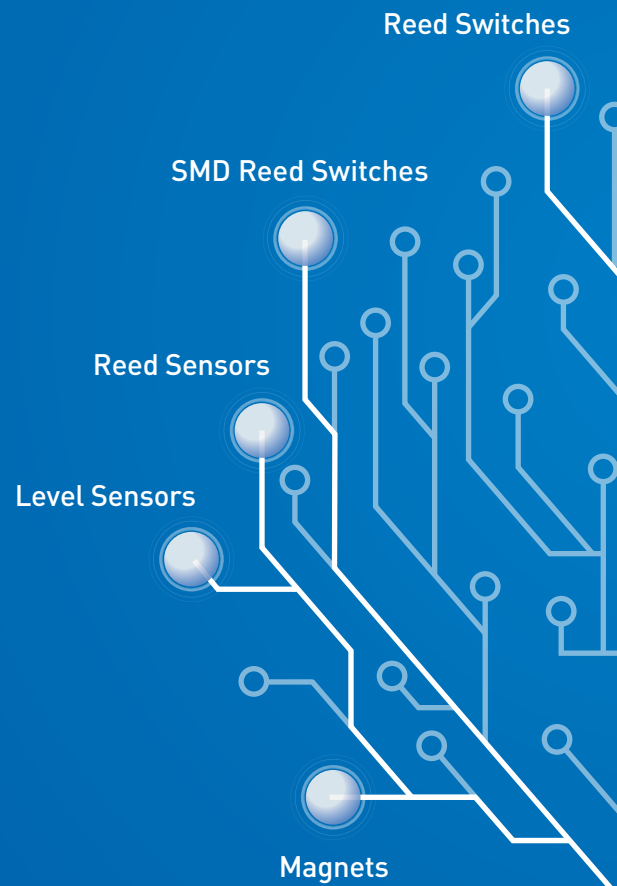


# PIC

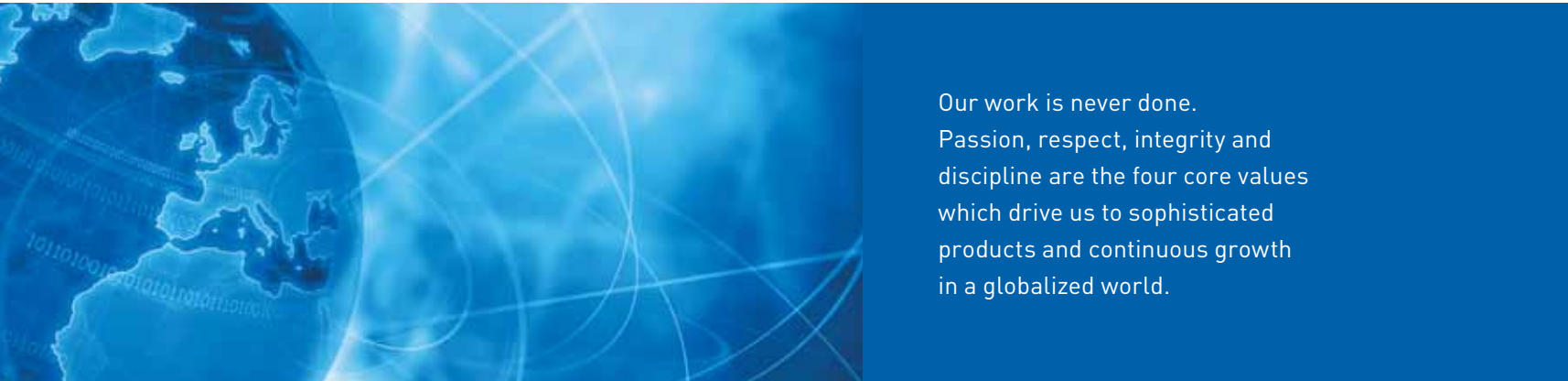
SWITCHING THE SMART WAY



## Sensor Technology



# Welcome to PIC



P

Product Innovation

I

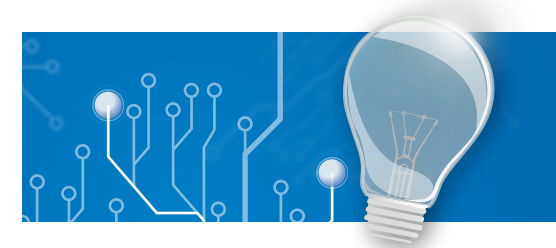
Intelligent Design

C

Creative Manufacturing

## Innovation

Modern machinery, perfected production concepts, clear information policy and our comprehensive sensor know-how secure our premier position in the branch.



## Quality

Continuous optimization in the areas of research, development, production, service and marketing assure high standards in product quality.

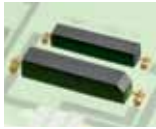


## Sustainability

Sustainability is an essential part of our philosophy. Careful use of resources and environmental compatibility starts long before production and does not finish at sale. We remain true to this principle with regard to social and economic aspects.



# Table of Contents

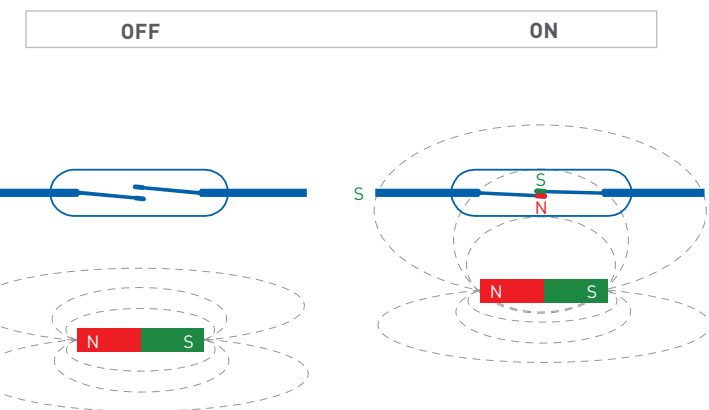
5-7	Reed Switches		Reed Switch Basics ..... 5 Micro / Standard..... 6 Power / Special ..... 7
8-11	SMD Reed Switches		S-Series ..... 8 T-Series ..... 9 TH-Series ..... 10 PRX+2-Series ..... 11
12-19	Reed Sensors		Reed Sensor Basics ..... 12 Snap-fit ..... 13 Flatpack ..... 14-15 Through Hole..... 16 Tubular ..... 17 Tubular Threaded..... 18-19
20-24	Level Sensors <b>IP 67</b>		Level Sensor Basics..... 20 PLS-PP-Series..... 21 PLS-PA-Series ..... 22 PLS-VA-Series ..... 23 HLS-PP ..... 24
25	Customized Products		Connectors and cable assemblies..... 25 Special housings ..... 25 PCB assemblies ..... 25 Hall Sensors ..... 25 Customized Level Sensors ..... 25 Magnets ..... 25
26	Magnets		Actuators ..... 26
27-30	Tech Center		Magnets: Magnet Selector..... 27 Reed Switches: How to operate..... 28 Reed Switches: Precautions..... 29 Housing Materials: Chemical resistance chart..... 30
31	Contact		

# Reed Switch Basics



## How does a Reed Switch work?

A Reed Switch consists of a pair of ferromagnetic reeds, hermetically sealed in a glass tube. Their free ends overlap at a very small distance.



## Benefits

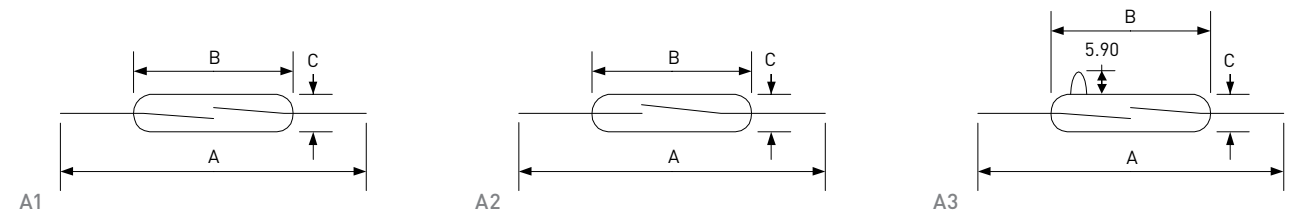
- > No power supply required
- > Contacts hermetically sealed
- > Most economic non-touch switching solution
- > Not ESD sensitive
- > Various methods of actuation possible
- > Magnetic and electrical pole independent
- > Non-touch actuation permits smooth surfaces and modern design
- > Various sensitivity ranges available

## Applications



# Micro / Standard

- Features**
- ▶ PMC-0701 for limited space the 7 mm glass length offers best solution
  - ▶ PMC-1401 most cost-efficient general purpose switch using 14 mm glass length
  - ▶ Close differential and mains voltage types available

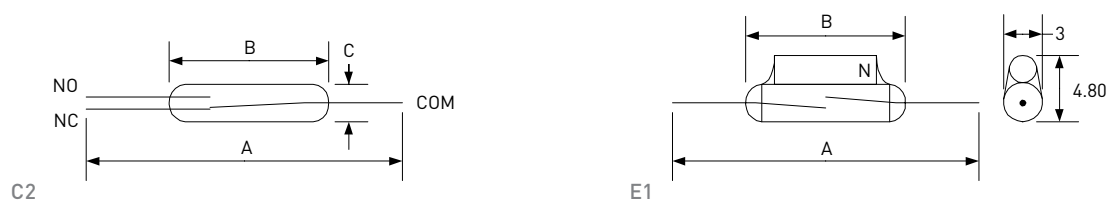


	Micro Switches				Standard Switches								
	HSR-0025	HSR-0035RT	PMC-0701	HSR-502	PMC-1001	PMC-1401	PMC-1402 DO min. 60%!	PMC-2003 DO max. 60%!	PMC-1515 Netzspannung	PMC-1496	TRH-200		
<b>Dimensions</b>													
A = Total length nom.	mm	26.7	26.7	41.8	37.9	41.8	44.0	44.30	45.6	40.4	55.0	52.5	
B = Glass length max.	mm	4.32	5.08	7.0	8.0	10.0	14.2	14.0	21.0	15.3	14.5	14.8	
C = Glass diameter max.	mm	0.97x1.27	1.4	1.8	2.4	1.8	2.3	2.3	3.0	2.3	2.2	2.7	
Contact arrangement (figure)		A2	A2	A1	C2	A1	A1	A1	A1	A1	C2	C2	
<b>Characteristics</b>													
Contact form		A	A	A	C	A	A	A	A	A	C	C	
Contact rating max.	W/VA	0.25	1.0	10	2	10	10	10	10	10	20	5	
Switching voltage max.	VDC	30	30	150	30	180	200	200	180	200	150	175	
	VAC	30	30	120	30	130	140	140	130	260	140	120	
Switching current max.	A	0.01	0.05	0.5	0.1	0.7	1.0	0.5	1.0	0.3	1.0	0.25	
Carry current max.	A	0.01	1.0	0.7	1.2	1.0	1.2	1.0	2.0	1.4	2.0	1.5	
Breakdown voltage min.	VDC	80	200	200	175	200	240	250	250	400	200	200	
Contact resistance (initial) max.	mΩ	500	750	200	200	150	100	100	150	100	150	100	
<b>Performance</b>													
Pull in range available	AT	2-15	5-20	10-20	15-35	10-25	10-30	10-20	30-50	20-30	15-30	15-30	
Drop out min.	AT	1	3	4	5	4	5	60% of PI	30% of PI	4	6	5	
Switching frequency max.	Hz	900	700	600	100	500	500	500	400	400	100	100	
Vibration (50-2000 Hz)	g	15	15	10	30	20	20	30	20	30	30	30	
Shock (1/2 sin 11 ms)	g	75	75	50	50	100	100	100	50	100	50	50	
Operating Temperature	°C	-40 to +125				-40 to +125	-60 to +155	-40 to +125		-20 to +125	-40 to +130	-40 to +125	
UL / CSA / RoHS		--/--/•	--/--/•	•/•/•	--/--/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	--/--/•	--/--/•	

AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

# Power / Special

- Features**
- ▶ Switching voltage up to 10 kV
  - ▶ Carry current up to 5 A
  - ▶ Contact rating max. 250 Watts
  - ▶ Normally open, change over and latching types



	Power Switches								Special Switches			
	PMC-2021	PMC-3617	PMC-5001	PMC-5002	CRH-500	PMC-5025	HSR-834WT	High voltage	Latching			
<b>Dimensions</b>												
A = Total length nom.	mm	55.0	70.0	80.0	80.0	85.7	80.0	86.2	82.0	82.0	82.0	44.0
B = Glass length max.	mm	20.0	36.0	50.0	50.0	39.7	52.0	34.3	53.4	53.4	53.4	14.2
C = Glass diameter max.	mm	2.54	5.6	5.4	5.4	5.4	5.6	5.35	5.4	5.4	5.4	
Contact arrangement (figure)		A1	C2	A1	A1	C2	C2	C2	A3	A3	A3	E1
<b>Characteristics</b>												
Contact form		A	C	A	A	C	C	C	A	A	A	E
Contact rating max.	W/VA	50	60	120	250	60	60	100	50	50	50	5
Switching voltage max.	VDC	200	400	250	250	500	230	500	5000	7500	10000	140
	VAC	250	400	250	250	350	230	500	3500	5000	7000	100
Switching current max.	A	1.5	1.0	3.0	5.0	1.0	1.0	3.0	3.0	3.0	3.0	0.5
Carry current max.	A	2.0	2.0	3.0	5.0	3.0	2.0	3.0	4.5	4.5	4.5	0.7
Breakdown voltage min.	VDC	400	1000	700	700	1200	400	1000	7500	10000	15000	200
Contact resistance (initial) max.	mΩ	100	100	200	300	130	100	500	150	150	150	150
<b>Performance</b>												
Pull in range available	AT	25-40	50-80	50-90	50-100	50-80	80-120	60-100	60-125	100-150	130-170	
Drop out min.	AT	5	20	20	20	20	20	30	20	30	40	
Switching frequency max.	Hz	300	100	25	5	50	100	50	50	50	50	500
Vibration (50-2000 Hz)	g	20	35	10	10	15	15	15	30	30	30	10
Shock (1/2 sin 11 ms)	g	50	50	50	50	10	50	10	100	100	100	50
Operating Temperature	°C	-60 to +125	-40 to +125	-60 to +130	-60 to +100	-20 to +125	-40 to +125	-25 to +125	-60 to +125			-40 to +125
UL / CSA / RoHS		•/•/•	--/--/•	•/•/•	•/•/•	--/--/•	--/--/•	•/•/•	--/--/•	--/--/•	--/--/•	--/--/•

AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

# S-Series

# T-Series

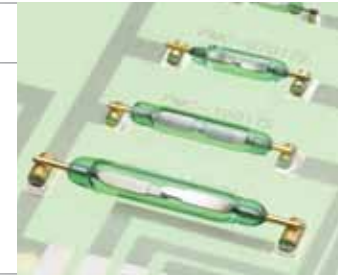
## Features

- › Most economic Reed Switch for automated assembly
- › Assembly in PCB cutout reduces height above PCB by approx. 50%
- › Various sensitivity ranges available



## Features

- › Attractively priced alternative to molded Reed Switches
- › No PCB redesign required since direct substitute for molded competitors types
- › Various sensitivity ranges available



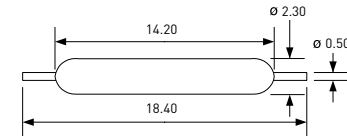
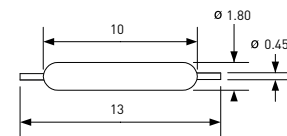
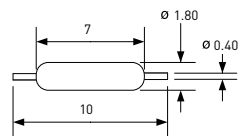
		PMC-0701S	PMC-1001S	PMC-1401S	PMC-1424S	PMC-1428S
Contact form		A	A	A	A	A
Contact rating max.	W / VA	10	10	10	10	10
Switching current max.	A	0.5	0.7	1.0	0.5	0.5
Switching voltage max.	VDC	150	180	200	200	100
	VAC	120	130	140	140	70
Pull in range available	AT	10-20	10-25	10-30	10-30	10-35
UL / CSA / RoHS		•/•/•	•/•/•	•/•/•	•/•/•	•/•/•

		HSR-0025TSM	PMC-0701TS	PMC-1001T/TS	PMC-1401T/TS	PMC-1424T/TS	PMC-1428T/TS
Contact form		A	A	A	A	A	A
Contact rating max.	W / VA	0.25	10	10	10	10	10
Switching current max.	A	0.01	0.5	0.7	1.0	0.5	0.5
Switching voltage max.	VDC	30	150	180	200	200	100
	VAC	30	120	130	140	140	70
Pull in range available	AT	2-15	10-20	10-25	10-30	10-30	10-35
UL / CSA / RoHS		--/--/•	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•

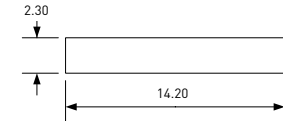
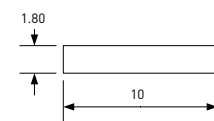
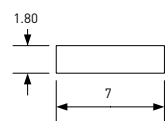
PMC-0701S

PMC-1001S

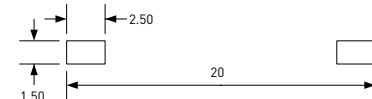
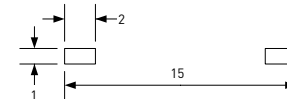
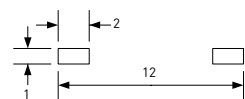
PMC-1401S  
PMC-1424S  
PMC-1428S



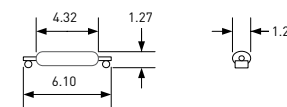
PCB cutout



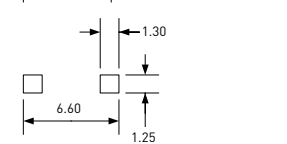
Recommended pad size



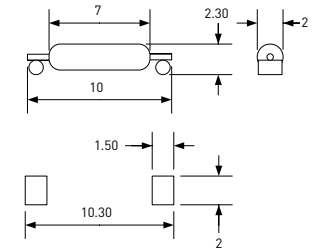
HSR-0025TSM



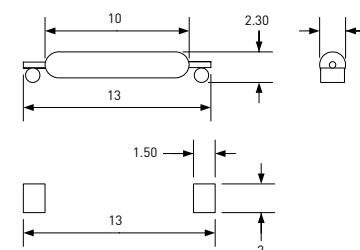
Recommended pad size



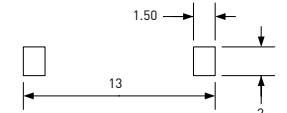
PMC-0701TS



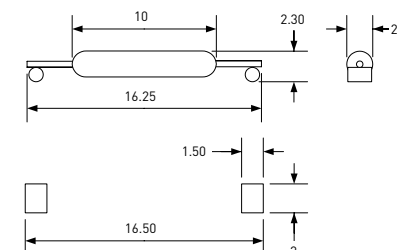
PMC-1001TS



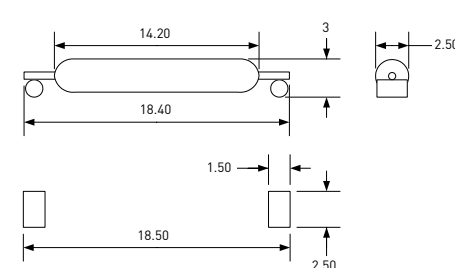
Recommended pad size



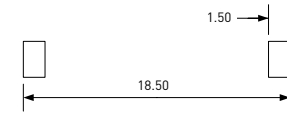
PMC-1001T



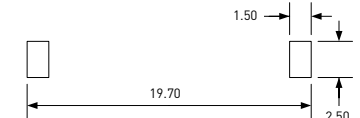
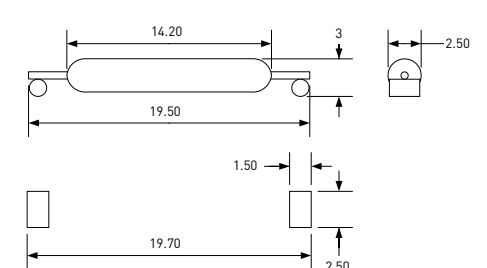
PMC-1401TS  
PMC-1424TS  
PMC-1428TS



Recommended pad size



PMC-1401T  
PMC-1424T  
PMC-1428T



AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

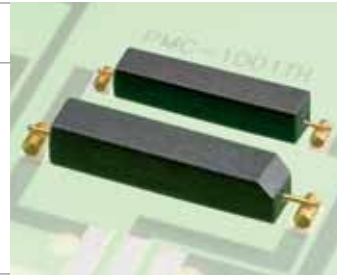
AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.



# TH-Series

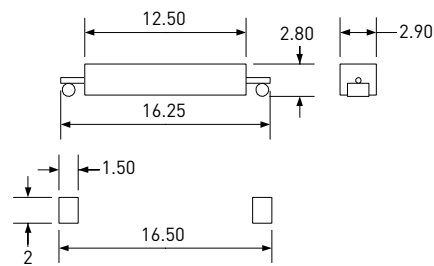
## Features

- > Replaces various molded competitors types, thus no PCB redesign required
- > Latching and Form B (normally closed) types available
- > Various sensitivity ranges available



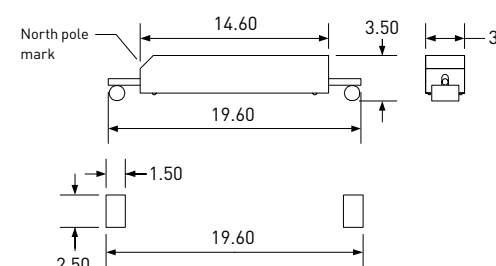
		PMC-1001TH PMC-1001THL	Normally closed PMC-1001THY	Latching PMC-1424THX
Contact form		A	B	E
Contact rating max.	W / VA	10	10	5
Switching current max.	A	0.7	0.7	0.5
Switching voltage max.	VDC	180	180	140
	VAC	130	130	100
Pull in range available	AT	10-25	consult factory	consult factory
UL / CSA / RoHS		•/•/•	•/•/•	•/•/•

PMC-1001TH

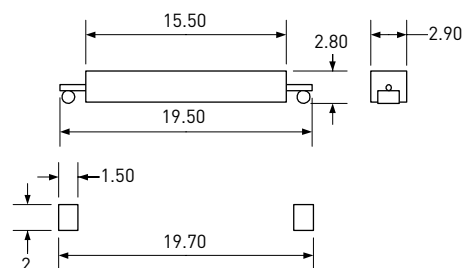


Recommended pad size

PMC-1001THY

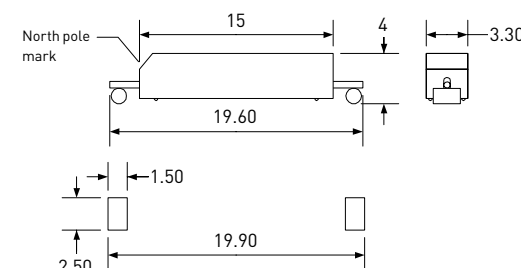


PMC-1001THL



Recommended pad size

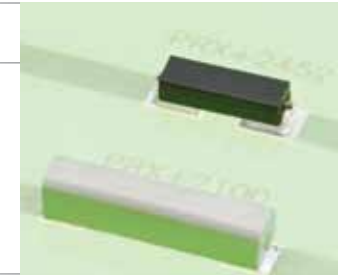
PMC-1424THX



# PRX+2-Series

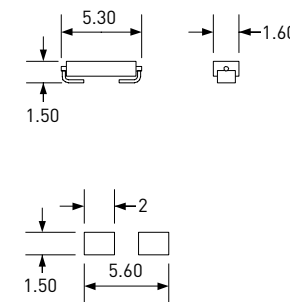
## Features

- > Ultra miniature size
- > Hi-Rel versions available
- > Various sensitivity ranges available



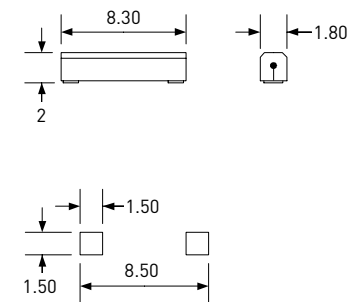
		PRX+2452	PRX+2100
Contact form		A	A
Contact rating max.	W	0.25	1
Switching current max.	A	0.01	0.05
Switching voltage max.	VDC	30	30
	VAC	30	30
Pull in range available	AT	2-15	5-20
UL / CSA / RoHS		--/--/•	--/--/•

PRX+2452



Recommended pad size

PRX+2100



AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

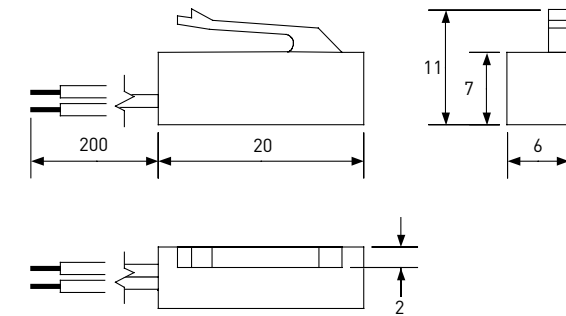
# Reed Sensor Basics



## Features

- > Easily mountable and removable as no tools or screws required
- > Small size
- > Various sensitivity ranges available
- > Customized types available

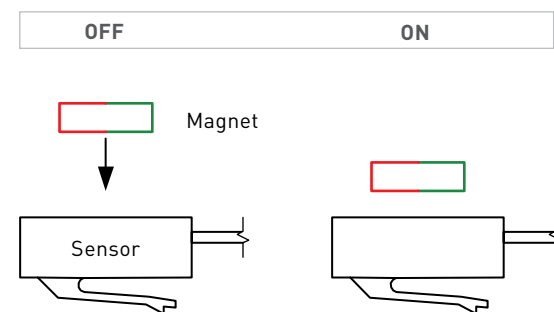
		MS-320
Contact form		A
Contact rating max.	W / VA	10
Switching current max.	A	0.7
Switching voltage max.	VDC	180
	VAC	130
Pull in range available	AT	10-25
Operating Temperature	°C	-20 to +85
UL / CSA / RoHS		• / • / •
Housing material		PA66-GF
Cable type		AWG 22



## How does a Reed Sensor work?

A Reed Sensor incorporates a Reed Switch inside a metal or plastic housing for better mechanical protection and easier mounting.

Actuation principles for Reed Switches also apply to Reed Sensors.



## Benefits

- > Mechanically protected
- > Wide range of housing types available
- > No power supply required
- > Not ESD sensitive
- > Non-touch actuation permits smooth surfaces and modern design
- > Various sensitivity ranges available

We supply Reed Sensors to any requirement: for snap-fit or screw mounting, with special cable and connector etc.

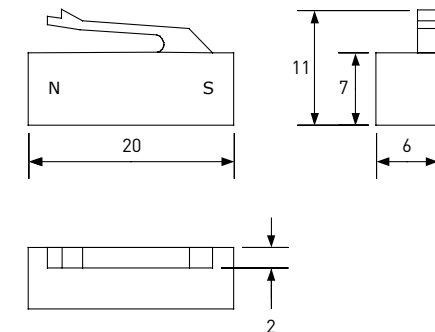
## Applications



# Snap-fit

		Actuator MSM-320
Remanence Br	mT	1190
Coercivity HcJ	kA/m	1274
Energy product (BH) max.	kJ/m <sup>3</sup>	275
Magnetic moment M	$\times 10^{-5}$ Vs cm	2.4
Operating Temperature	°C	-20 to +85
UL / CSA / RoHS		-- / -- / •
Housing material		PA66-GF

Nominal values unless otherwise specified.



AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.



- ### Features
- > Adjustable switching point
  - > Replaces various competitors types
  - > Mains voltage variants available
  - > Various sensitivity ranges available
  - > Customized types available



		MS-313-3	MS-324-3	MS-324-4	MS-324-5
Contact form		A	A	C	A
Contact rating max.	W / VA	10	10	5	10
Switching current max.	A	0.5	1.0	0.25	0.3
Switching voltage max.	VDC	150	200	175	200
	VAC	120	140	120	260
Pull in range available	AT	10-20	10-25	15-30	15-30
Operating Temperature	°C	-20 to +85	-20 to +85	-20 to +85	-20 to +85
UL / CSA / RoHS		-- / -- / •	• / • / •	• / • / •	• / • / •

		MS-313-3	MS-324
Housing material		ABS	ABS
Cable type		AWG 26	AWG 24 (MS-324-4: AWG 26)

Matching actuators on page 26.

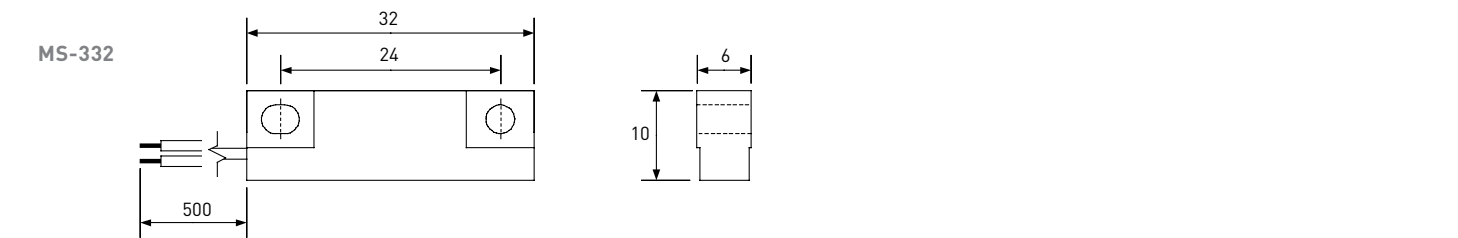
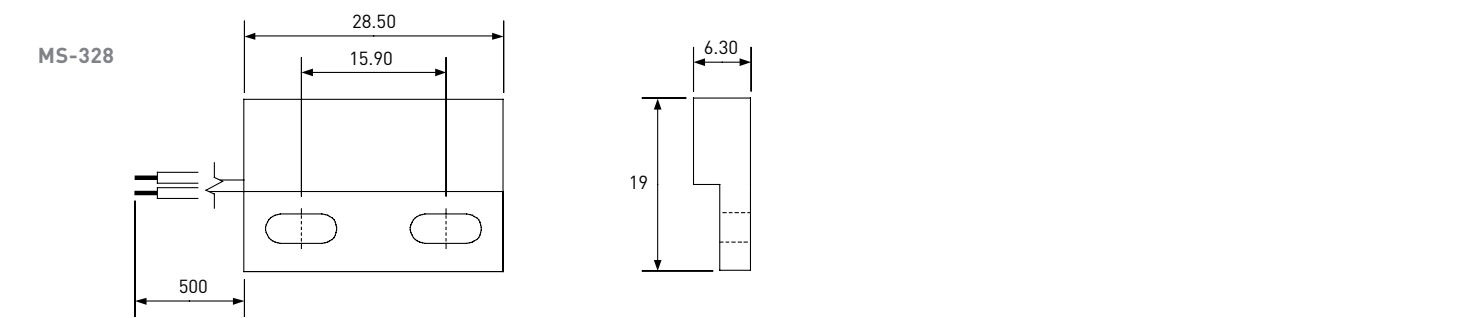
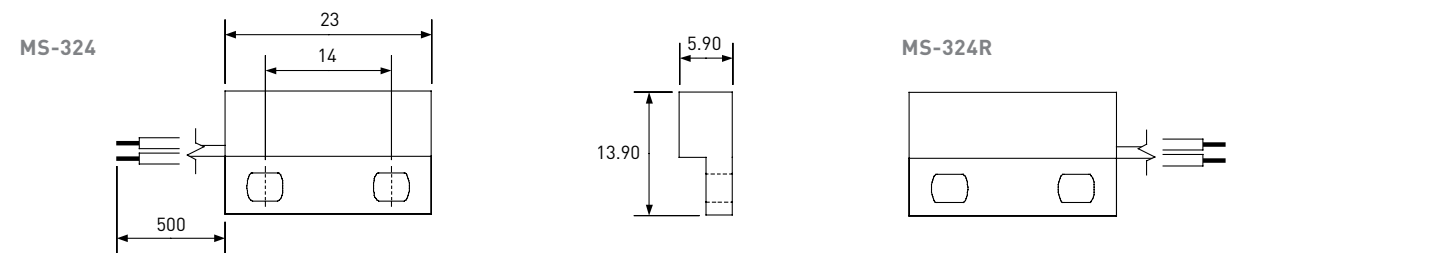
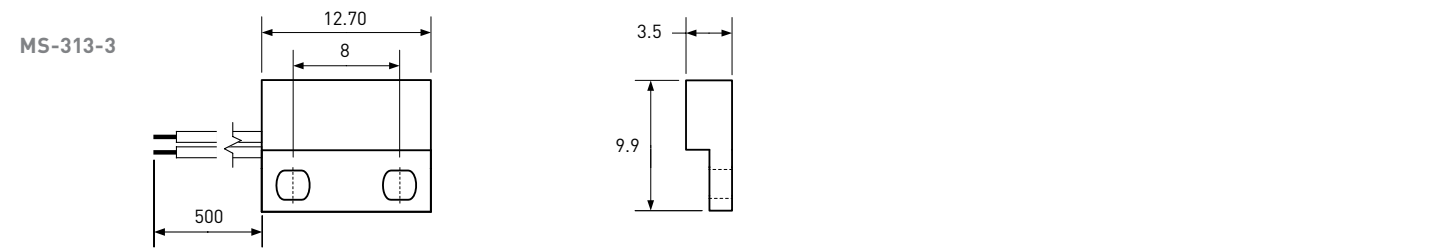
		MS-328-3 MS-332-3	MS-328-4	MS-328-5 MS-332-5	MS-328-6 MS-332-6
Contact form		A	C	A	A
Contact rating max.	W / VA	10	5	10	50
Switching current max.	A	1.0	0.25	0.3	1.5
Switching voltage max.	VDC	200	175	200	200
	VAC	140	120	260	250
Pull in range available	AT	10-25	15-30	15-30	25-40
Operating Temperature	°C	-20 to +85	-20 to +85	-20 to +85	-20 to +85
UL / CSA / RoHS		• / • / •	• / • / •	• / • / •	• / • / •

		MS-328	MS-332
Housing material		PA66-GF	ABS
Cable type		AWG 20 (MS-328-4: AWG 24)	AWG 24

Matching actuators on page 26.

### Standard types

Cable exit: right



AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.



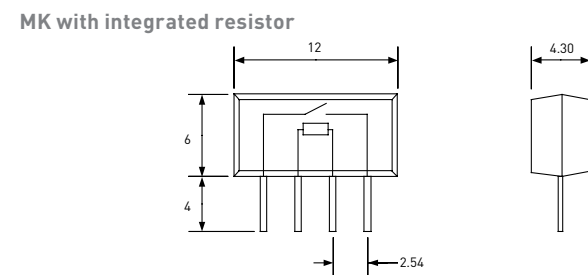
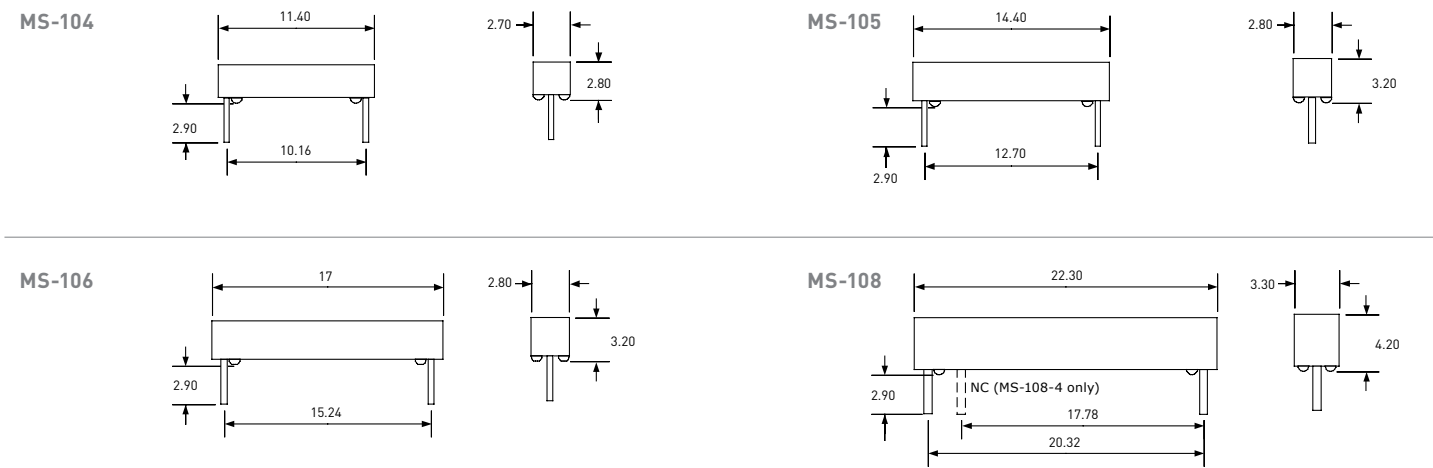


# Through Hole

- Features**
- › Pitch ranging from 2.54 to 20.32 mm
  - › Mechanically protected
  - › Replaces various competitors types
  - › MK sensor with integrated resistor
  - › Mains voltage variants available
  - › Customized types available



		MS-104 MS-105	MS-106	MS-108-3	MS-108-4	MS-108-5	MK
Contact form		A	A	A	C	A	A
Contact rating max.	W / VA	10	10	10	5	10	10
Switching current max.	A	0.5	0.7	1.0	0.25	0.3	0.5
Switching voltage max.	VDC	150	180	200	175	200	150
	VAC	120	130	140	120	260	120
Pull in range available	AT	10-20	10-25	10-25	15-30	15-30	10-15
Operating Temperature	°C	-20 to +85	-20 to +85	-20 to +85	-20 to +85	-20 to +85	-40 to +125
UL / CSA / RoHS		•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	--/--/•



AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

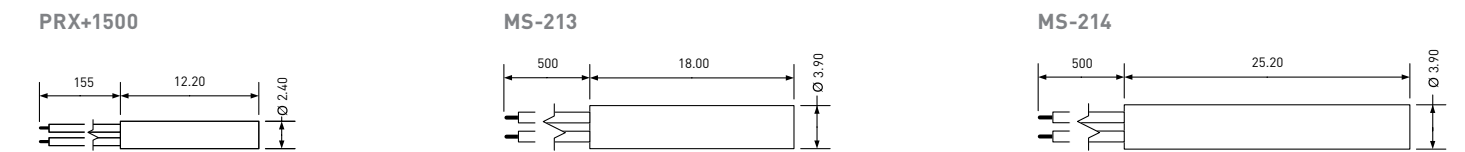
# Tubular

- Features**
- › Replaces various competitors types
  - › Mains voltage variants available
  - › Various sensitivity ranges available
  - › Customized types available



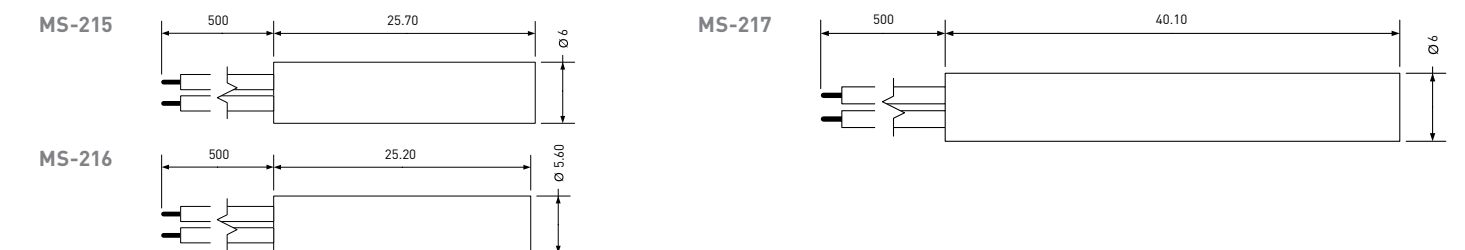
		PRX+1500	MS-213	MS-214
Contact form		A	A	A
Contact rating max.	W / VA	1	10	10
Switching current max.	A	0.05	0.7	0.7
Switching voltage max.	VDC	30	180	180
	VAC	30	130	130
Pull in range available	AT	10-25	10-25	10-25
Operating Temperature	°C	-40 to +125	-20 to +85	-20 to +85
UL / CSA / RoHS		--/--/•	•/--/•	•/--/•

Housing material	HTM	ABS	ABS
Cable type	AWG 28	AWG 26	AWG 26



		MS-215-3 MS-216-3 MS-217-3	MS-215-4 MS-216-4 MS-217-4	MS-215-5 MS-216-5 MS-217-5	MS-217-6
Contact form		A	C	A	A
Contact rating max.	W / VA	10	5	10	50
Switching current max.	A	1.0	0.25	0.3	1.5
Switching voltage max.	VDC	200	175	200	200
	VAC	140	120	260	250
Pull in range available	AT	10-25	15-30	15-30	25-40
Operating Temperature	°C	-20 to +85	-20 to +85	-20 to +85	-20 to +85
UL / CSA / RoHS		•/•/•	•/•/•	•/•/•	•/•/•

Housing material	ABS	ABS	ABS	ABS
Cable type	AWG 24	AWG 24	AWG 24	AWG 24



AT ranges and characteristics stated for unmodified Reed Switches. Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

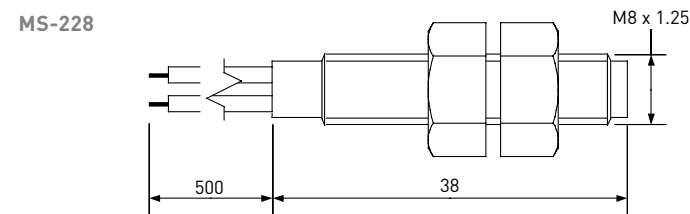
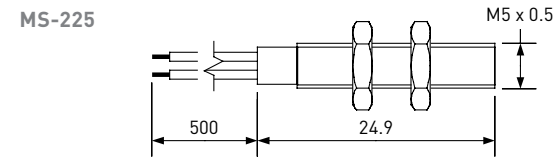
# Tubular Threaded

## Features

- › Adjustable switching point
- › Replaces various competitors types
- › Mains voltage variants available
- › Various sensitivity ranges available
- › Customized types available



		MS-225
Contact form		A
Contact rating max.	W / VA	10
Switching current max.	A	0.7
Switching voltage max.	VDC	180
	VAC	130
Pull in range available	AT	10-25
Operating Temperature	°C	-20 to +85
UL / CSA / RoHS		•/•/•
<b>Housing material</b>		
		Nickel plated brass
<b>Cable type</b>		
		AWG 28



		MS-228-3	MS-228-4	MS-228-5	MS-228-6
Contact form		A	C	A	A
Contact rating max.	W / VA	10	5	10	50
Switching current max.	A	1	0.25	0.3	1.5
Switching voltage max.	VDC	200	175	200	200
	VAC	140	120	260	250
Pull in range available	AT	10-25	15-30	15-30	25-40
Operating Temperature	°C	-20 to +85	-20 to +85	-20 to +85	-20 to +85
UL / CSA / RoHS		•/•/•	•/•/•	•/•/•	•/•/•
<b>Housing material</b>					
		PA6-GF	PA6-GF	PA6-GF	PA6-GF
<b>Cable type</b>					
		AWG 24	AWG 24	AWG 24	AWG 24

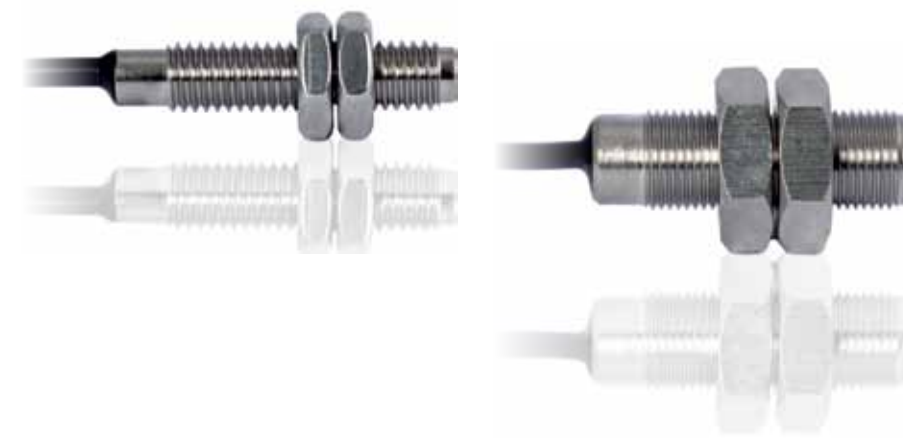
Matching actuators on page 26.

AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

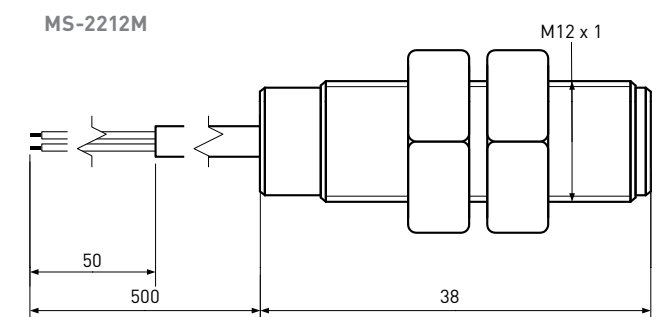
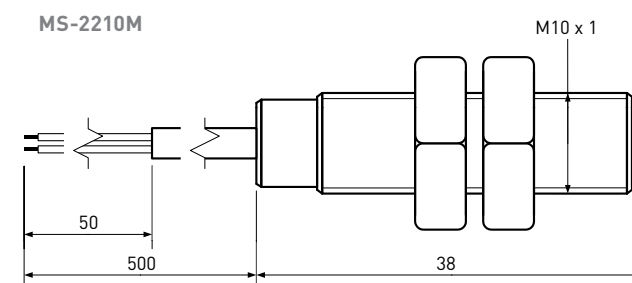
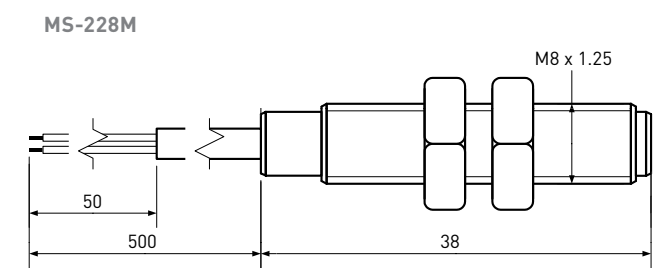
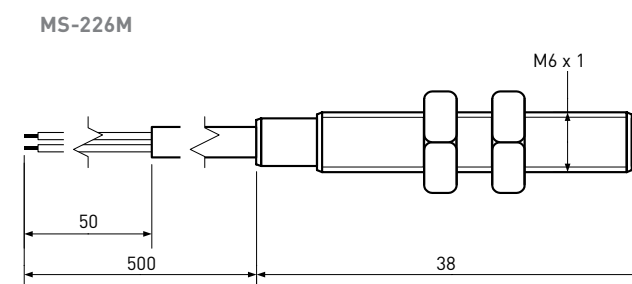
# Tubular Threaded

## Features

- › Adjustable switching point
- › Rugged design
- › Mains voltage variants available
- › Various sensitivity ranges available
- › Customized types available



		MS-226M-3 MS-228M-3 MS-2210M-3 MS-2212M-3	MS-228M-6 MS-2210M-6 MS-2212M-6
Contact form		A	A
Contact rating max.	W / VA	10	50 / 70
Switching current max.	A	1	DC 0.7 / AC 0.5
Switching voltage max.	VDC	200	350
	VAC	140	300
Pull in range available	AT	10-30	20-60
Operating Temperature	°C	-20 to +85	-20 to +85
UL / CSA / RoHS		--/--/•	--/--/•
<b>Housing material</b>			
		Nickel plated brass	Nickel plated brass
<b>Cable type</b>			
		UL 2464, AWG 24 (MS-226M-3: AWG 28)	UL 2464, AWG 24



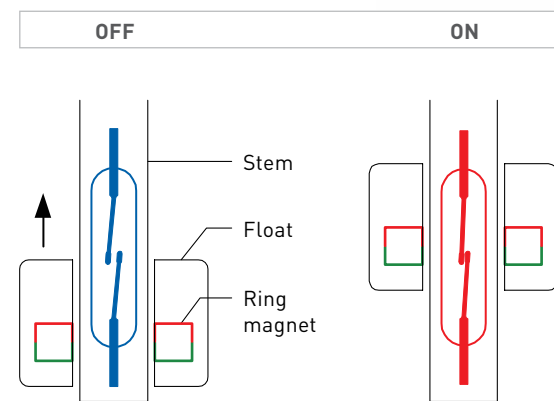
AT ranges and characteristics stated for unmodified Reed Switches.  
Pls. refer page 28/29 for additional technical information. All dimensions in mm. Subject to change without prior notice.

# Level Sensor Basics



## How does a Level Sensor work?

A Level Sensor incorporates a Reed Switch in a stem. An external float, with a magnet inside, passes and actuates the Reed Switch, depending on liquid level. Actuation principles for Reed Switches also apply to Level Sensors.



## Benefits

- > No power supply required
- > Various housing materials available
- > Form A and Form B
- > Suitable for food contact
- > Customized types available

## Applications



# PLS-PP-Series

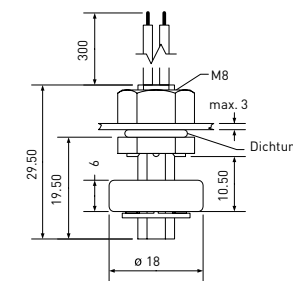
IP 67

## Features

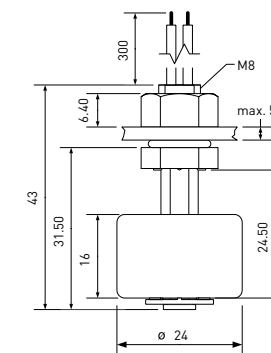
- > Polypropylene housing
- > Mains voltage variants
- > Form A and Form B
- > Suitable for food contact
- > Covers a wide range of applications
- > Customized types available

		PLS-020A-3PP		PLS-020B-3PP		PLS-031A-3PP		PLS-031B-3PP		Power Switch			
		A		B		A		B		PLS-031A-6PP		PLS-031B-6PP	
		A		B		A		B		A		B	
Contact form		A		B		A		B		A		B	
Contact rating max.	W / VA	10		10		10		10		50		50	
Switching current max.	A	0.7		0.7		1.0		1.0		1.5		1.5	
Carry current max.	A	1.0		1.0		1.2		1.2		2.0		2.0	
Switching voltage max.	VDC	180		180		200		200		200		200	
	VAC	130		130		140		140		250		250	
Breakdown voltage min.	VDC	200		200		240		240		400		400	
Operating Temperature	°C	-20°C to +80°C				-20°C to +80°C				-20°C to +80°C			
UL / CSA / RoHS		• / • / •				• / • / •				• / • / •			
Housing material		PP				PP				PP			
Cable type		AWG 24				AWG 24				AWG 22			

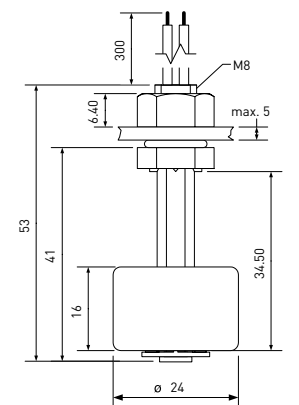
PLS-020 – world's smallest!



PLS-031 – Miniature



PLS-041 – Standard



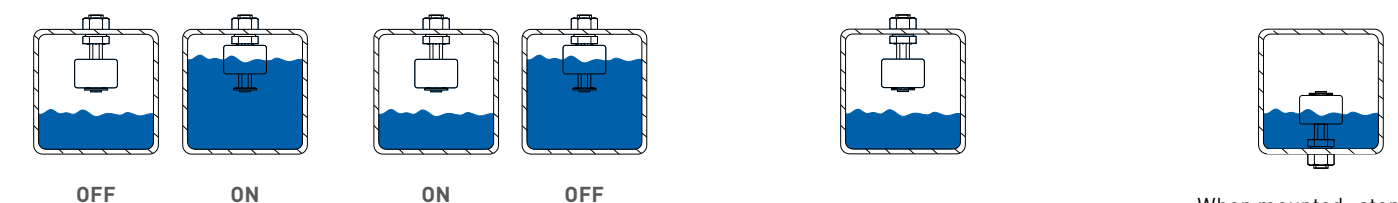
## Variants & mounting

FORM A (Normally open)

FORM B (Normally closed)

Top mounting

Bottom mounting



When mounted „stem up“, operating functions are reversed.

# PLS-PA-Series

IP 67

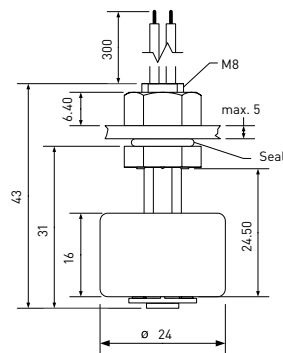


## Features

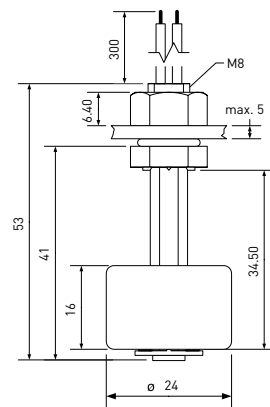
- > Polyamide housing
- > Mains voltage variants
- > Form A and Form B
- > Extended temperature range
- > Customized types available

		Power Switch			
		PLS-031A-3PA	PLS-031B-3PA	PLS-031A-6PA	PLS-031B-6PA
		PLS-041A-3PA	PLS-041B-3PA	PLS-041A-6PA	PLS-041B-6PA
Contact form		A		B	
Contact rating max.	W / VA	10		50	
Switching current max.	A	1.0		1.5	
Carry current max.	A	1.2		2.0	
Switching voltage max.	VDC	200		200	
	VAC	140		250	
Breakdown voltage min.	VDC	240		400	
Operating Temperature	°C	-20 to +80°C		-20°C to +80°C	
UL / CSA / RoHS		• / • / •		• / • / •	
Housing material		PA		PA	
Cable type		AWG 24		AWG 22	

PLS-031 - Miniature



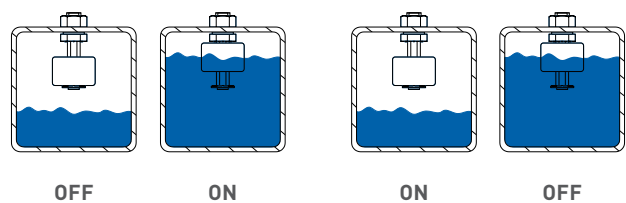
PLS-041 - Standard



## Variants & mounting

FORM A (Normally open)      FORM B (Normally closed)

Top mounting      Bottom mounting



When mounted „stem up“, operating functions are reversed.

# PLS-VA-Series

IP 67

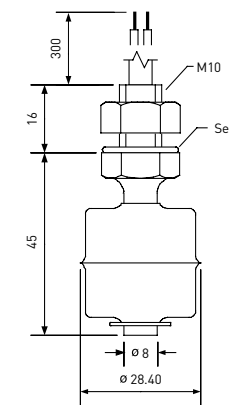


## Features

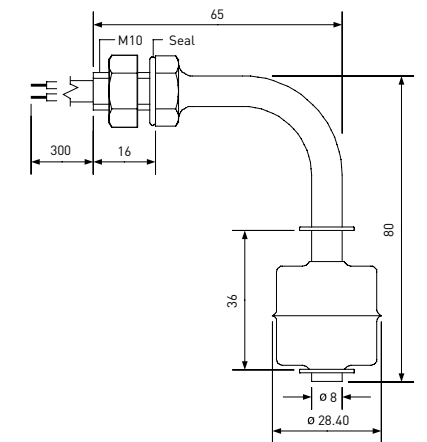
- > Stainless Steel housing
- > Rugged & durable
- > Mains voltage variants
- > Form A and Form B
- > Suitable for food contact
- > Extended temperature range
- > Customized types available

		Power Switch			
		PLS-045A-3VAI	PLS-045B-3VAI	PLS-045A-6VAI	PLS-045B-6VAI
		PLS-080A-3VAL	PLS-080B-3VAL	PLS-080A-6VAL	PLS-080B-6VAL
Contact form		A		B	
Contact rating max.	W / VA	10		50	
Switching current max.	A	1.0		1.5	
Carry current max.	A	1.2		2.0	
Switching voltage max.	VDC	200		200	
	VAC	140		250	
Breakdown voltage min.	VDC	240		400	
Operating Temperature	°C	-30 to +125°C		-30°C to +125°C	
UL / CSA / RoHS		-- / -- / •		-- / -- / •	
Housing material		Stainless Steel 304		Stainless Steel 304	
Cable type		AWG 24		AWG 22	

PLS-045

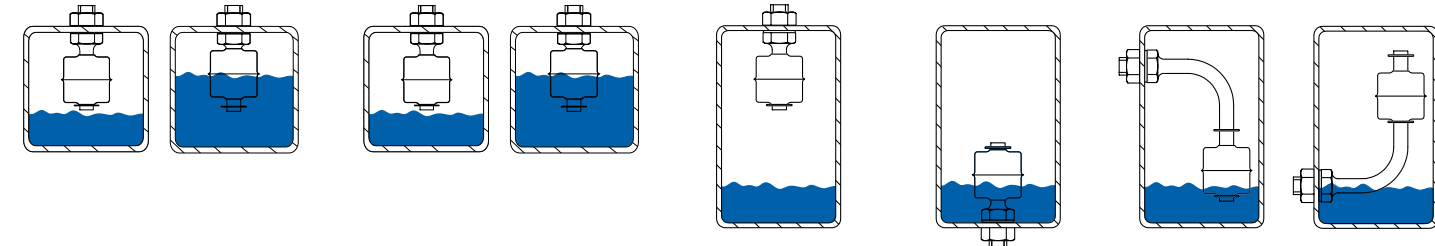


PLS-080



## Variants & mounting

FORM A (Normally open)      FORM B (Normally closed)      Top mounting      Bottom mounting      Side mounting



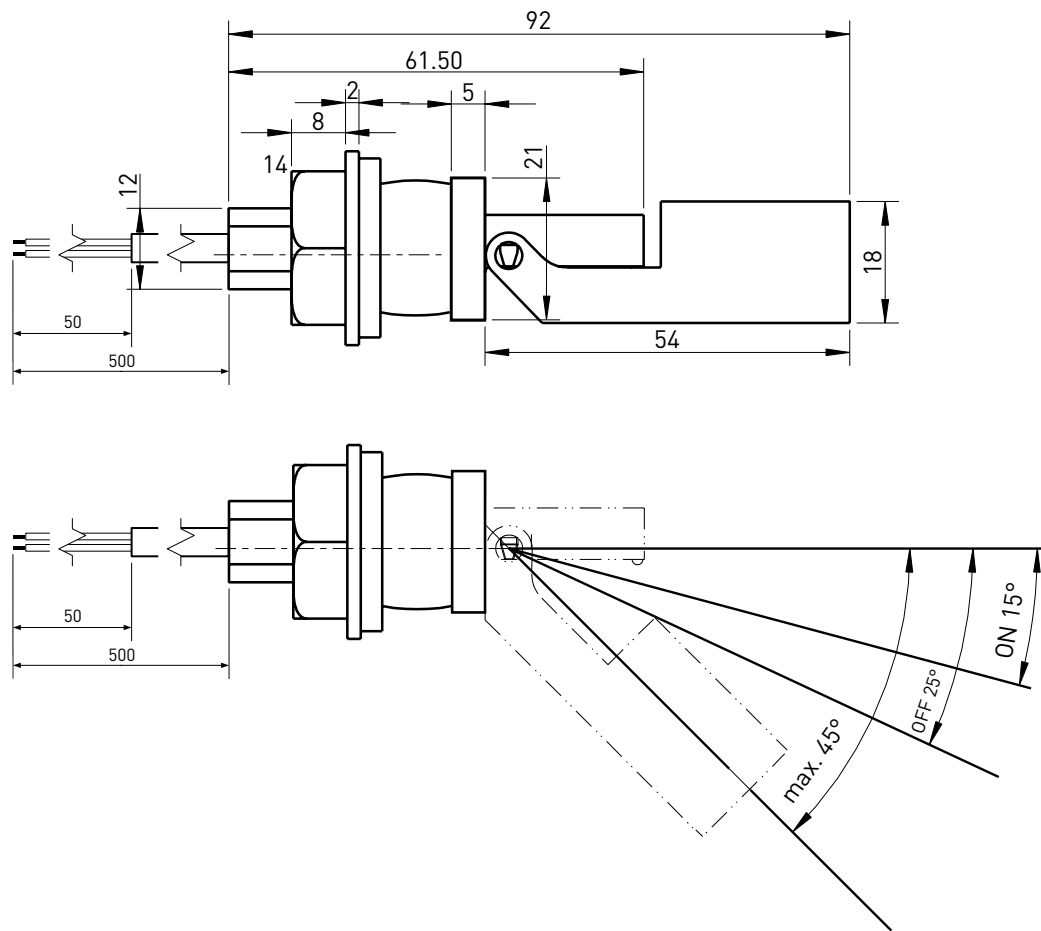
When mounted „stem up“, operating functions are reversed.

# HLS-PP

- Features**
- > Level Sensors for horizontal mounting
  - > Polypropylene housing
  - > Covers a wide range of applications
  - > Customized types available



		HLS-092-3PP
Contact rating max.	W / VA	10
Switching current max.	A	0.5
Carry current max.	A	1.0
Switching voltage max.	VDC	200
	VAC	140
Breakdown voltage min.	VDC	250
Operating Temperature		°C -20°C to +80°C
UL / CSA / RoHS		--/--/•
Housing material		PP
Cable type		UL 2464, AWG 22



# Customized Products

**Over 80% of our products are *special custom designs*.**

**Connectors and cable assemblies**

- > Sensor solutions + wire harnesses: taylor made to your requirements.



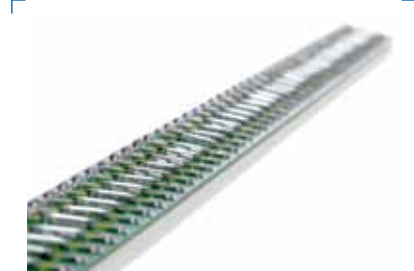
**Special housings**

- > Own molding facilities spell flexibility when it comes to special housings, snap-fit solutions and inserts.



**PCB-Assemblies**

- > Where large quantities in particular are concerned, assembly costs can make or break a product. We will be happy to supply Reed Switches and other components as fully assembled PCBs including cable and connector at highly competitive prices.



**Hall Sensors**

- > In cases where Reed Technology is reaching its limits (extended operating frequencies etc.) we offer Hall-based switching components with open collector output or two-wire variants.



**Customized Level Sensors**

- > We can do much more than what you see in this catalogue.



**Magnete**

- > We design the matching actuator magnet for your application - bare or cased.



# Actuators

# Magnet-Selector

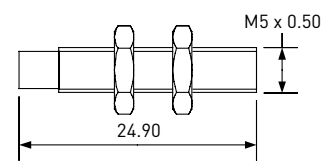
## Features

- › Easily mountable
- › Matches chosen Sensor
- › Mechanically protected
- › Customized types available

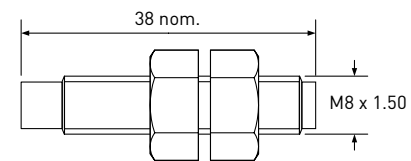


		MSM-225	MSM-228	MSM-313	MSM-324	MSM-328	MSM-332
Remanence Br	mT	1105	1190	1360-1420	1105	1105	1185
Coercivity HcB	kA/m	836	828	836	836	836	828
Coercivity HcJ	kA/m	1274	1274	955	1274	1274	955
Energy Product (BH) max.	kJ/m <sup>3</sup>	235	275	358-382	235	235	275
Magnetic moment M	x10 <sup>-5</sup> Vs cm	1.21	1.50	0.3	3.42	3.42	4.30
Operating Temperature max.	°C	120	85	80	85	85	85
UL / CSA / RoHS		--/--/•	--/--/•	--/--/•	--/--/•	--/--/•	--/--/•
Housing material		Nickel	PA6-GF	ABS	ABS	PA66-GF	ABS

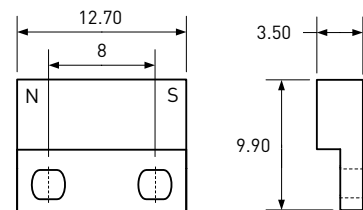
MSM-225



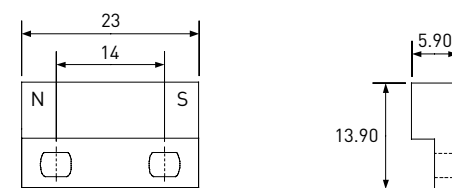
MSM-228



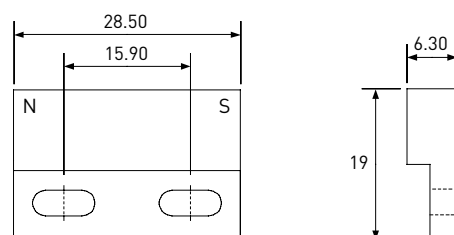
MSM-313



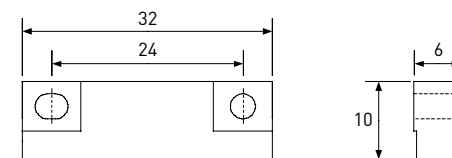
MSM-324



MSM-328



MSM-332



Check table below for most convenient magnet material

Selection Guide	LOW <span style="display: inline-block; width: 100px; height: 10px; background: linear-gradient(to right, blue, white, blue);"></span> HIGH			
	Costs	Ferrite	AlNiCo	NdFeB
Energy Product	Ferrite	AlNiCo	SmCo	NdFeB
Operating Temperature	NdFeB	Ferrite	SmCo	AlNiCo
Corrosion Resistance	NdFeB	SmCo	AlNiCo	Ferrite
Resistance to Demagnetization	AlNiCo	Ferrite	NdFeB	SmCo
Mechanical Strength	Ferrite	SmCo	NdFeB	AlNiCo
Temperature Coefficient	AlNiCo	SmCo	NdFeB	Ferrite

## Maximum power, minimum space

In recent years, Neodymium-Iron-Boron magnets (NdFeB) have advanced from being exotic luxury items to affordable power magnets.



## The benefits in sensor applications

- › Increased switching distance
- › Miniature design possible
- › Resistance to demagnetization
- › Greater product design flexibility

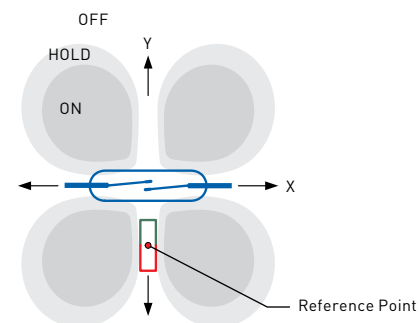
Material Grades		Remanence Br	Coercivity		Energy Product (BH) max.	Operating Temperature max.
		mT	HcB kA/m	HcJ kA/m	kJ/m <sup>3</sup>	°C
NdFeB	N30	1105	836	955	235	80
	N30H	1105	836	1274	235	120
	N30SH	1100	836	1512	239	150
	N33EH	1185	828	955	275	180
	N35	1185	828	955	275	80
	N35H	1190	828	1274	275	120
	N35SH	1190	828	1512	275	150
	N40SH	1260	844	1512	314	150
N45	1350	840	955	354	80	
SmCo5	S20	875	617	1194	159	250
Sm2Co17	S24H	975	724	1433	183	300
	S28H	1065	724	1433	215	300
AlNiCo	A500	1281	50	52	40	500
Ferrite	Y10	215	143	203	8	250
	Y30BH	390	229	231	29	300
	Y35	410	183	167	31	300
Bonded Ferrite	FB1	240	171	225	11	80
Bonded NdFeB	BN8	575	378	1035	64	150



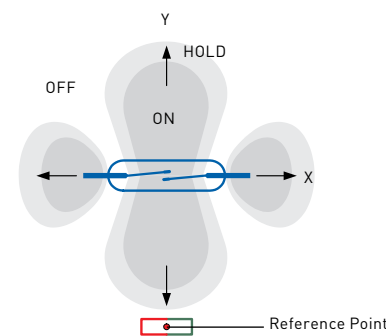
# How to operate

In general **four** different magnet approaches are known when using permanent magnets

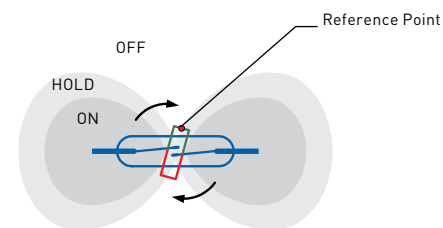
**1 One magnet pole** faces Reed Switch providing **two** operations max. when moving on X-axis. Minimum movement of magnet over switch center provides smallest possible switching differential.



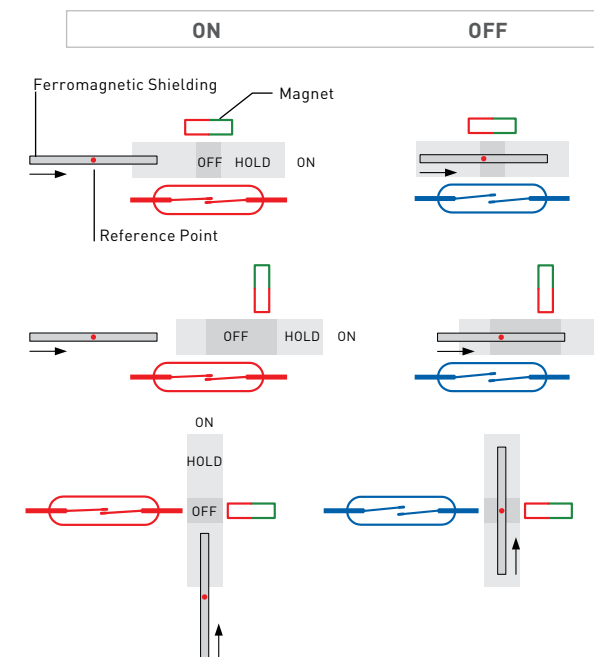
**2 Magnet parallel to longitudinal axis of switch:** Approaching magnet **vertically** to switch on Y-axis provides **one** operation only. Driving magnet over full length of switch (X-axis) may result in up to three operations. Minimum movement of magnet over switch center provides smallest possible switching differential.



**3 Switch operation by rotation** of magnet. This gives two operations per complete rotation.



**4 Operation of switch by shielding.** This method requires a permanently opposite location of magnet and switch. The switch is held closed continuously and will release only if magnet flux is removed by means of ferro-magnetic shield.

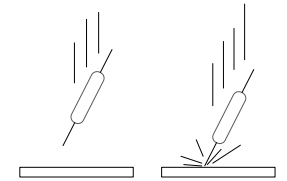


Check out our interactive Reed Switch here: [www.pic-gmbh.com/go](http://www.pic-gmbh.com/go)

# Precautions

## Shock Resistance

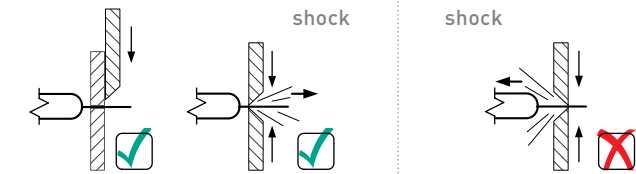
Generally Reed Switches provide high shock resistance up to 100 g. Still a drop on a hard surface can generate a shock of several 100 g, which can lead to de-adjustment of contacts. Switches having been dropped should be re-tested for sensitivity before usage!



## Do's and Don'ts when cutting and bending Reed Switches

Incorrect bending or cutting of terminals may lead to cracks in the sealing area due to heavy mechanical stress. To avoid this problem the remaining part of terminal between glass body and point of bending resp. cutting, should be gripped tightly.

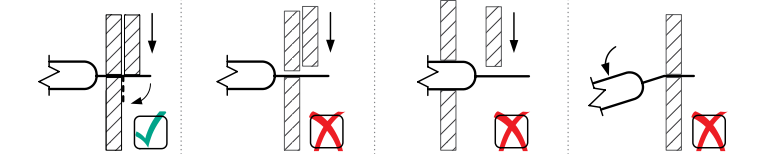
### Cutting



Forces directed away from Reed Switch

Forces directed toward Reed Switch!

### Bending



Terminal gripped tightly between glass body and point of bending

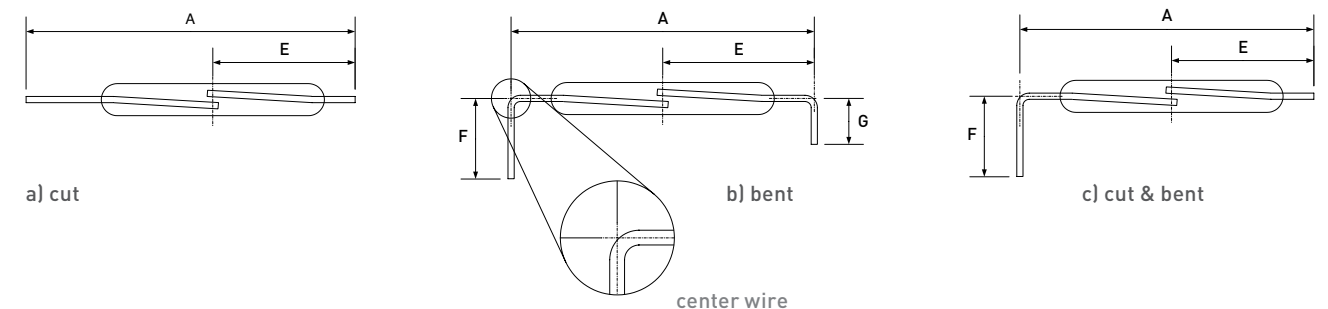
Terminal not gripped

Gripped on glass body

Terminal not gripped between glass body and point of bending

## Dimensioning of modified Reed Switches

We supply Reed Switches with terminals modified to nearly any requirement. Dimensioning should be made according to the examples below.





# Chemical resistance chart

+ = Excellent o = Limited - = Poor	Chemical resistance @20°C / @60°C				
	ABS	PA	PP	POM	Stainless Steel 304
Acetic Acid, dilute	+ / o	- / -	+ / +	- / -	+ / o
Acetone	o / -	+ / +	+ / +	+ / +	+ / +
Ammonium Hydroxide	- / -	o / -	+ / +	- / -	+ / +
Aniline	- / -	+ / +	+ / o	+ / o	+ / +
Beer, Wine, Whiskey	- / -	- / -	- / -	+ / +	+ / +
Butanol	+ / +	+ / +	+ / +	+ / +	+ / +
Chloroform	+ / o	+ / +	+ / +	+ / o	+ / +
Citric Acid	- / -	- / -	- / -	- / -	+ / +
Copper Sulphate	+ / +	o / o	+ / o	+ / +	+ / +
Detergents	+ / +	- / -	+ / +	- / -	- / -
Diesel fuel	- / -	- / -	+ / +	+ / o	+ / +
Ethanol	+ / +	+ / +	+ / +	+ / +	+ / +
Ethylene Glycol	+ / +	+ / +	+ / +	+ / o	+ / +
Ferric Chloride	+ / +	o / o	+ / +	+ / +	+ / +
Formaldehyde (Formalin)	+ / +	+ / +	+ / +	+ / -	+ / +
Formic Acid	+ / +	+ / +	+ / +	+ / +	+ / +
Fruit Juice	+ / +	- / -	+ / +	+ / +	o / o
Gasoline	- / -	o / -	+ / +	+ / +	+ / +
Glycerol (Glycerin)	+ / o	+ / +	+ / +	+ / +	+ / +
Hydrochloric Acid	+ / +	o / -	+ / +	+ / -	+ / o
Hydrogen Peroxide, dilute	+ / +	+ / +	+ / +	+ / +	+ / +
Lactic Acid	+ / +	o / -	+ / +	+ / +	+ / +
Methanol	- / -	- / -	+ / +	+ / -	+ / +
Milk	+ / o	+ / +	+ / +	+ / +	+ / +
Mineral Oil	+ / +	- / -	+ / +	+ / -	o / -
Nitric Acid, dilute	o / -	+ / +	+ / +	+ / +	o / o
Nitrobenzene	- / -	- / -	+ / +	- / -	+ / o
Phosphoric Acid, dilute	+ / -	- / -	+ / +	- / -	- / -
Propanol (IPA)	o / -	- / -	+ / +	o / -	o / -
Silver Nitrate	+ / +	+ / +	+ / +	+ / +	+ / +
Soaps	+ / o	o / -	+ / +	+ / -	+ / +
Sodium Hydroxide, dilute	+ / +	+ / +	+ / +	+ / +	+ / +
Sulphuric Acid, dilute	+ / o	+ / o	+ / +	+ / +	+ / +
Urine	+ / +	+ / o	+ / +	+ / +	+ / +
Vegetable Oil	+ / +	+ / o	+ / +	+ / +	- / -
Water	- / -	- / -	+ / +	o / -	+ / +
Water, Sea-, Salt-	+ / +	+ / +	+ / +	+ / -	o / o

Above data is intended only as a guide for chemical compatibility.

We do not assume any liability for the accuracy of the information.

It is strongly recommended that users perform their own tests to determine suitability of material.

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