.5	64.2	1.7	72.6

Actuators - Track Mounted Switches

How to Order

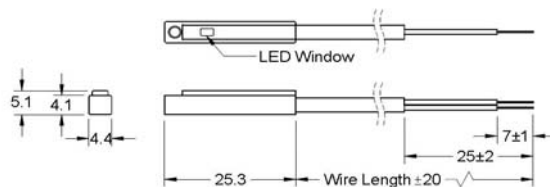
Two-Wire Reed Switches	
Model Number	Description
MCS1-G-050	2-wire reed switch; 5 meter leads
MCS1-G-C08	2-wire reed switch; M8 male quick-connect; 150mm wire length
MCS1-G-C12	2-wire reed switch; M12 male quick-connect; 150mm wire length

Three-Wire Solid State Switches	
Model Number	Description
MDS1-GN-050	3-wire solid state switch; 5 meter leads; NPN (sinking)
MDS1-GN-C08	3-wire solid state switch; M8 male quick-connect; 150mm wire length; NPN (sinking)
MDS1-GN-C12	3-wire solid state switch; M12 male quick-connect; 150mm wire length; NPN (sinking)
MDS1-GP-050	3-wire solid state switch; 5 meter leads; PNP (sourcing)
MDS1-GP-C08	3-wire solid state switch; M8 male quick-connect; 150mm wire length; PNP (sourcing)
MDS1-GP-C12	3-wire solid state switch; M12 male quick-connect; 150mm wire length; PNP (sourcing)

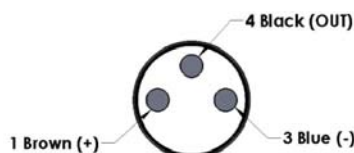
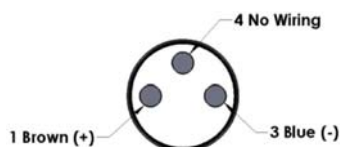
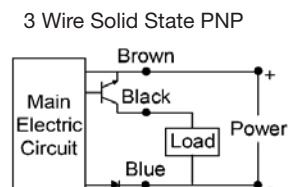
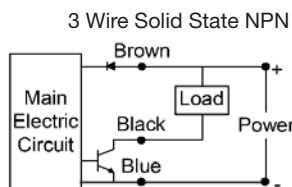
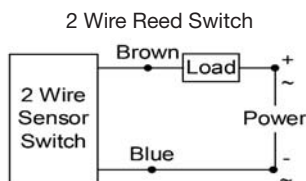
Specifications

Item/Type	MCS1-G	MDS1-GN	MDS1-GP
Switch Logic	SPST Normally Open	Transistor without contact, Normally Open Type	
Sensor Type	Reed Switch with Contact	NPN Type	PNP Type
Operating Voltage (V)	5-240V AC/DC	5-30V DC	
Max. Switching Current (mA)	100	200	
Switching Rating (W)	10 Max.	6 Max.	
Current Consumption	-	15mA Max. @ 24V	
Voltage Drop	2.5V Max @ 100mA DC	0.5V Max. @ 200mA DC	
Cable	Ø2.8, 2C, Gray Oil Resistant PVC (Flame Retardant)	Ø3.3, 3C, Black Oil Resistant PVC	
Indicator	LED		
Leakage Current	-	0.01mA Max.	
Sensitivity (Gauss)	60-75	60-75	
Max. Frequency (Hz)	200	1000	
Shock (m/s²)	300	500	
Vibration (m/s²)	90		
Temperature Range (°C)	-10 to 70		
Enclosure Classification	IP67 (NEMA6)		
Protection Circuit	None	Power Reverse Polarity, Surge Suppression	

Dimensions (mm)



Wiring Diagrams



Your stocking distributor is:



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