Standex Electronics

An Engineered Solution Provider and
Manufacturer of Custom Components & Assemblies

Product Solutions

Reed switch selection guide

Standex Electronics produces a broad range of magnetic reed switches. From dry circuit switching to 70VA, from switching microvolt levels to switching 1,000 VDC, our broad range of switches will handle most applications. Using a unique, patented and highly automated production process results in a very cost-effective switch with outstanding physical and electrical characteristics. Standex reed switches are capable of tens of millions of trouble-free switching cycles.

We offer high-speed, fully-automated custom lead cropping and forming service at a minimal cost – details on request. SMT and overmolded versions are also available. Standex reed switches are RoHS compliant and most are UL recognized. They are ideal for a wide range of applications including proximity sensors, fluid level sensors, reed relays, and use within medical, consumer, commercial and industrial equipment.

Standex Electronics is a manufacturer of electronic components and subassemblies including inductors, chokes, transformers, antenna coils, connectors, progressive die stampings, insert-moulded plastic components, reed / capacitive / conductivity and pressure sensors, reed relays and custom products combining many of the above components. Standex Electronics has manufacturing operations in the USA, Canada, Mexico, UK and China operating to TS16949, AS9100 and ISO 9001 standards.

Standex reed switches are RoHS compliant and most are UL recognized.

RoHS Compliant

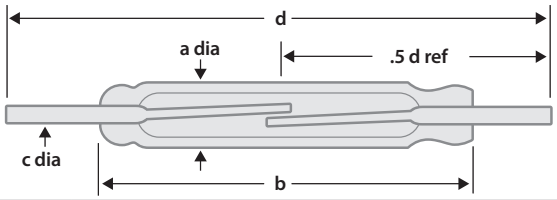
UL®

www.standexelectronics.com • +1.866.STANDEX (+1.866.782.6339)

United Kingdom +44.1732.771.023 • China +86.22.86996881~5

Standex Electronics

Reed Switch Quick Selection Guide



Professional grade reed switches

Switch type	GR150*	GR200*	GR / GP501	GR / GP560	GR / GP100	NL126	PR560	PR126	VR126*	VR1000 Provisional
Description	World's smallest reed switch, ultra miniature	Ultra miniature reed	Sub-min reed	Miniature reed	Mid power reed	High power lamp load reed	AC line voltage miniature reed	AC line voltage high power reed	High voltage & power reed	Very high voltage (up to 15kV) & power reed
			GP series ideal for high stability contact resistance applications, i.e. counting							
Physical characteristics										
Glass dia max - a	0.8 x 1.2mm	1.5mm	2.3mm	2.3mm	2.5mm	2.5mm	2.3mm	2.5mm	2.5mm	5.0mm
Glass length max - b	3.7mm	4.7mm	12.7mm	14.2mm	20.3mm	20.3mm	14.2mm	20.3mm	20.3mm	50.0mm
Lead dia nominal - c	0.25mm	0.25mm	0.45mm	0.6mm	0.6mm	0.7mm	0.6mm	0.7mm	0.7mm	1.3mm
Overall length - d	36.0mm	36.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	82.0mm
Electrical characteristics										
Contact material	Pd alloy	Pd alloy	Rh / Pd alloy	Rh / Pd alloy	Rh / Pd alloy	Rhodium	Rhodium	Rhodium	Rhodium	Rhodium/Tungsten
Max power rating	1VA	3VA	10 VA	10 VA	10 VA	50 VA	10 VA	70 VA	50 VA	50 VA
Max switching current	0.05 Amp DC	0.05 Amp DC	0.5 Amp DC and AC	1.0 Amp DC and AC	1.0 Amp DC and AC	1.5 Amp DC and AC	1.0 Amp DC and AC	1.5 Amp DC and AC	1.5 Amp DC and AC	3.0 Amp DC & AC
Max switching voltage	30 VDC	30 VDC	100 VDC / 125 VAC	100 VDC / 125 VAC	100 VDC / 150 VAC	200 VDC / 150 VAC	250 VAC / 100 VDC	300 VAC / 200 VDC	1,000 VDC / 300 VAC	Up to 15k VDC
Min breakdown voltage @ 20AT	100 VDC	100 VDC	200 VDC	200 VDC	250 VDC	250 VDC	600 VDC	750 VDC	1,750 VDC	Up to 20k VDC
Contact resistance	500 mΩ	500 mΩ	150 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ
Min insulation resistance	10^{11} mΩ	10^{11} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ	10^{12} mΩ
Max contact capacitance	0.3 pF	0.3 pF	0.3 pF	0.2 pF	0.2 pF	0.3 pF	0.2 pF	0.3 pF	0.3 pF	0.4 pF
Operating characteristics										
Sensitivity, pull in range	2-15 AT	3-15 AT	7-30 AT	10-50 AT	10-60 AT	20-60 AT	20-40 AT	20-50 AT	20-50 AT	60-200 AT
Operate time, inc. bounce	0.2 msecs	0.2 msecs	1.0 msecs	0.6 msecs	0.8 msecs	0.6 msecs	0.6 msecs	0.8 msecs	0.8 msecs	2.0 msecs
Release time	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.5 msecs
Max vibration 10 - 2,000Hz	-	-	50 G	50 G	40 G	30 G	50 G	30 G	30 G	-
Max shock, 11-ms.½ sine wave	-	-	100 G	100 G	100 G	100 G	100 G	100 G	100 G	-
Operating temperature	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C
Storage temperature	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C

Commercial grade reed switches

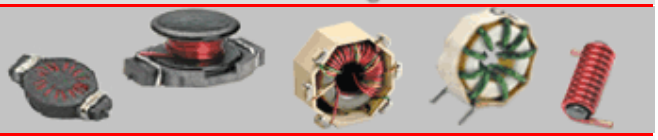
Switch type	TS501	TR501	TS560	TR560	TS100	TR100
Description	General purpose wide differential sub miniature reed	General purpose wide differential sub miniature reed	General purpose wide differential miniature reed	General purpose wide differential miniature reed	General purpose wide differential reed	General purpose wide differential reed
Physical characteristics						
Glass dia (max) - a	2.3mm	2.3mm	2.3mm	2.3mm	2.5mm	2.5mm
Glass length max - b	12.7mm	12.7mm	14.2mm	14.2mm	21.0mm	21.0mm
Lead dia nominal - c	0.45mm	0.45mm	0.6mm	0.6mm	0.7mm	0.7mm
Overall length - d	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm
Electrical characteristics						
Contact material	Palladium alloy	Palladium alloy	Palladium alloy	Palladium alloy	Palladium alloy	Palladium alloy
Max power rating	7 VA	10 VA	8 VA	10 VA	8 VA	10 VA
Max switching current	0.3 Amp DC and AC	0.5 Amp DC and AC	0.5 Amp DC and AC	1.0 Amp DC and AC	0.5 Amp DC and AC	1.0 Amp DC and AC
Max switching voltage	50 VDC / 75 VAC	100 VDC / 125 VAC	75 VDC / 100 VAC	100 VDC / 125 VAC	100 VAC / 125 VDC	100 VAC / 150 VDC
Min breakdown voltage @ 20AT	150 Volts DC	200 Volts DC	150 Volts DC	200 Volts DC	200 Volts DC	250 Volts DC
Contact resistance	250 mΩ	200 mΩ	250 mΩ	200 mΩ	250 mΩ	200 mΩ
Min insulation resistance	10^{9} mΩ	10^{12} mΩ	10^{9} mΩ	10^{12} mΩ	10^{9} mΩ	10^{12} mΩ
Max contact capacitance	0.3 pF	0.3 pF	0.2 pF	0.2 pF	0.2 pF	0.2 pF
Operating characteristics						
Sensitivity, pull in range	10 to 30 AT	7 to 30 AT	10 to 35 AT	10 to 50 AT	10 to 35 AT	10 to 35 AT
Operate time, inc. bounce	1.5 msecs	1.0 msecs	1.0 msecs	0.6 msecs	1.0 msecs	0.8 msecs
Release time	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs
Max vibration 10 - 2,000Hz	30 G	50 G	30 G	50 G	30 G	40 G
Max shock, 11-ms.½ sine wave	100 G	100 G	100 G	100 G	100 G	100 G
Operating temperature	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C
Storage temperature	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C	-50°C to +155°C

Standex Electronics

Reed Switch Catalogue

www.StandexElectronics.com

Standex Product Offerings:

Low-Frequency Magnetics	
High-Frequency Magnetics	
Antenna & RF Magnetics	
Magnetic Reed Switches, Sensors & Relays	
Hermetic Connector Products	
Precision Stamping & Value-Added Packaging	
HID Lighting Products	

Standex Global Locations

Divisional Headquarters – USA:
Standex Electronics, Inc.
4538 Camberwell Road
Cincinnati, Ohio 45209 USA
Phone: +513 871 3777
Fax: +513 871 3779
Toll Free - US: 866-STANDEX (866-782-6339)

United Kingdom:
Standex Electronics (U.K.) Ltd
40 Morley Road, Tonbridge
Kent, TN9 1RA, UK
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Canada:
Standex Electronics/ATC-Frost Magnetics, Inc.
1130 Eighth Line, Oakville
Ontario, LH6 2R4 Canada

China:
Standex Electronics (Tianjin) Co., Ltd.
No.4 Factory Building,
61#, Huasheng Road,
East of Jinwei Ave.,
Beichen High-Tech Industrial Park
Tianjin 300402, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

Mexico:
Standex Electronics, S.I. de Mexico S.A. de C.V.
Calle Primera #2550, Agua Prieta
Sonora Mexico 84270

Contents:

About Standex Electronics

Standex Electronics, Inc. is a subsidiary of **Standex International Corporation**; symbol SXI on the New York Stock Exchange. Standex Electronics is registered to quality standard **ISO/TS 16949:2002.** Standex Electronics divisional headquarters is located in Cincinnati, Ohio, USA. In addition to the factory in Ohio, facilities are also maintained in Agua Prieta, Mexico; Arizona, USA; Kent, UK; Ontario, Canada; and Tianjin, China. Standex Electronics is a manufacturer of electronic components and subassemblies including, inductors, chokes, transformers, antenna coils, reed switches, reed relays, proximity sensors, fluid-level sensors, connectors, progressive die stampings, insert-moulded plastic components, and custom products combining many of the above components. In addition to manufacturing facilities, Standex Electronics also maintains a sophisticated testing laboratory. Standex Electronics specializes in electro-mechanical engineered solutions.

With laboratory testing capabilities as diverse as the products we manufacture, Standex Electronics offers laboratory testing support that is unmatched within our industry.

- Thermal Shock Testing (-70^{0}C to +200^{0}C, LN2 boost assures less than a 5 minute air-temperature recovery time).
- Thermal Cycle Testing (-68^{0}C to +177^{0}C).
- Humidity Testing (-18^{0}C to +93^{0}C, 98% RH, cycle temp or steady state).
- Vibration Testing (Sine or Random profile, 1" pk-pk displacement, 0 to 80 g pk, 5 to 2000 HZ).
- Mechanical Shock Drop Testing (½ sine 50g 11ms, ½ sine 1500g .5ms, or saw tooth 100g 6ms).
- Hi Temp Testing (Up to +260^{0}C).
- Salt Fog Testing.
- Solderability Testing.
- Lead Pull Testing.
- Cross-Sectioning.
- Polishing.
- Microscopic Inspection.
- X-Ray.

What differentiates Standex Electronics from its competition is turnkey solutions, from concept, through design, pre-production, qualification testing, manufacturing, and service after the sale.

Mission Statement

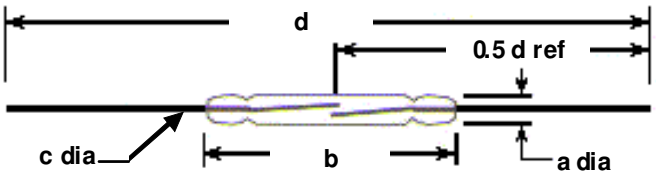
Standex Electronics is committed to providing products that offer an unmatched value through continuous improvement and employee involvement. The company conducts its business by recognizing safety, morale and professional development of all employees.

History of Standex Electronics

Standex Electronics was established in 1969 when Standex International purchased the Paul Smith Company. Standex Electronics has grown over the years by developing new products internally as well as by synergistic acquisition. Acquisitions, and strategic license agreements, include Underwood Electric (1973), Van Products (1974), Comtelco (1978), ATR Coil (1998), Classic Coil Winding (1998), ATC-Frost Magnetics (2001), Cin-Tran (2002), Magnetico (2003) and Lepco (2004).

Professional grade reed switch quick selection chart:

All Standex switches are UL recognised
All Standex switches are RoHS compliant.



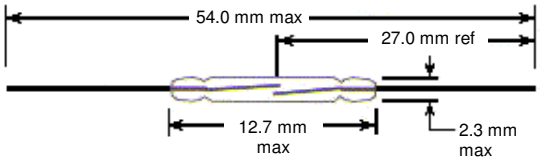
Switch type	GR501 / GP501	GR560 / GP560	GR100 / GP100	NL126	PR560	PR126
Physical Characteristics						
Glass dia max - a	2.3mm	2.3mm	2.5mm	2.5mm	2.3mm	2.5mm
Glass length max - b	12.7mm	14.2mm	20.3mm	20.3mm	14.2mm	20.3mm
Lead dia nominal - c	0.45mm	0.6mm	0.6mm	0.7mm	0.6mm	0.7mm
Overall length - d	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm
Electrical Characteristics						
Contact material	Rh / PGM alloy	Rh / PGM alloy	Rh / PGM alloy	Rhodium	Rhodium	Rhodium
Power rating maximum	10 VA	10 VA	10 VA	50 VA	10 VA	70 VA
Switching current maximum	0.5 Amp DC & AC	1.0 Amp DC & AC	1.0 Amp DC & AC	1.5 Amp DC & AC	1.0 Amp DC & AC	1.5 Amp DC & AC
Carry current maximum	0.8 Amp DC & AC	1.5 Amp DC & AC	1.5 Amp DC & AC	2.5 Amp DC & AC	1.5 Amp DC & AC	2.5 Amp DC & AC
Switching voltage maximum	100 VDC 125 VAC	100 VDC 125 VAC	100 VDC 150 VAC	200 VDC 150 VAC	250 VAC 100 VDC	300 VAC 200 VDC
Breakdown volt min @20AT	200 VDC	200 VDC	250 VDC	250 VDC	600 VDC	750 VDC
Contact resistance	150 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ	100 mΩ
Insulation resistance minimum	10^{12} Ω	10^{12} Ω	10^{12} Ω	10^{12} Ω	10^{12} Ω	10^{12} Ω
Contact capacitance pf maximum	0.3 pF	0.2 pF	0.2 pF	0.3 pF	0.2 pF	0.3 pF
Operating Characteristics						
Magnetic sensitivity, pull in range	7-30 AT	10-50 AT	10-60 AT	20-60 AT	20-40 AT	20-50 AT
Operate time, inc. bounce typ	1.0 msecs	0.6 msecs	0.8 msecs	0.8 msecs	0.6 msecs	0.8 msecs
Release time typical	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs
Resonant Frequency	3.2 kHz	3.0 kHz	2.2 kHz	2.2 kHz	3.0 kHz	2.2 kHz
Vibration, 10-2000Hz maximum	50 G	50 G	40 G	30 G	50 G	30 G
Shock, 11-ms. ½ sine wave max	100 G	100 G	100 G	100 G	100 G	100 G
Operating temperature	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃
Storage temperature	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃

 www.StandexElectronics.com

GR501

- Sub miniature reed switch with rhodium alloy contacts.
- Designed for applications where the available magnetic field is very low.
- Useful for "wide-gap" security system applications and other magnetic systems requiring long operating distances with permanent magnets.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	12.7mm
Lead Dia. (Nominal)	0.45 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	10VA maximum
Switching Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Carry Current (Max.)	0.8 Amp. DC, 0.8 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	150 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.3 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

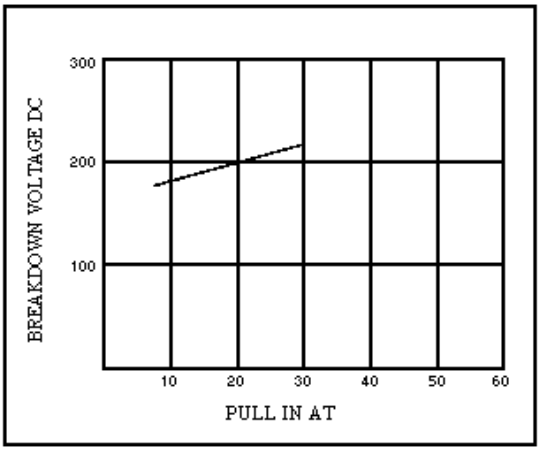
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	100×10^6	0.5×10^6	10×10^6	2×10^6	0.5×10^6	0.5×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

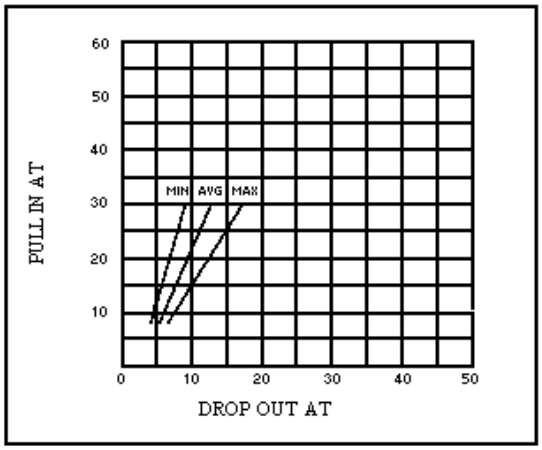
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	7 to 30 Ampere Turns
Magnetic Sensitivity (Range - Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	1.0 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

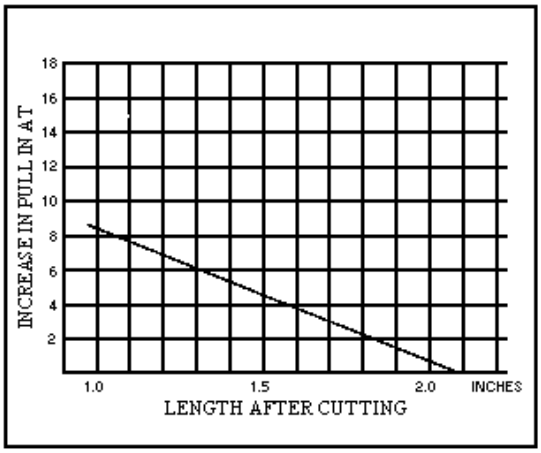
Charts



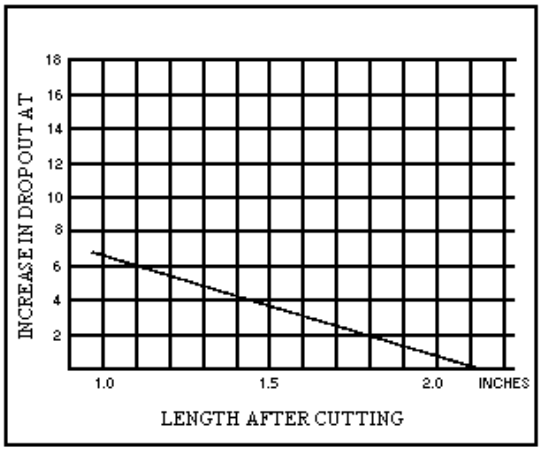
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

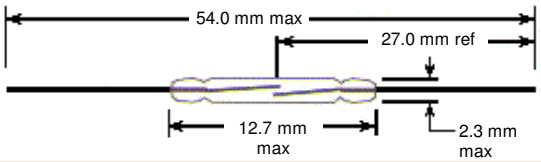


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

GP501

- Sub miniature reed switch with PGM alloy contacts.
- Designed for applications where the available magnetic field is very low and/or a high stability contact resistance is required
- Useful for "wide-gap" security system applications and other magnetic systems requiring long operating distances with permanent magnets.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	12.7mm
Lead Dia. (Nominal)	0.45 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	PGM alloy
Power Rating [1]	10VA maximum
Switching Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Carry Current (Max.)	0.8 Amp. DC, 0.8 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	150 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.3 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

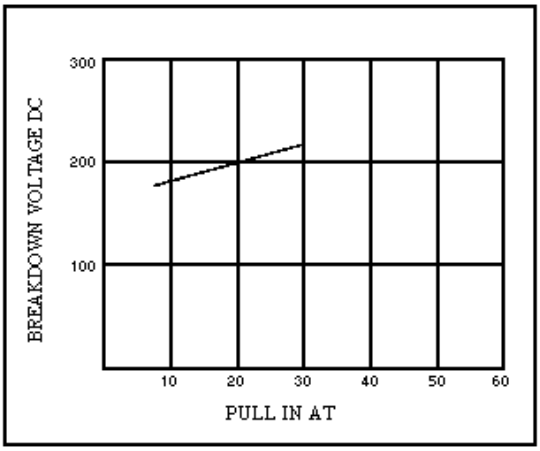
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	100×10^6	0.5×10^6	10×10^6	2×10^6	0.5×10^6	0.5×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

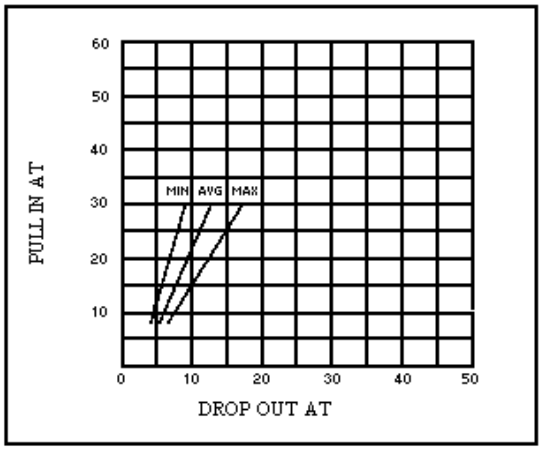
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	7 to 30 Ampere Turns
Magnetic Sensitivity (Range - Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	1.0 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

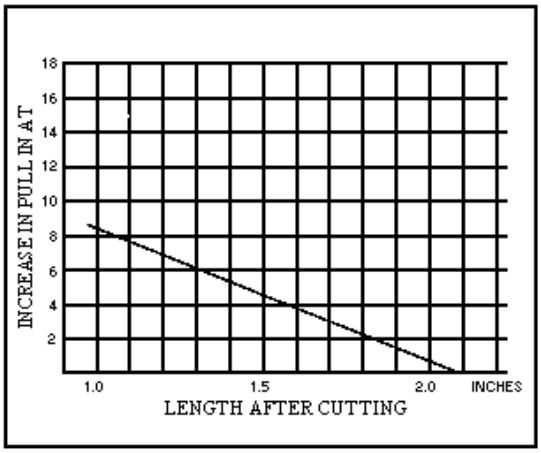
Charts



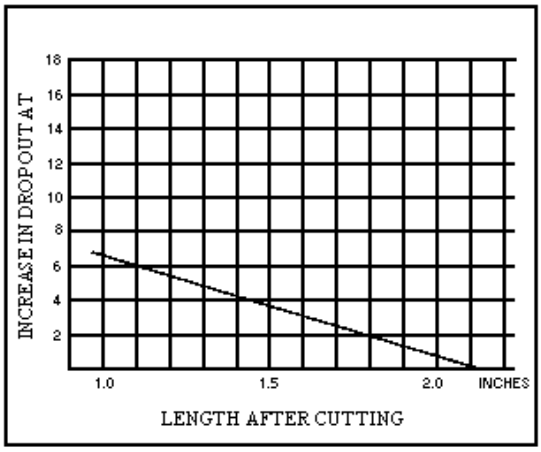
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

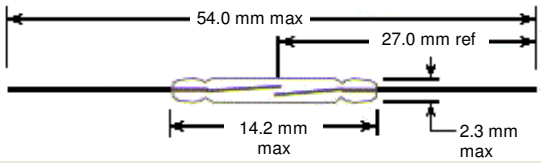
© Standex Electronics Inc. ***www.StandexElectronics.com***

Cincinnati, Ohio USA *Phone +513 871 3777* *Fax +513 871 3779*	*Tonbridge, United Kingdom* *Phone +44 1732 77 10 23* *Fax +44 1732 77 01 22*	*Tianjin, China* *Tel: +86 22 86 99 68 81~5* *Fax: +86 22 86 99 68 86*

GR560

- General-purpose miniature reed switch with rhodium contacts.
- Gives superior life switching relatively heavy loads in a miniature glass package.
- Has the ability to maintain a low contact resistance over life switching light duty logic level loads.
- Normal applications include liquid level sensors, security systems, reed relays, proximity sensors and counting devices.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	14.2mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

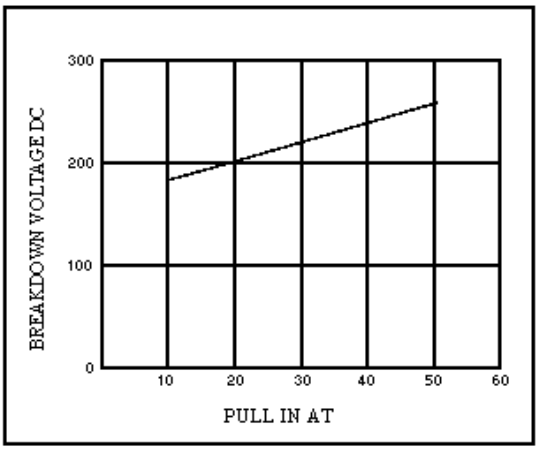
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	100×10^6	1×10^6	100×10^6	5×10^6	1×10^6	1×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

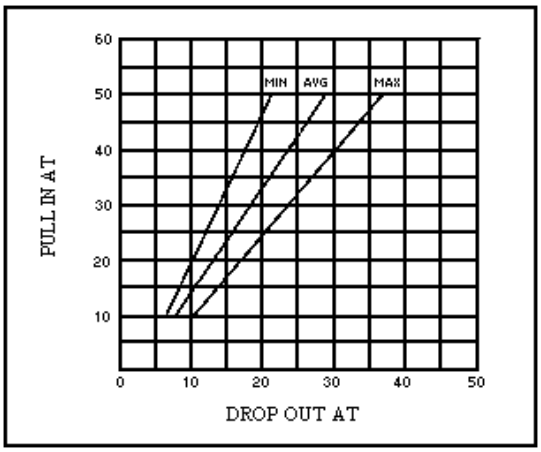
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 50 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.6 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.0 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

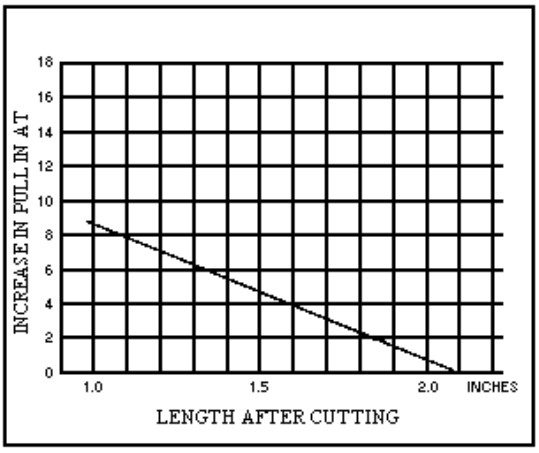
Charts:



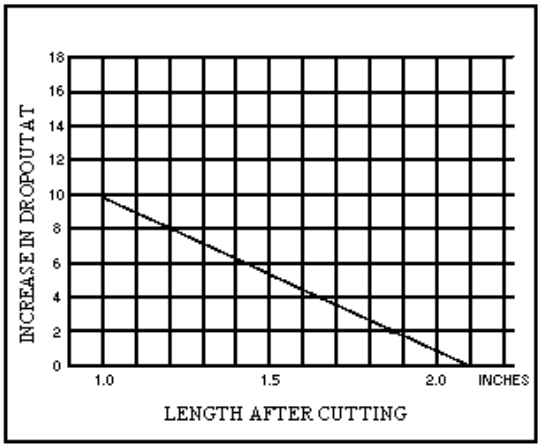
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

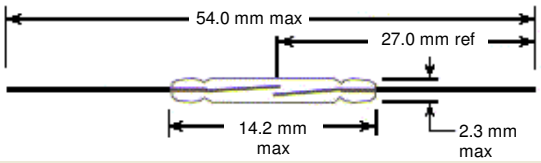


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

GP560

- General-purpose miniature reed switch with PGM alloy contacts.
- Gives superior life switching relatively heavy loads in a miniature glass package.
- High stability contact resistance.
- Normal applications include liquid level sensors, security systems, reed relays, proximity sensors and counting devices.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	14.2mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	PGM alloy
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

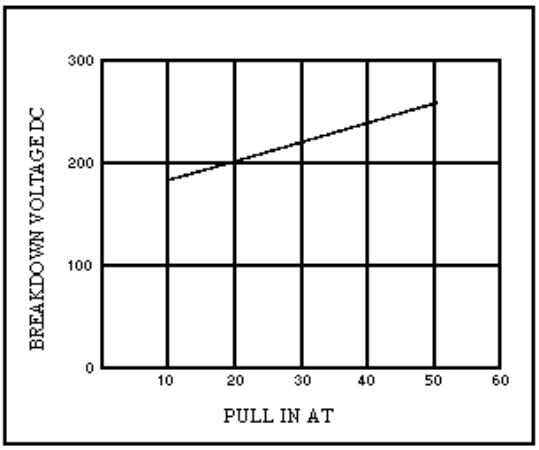
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	100×10^6	1×10^6	100×10^6	5×10^6	1×10^6	1×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

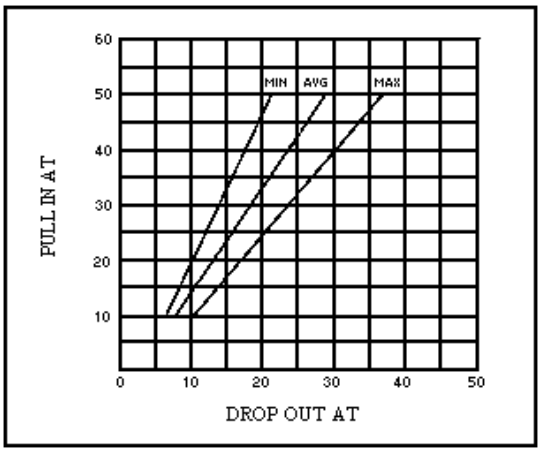
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 50 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.6 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.0 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

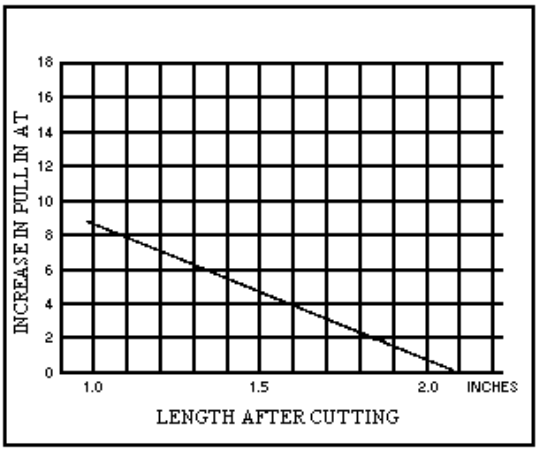
Charts:



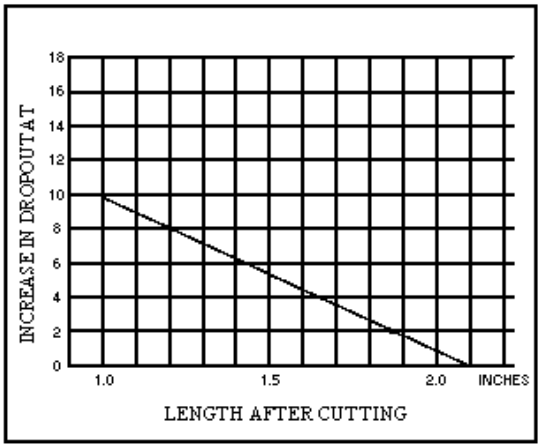
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

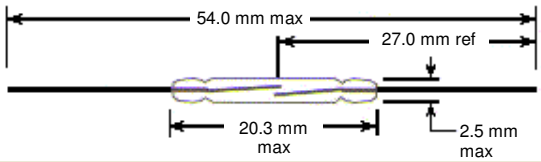


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

GR100

- General purpose reed switch with rhodium contacts.
- Designed to give superior life switching relatively heavy loads.
- Normal applications include liquid level sensors, security systems, reed relays, proximity sensors and counting devices.
- Ideally suited to handle normal 120 VAC loads.
- Maintains low contact resistance over life switching light duty logic level loads.

Physical Characteristics:



Glass Diameter (Max.)	2.5mm
Glass Length (Max.)	20.3mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.) [4]	100 VDC, 150 VAC
Breakdown Voltage (Min. @20AT) [2]	250 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.
4. When switching 150 VAC please contact a Standex application engineer.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

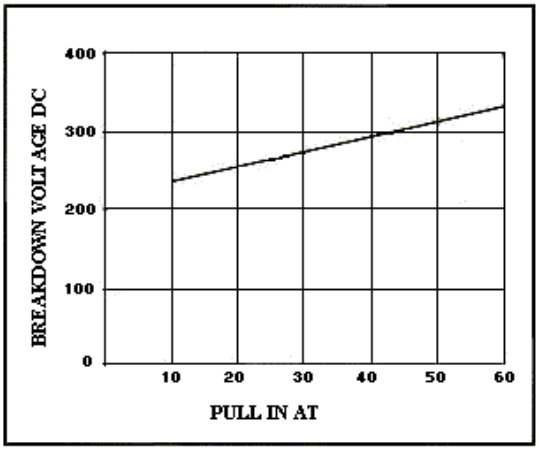
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC	150 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA	60 mA
Life	1000×10^6	2×10^6	100×10^6	8×10^6	2×10^6	2×10^6	1×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

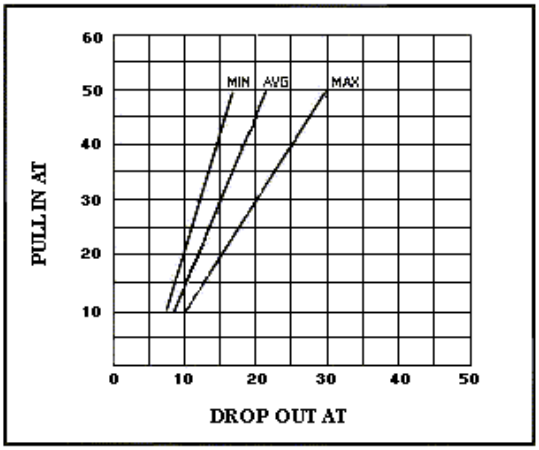
Operating Characteristics

Magnetic Sensitivity (Range - Pull In)	10 to 60 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.8 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	40 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

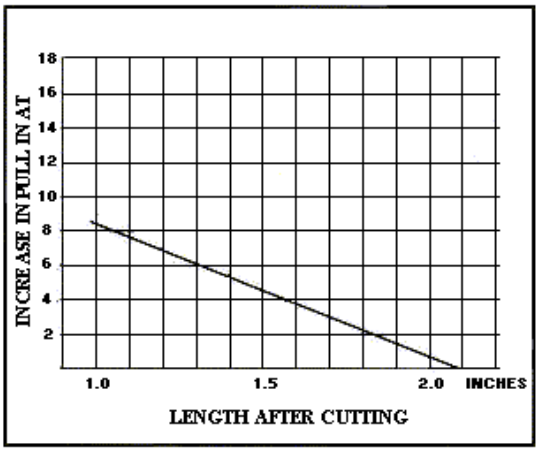
Charts:



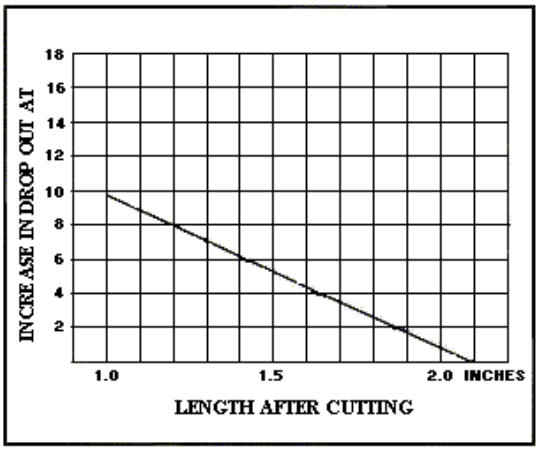
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

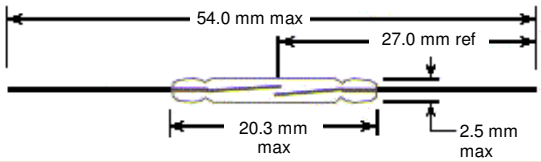
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

GP100

- General purpose reed switch with PGM alloy contacts.
- Designed to give superior life switching relatively heavy loads.
- Normal applications include liquid level sensors, security systems, reed relays, proximity sensors and counting devices.
- Ideally suited to handle normal 120 VAC loads.
- High stability contact resistance.

Physical Characteristics:



Glass Diameter (Max.)	2.5mm
Glass Length (Max.)	20.3mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	PGM alloy
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.) [4]	100 VDC, 150 VAC
Breakdown Voltage (Min. @20AT) [2]	250 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.
4. When switching 150 VAC please contact a Standex application engineer.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

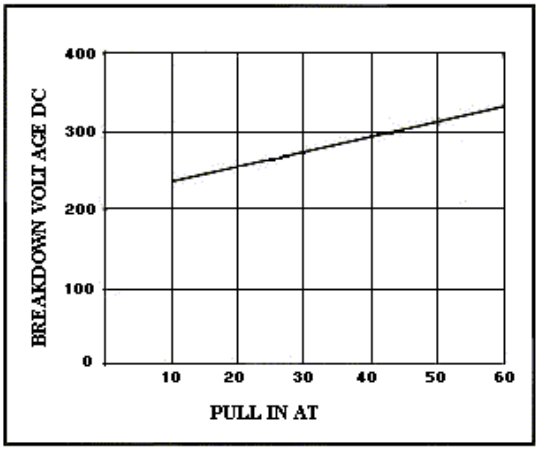
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC	150 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA	60 mA
Life	1000×10^6	2×10^6	100×10^6	8×10^6	2×10^6	2×10^6	1×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

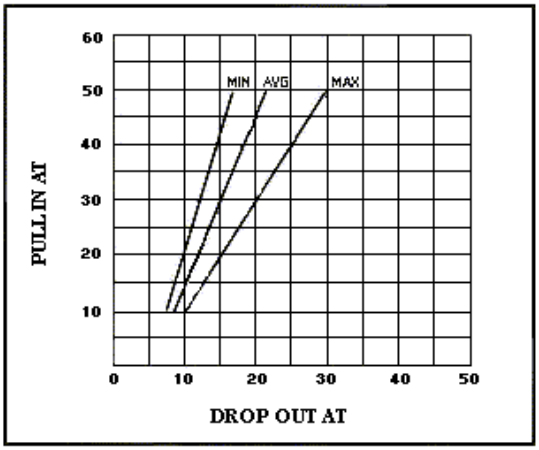
Operating Characteristics

Magnetic Sensitivity (Range - Pull In)	10 to 60 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.8 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	40 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

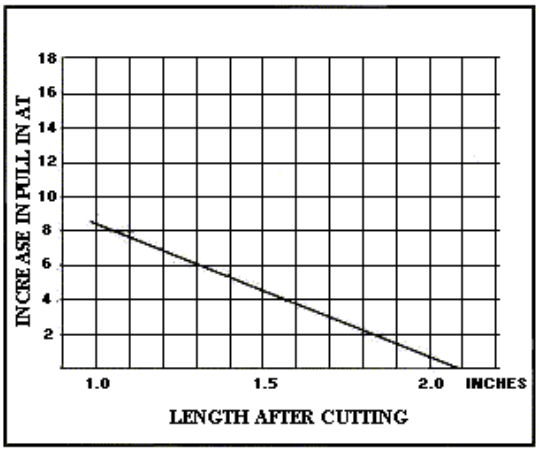
Charts:



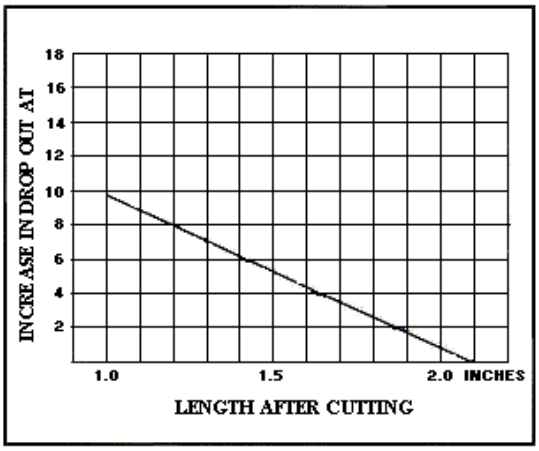
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

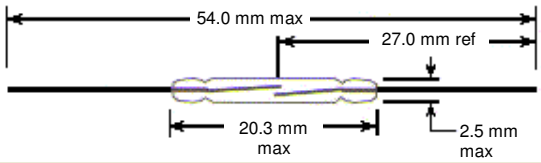
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

NL126

- General-purpose miniature reed switch with rhodium contacts.
- Designed to give superior life switching relatively heavy loads.
- Normal applications include test equipment, instrumentation, liquid level sensing and incandescent lamp switching.

Physical Characteristics:



Glass Diameter (Max.)	2.5 mm
Glass Length (Max.)	20.3 mm
Lead Dia. (Nominal)	0.7 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	50VA maximum
Switching Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Carry Current (Max.)	2.5 Amp. DC, 2.5 Amp. AC
Switching Voltage (Max.) [4]	200 VDC, 150 VAC
Breakdown Voltage (Min. @20AT) [2]	250 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.3 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.
4. When switching 150 VAC please contact a Standex application engineer.

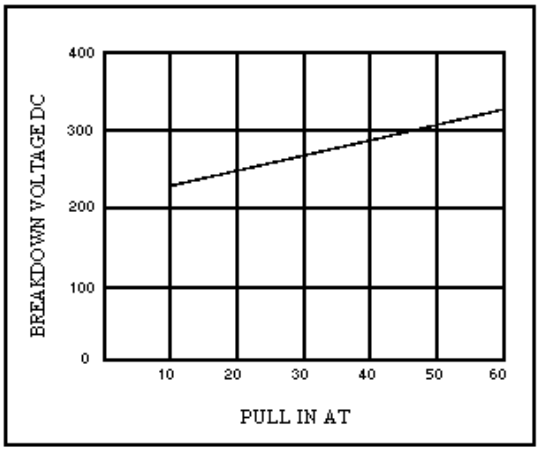
Minimum Switching Life with Standard Test Loads, using 20AT switch:

Voltage	5 VDC	10 VDC	12 VDC	12 VDC	24 VDC	50 VDC	100 VAC	150 VAC
Current	2 mA	1 A	10 mA	3 A	10 mA	1 A	100 mA	200 mA
Life	1×10^9	3×10^6	500×10^6	50×10^3	10×10^6	3×10^6	3×10^6	0.5×10^6
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.								

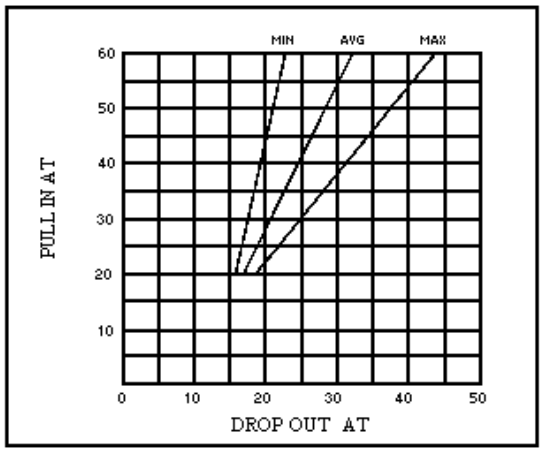
Operating Characteristics

Magnetic Sensitivity (Range - Pull In)	20 to 60 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.8 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	30 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

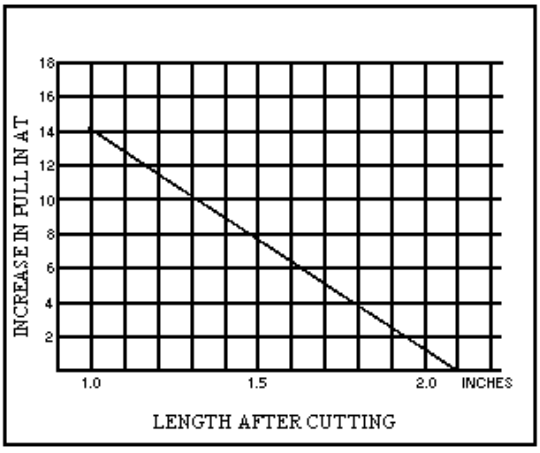
Charts:



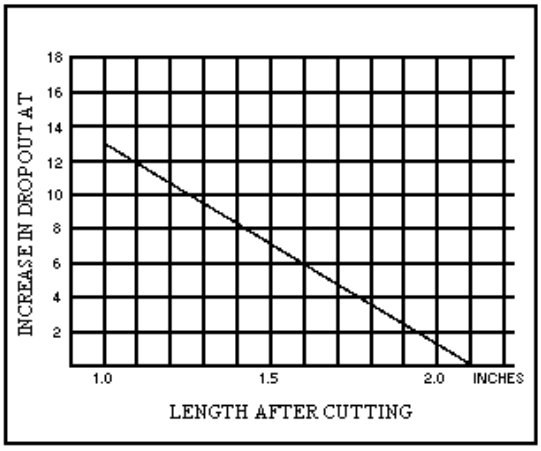
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



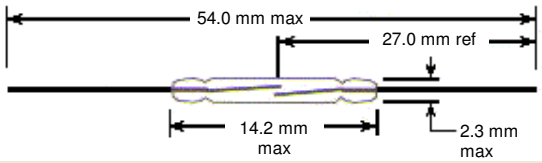
Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA	*Tonbridge, United Kingdom*	*Tianjin, China*
Phone +513 871 3777	*Phone +44 1732 77 10 23*	*Tel: +86 22 86 99 68 81~5*
Fax +513 871 3779	*Fax +44 1732 77 01 22*	*Fax: +86 22 86 99 68 86*

PR560

- High voltage medium power applications reed switch with rhodium contacts
- Designed to give superior life switching relatively heavy loads

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	14.2mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.)	100 VDC, 250 VAC
Breakdown Voltage (Min. @20AT) [2]	600 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1) The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2) Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3) Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

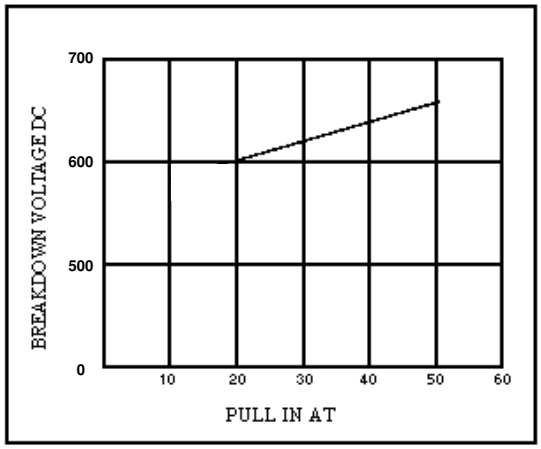
Voltage	12 VDC	24 VDC	100 VDC	125 VAC	240 VDC	240 VAC
Current	10 mA	10 mA	100 mA	80 mA	10 mA	40 mA
Life	100×10^6	5×10^6	1×10^6	1×10^6	2×10^5	5×10^5

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

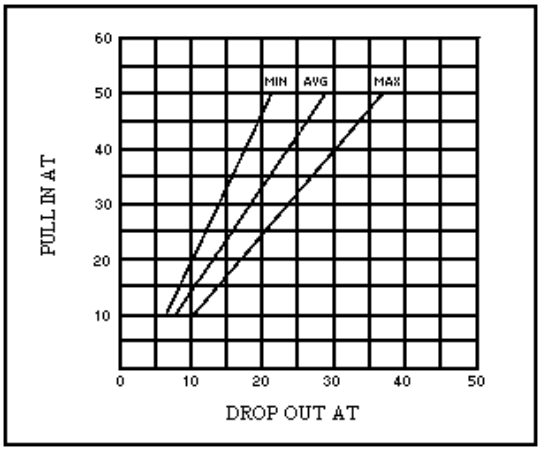
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	20 to 40 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.6 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.0 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

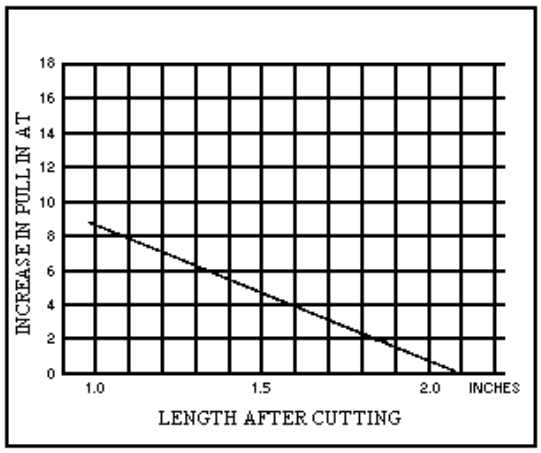
Charts:



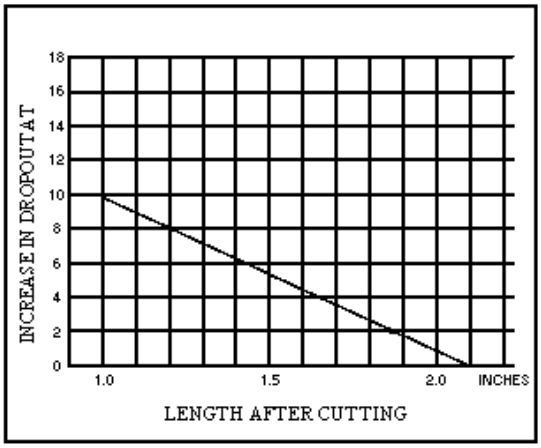
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

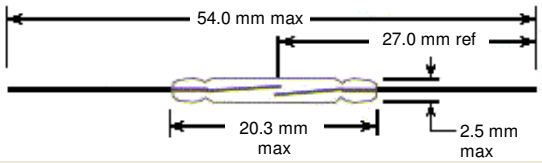
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

PR126

- High voltage high power applications reed switch with rhodium contacts
- Designed to give superior life switching relatively heavy loads

Physical Characteristics:



Glass Diameter (Max.)	2.5 mm
Glass Length (Max.)	20.3 mm
Lead Dia. (Nominal)	0.7 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Rhodium
Power Rating [1]	70VA maximum
Switching Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Carry Current (Max.)	2.5 Amp. DC, 2.5 Amp. AC
Switching Voltage (Max.)	200 VDC, 300 VAC
Breakdown Voltage (Min. @20AT) [2]	750 Volts DC
Contact Resistance [3]	100 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.3 pf

1) The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2) Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3) Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

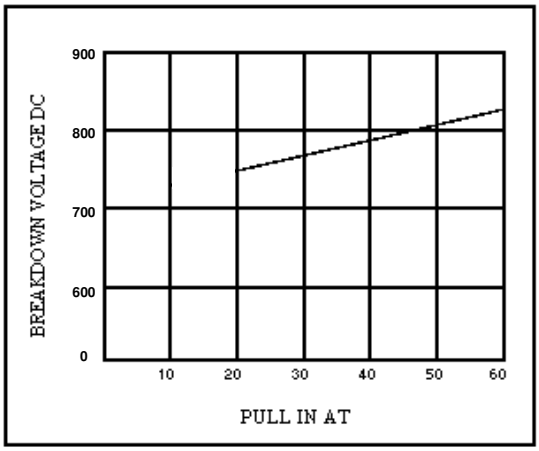
Voltage	24 VDC	100 VDC	125 VAC	240 VDC	240 VAC
Current	10 mA	100 mA	80 mA	40 mA	40 VA lamp load, 5 sec period, 10% duty cycle
Life	5×10^6	1×10^6	1×10^6	2×10^5	5×10^5

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

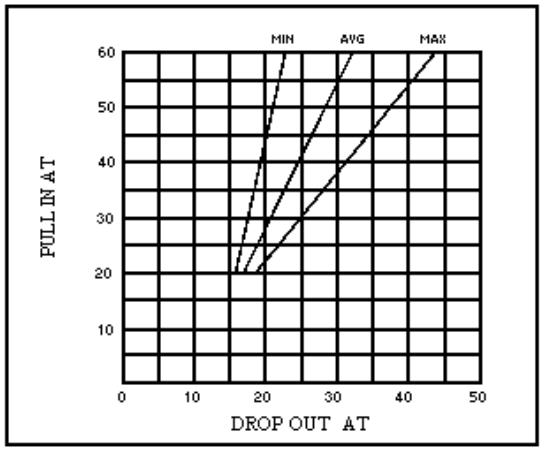
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	20 to 50 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.8 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	30 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

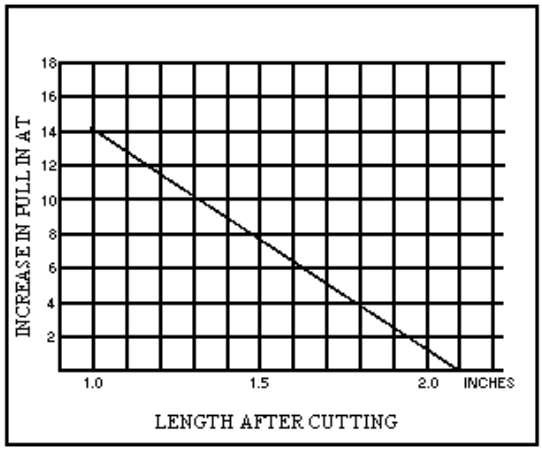
Charts:



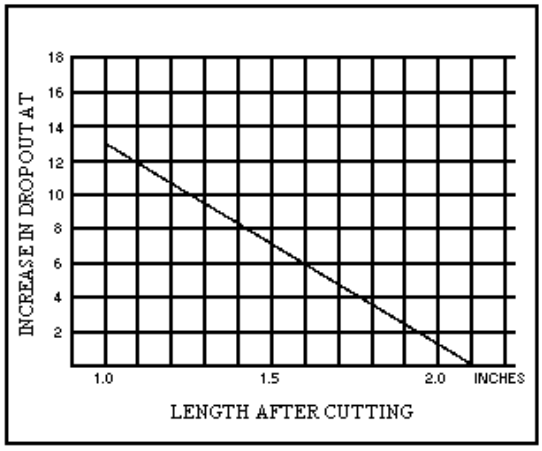
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

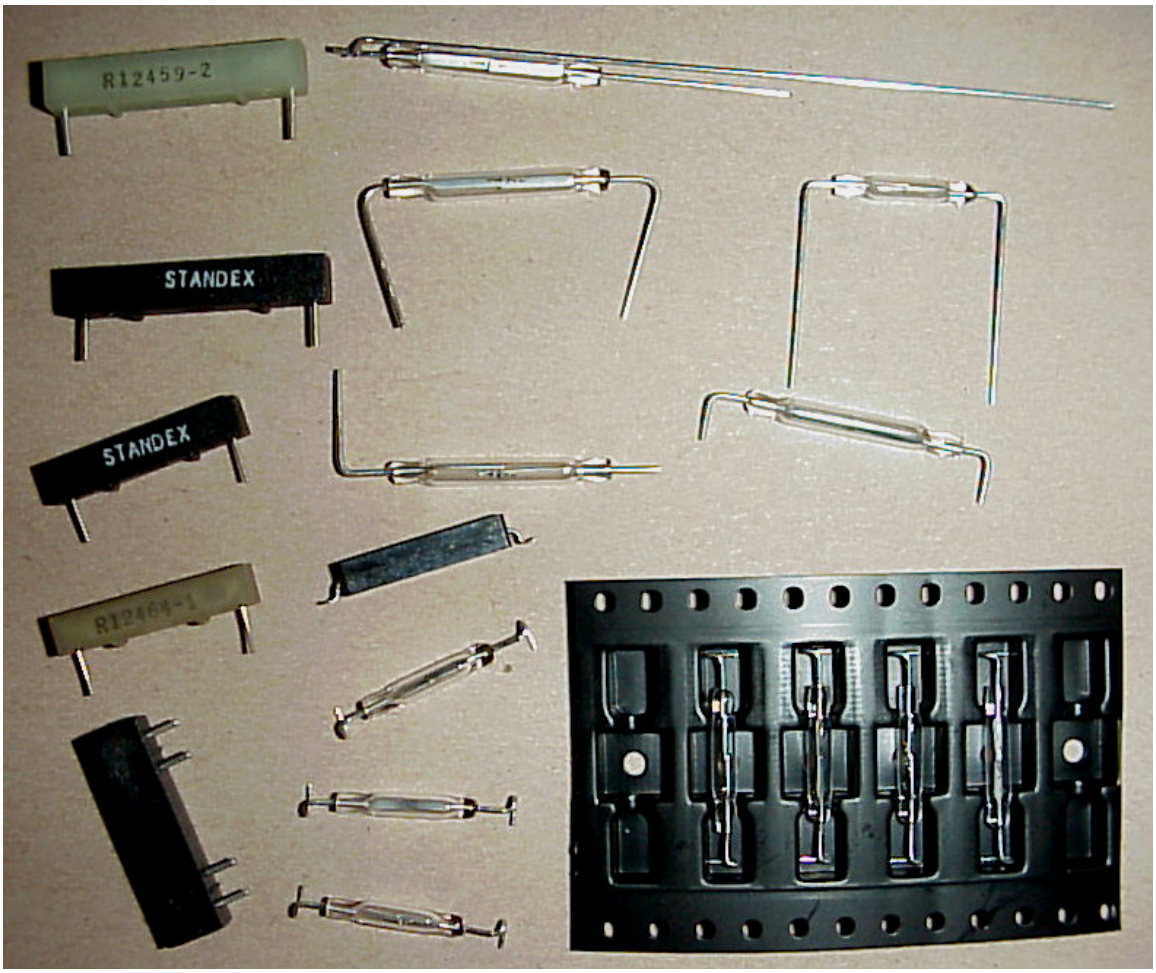


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

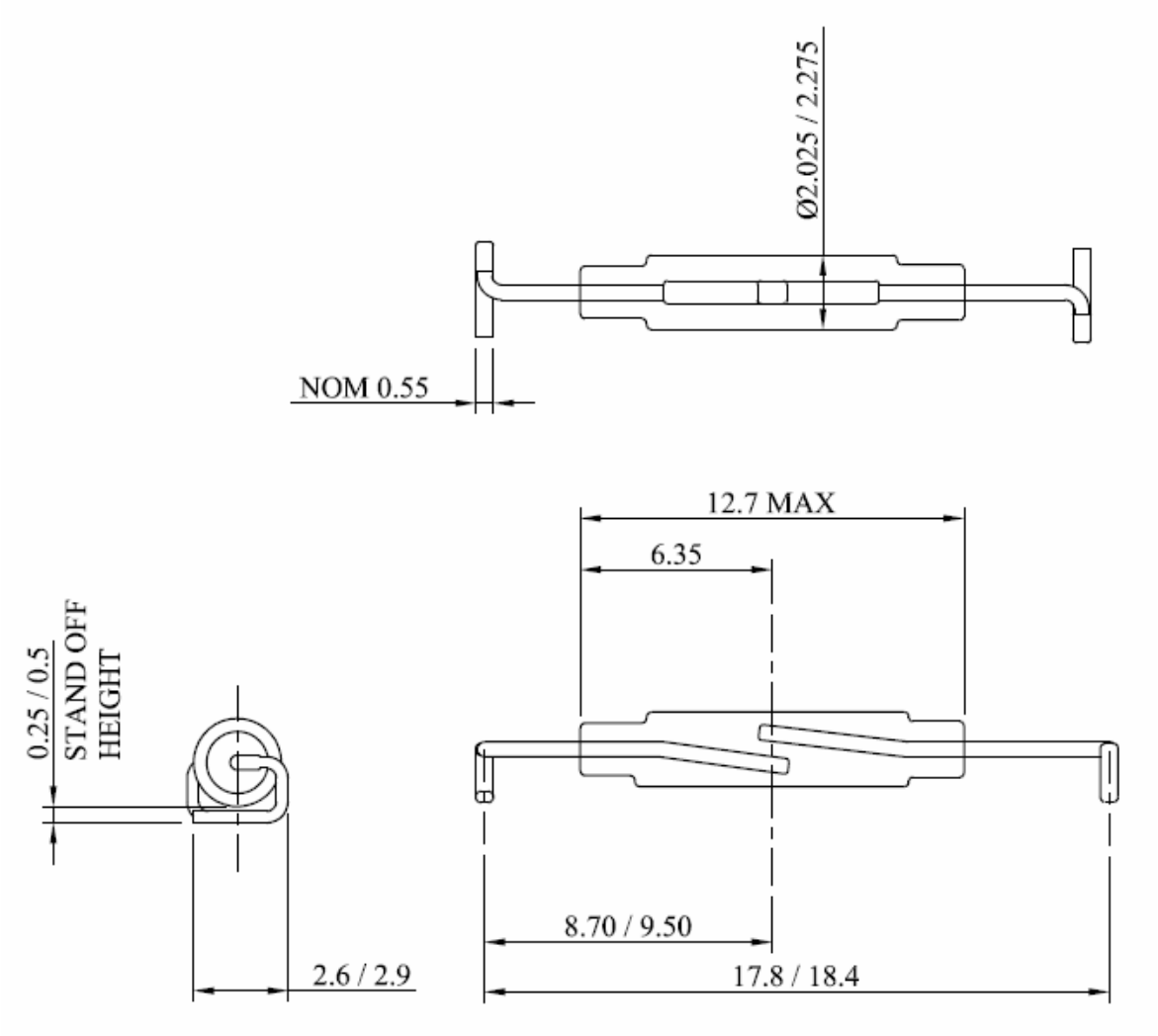
Custom lead forming and customer specific requirements

Standex can accommodate custom lead forming and/or cropping including surface mount options supplied in tape and reel or loose. Surface mount options can be over moulded or a bare reed switch with a custom formed lead, see following drawing for dimensions. We can supply various over moulded switch types and we can weld longer terminals depending on customer specific requirements upon request:

High volume requirements of any of the above are easily accommodated.



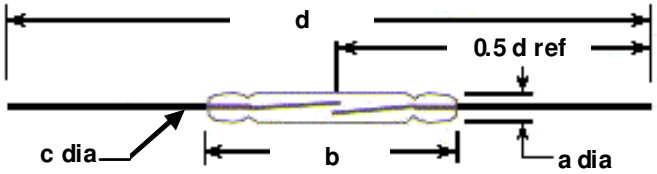
Custom lead forming and encapsulated reed switches



Bare glass surface mount reed switch dimensions using a 501 base switch variant, available in tape and reel or loose packed.

Commercial grade reed switch quick selection chart:

All Standex switches are UL recognised and RoHS compliant.



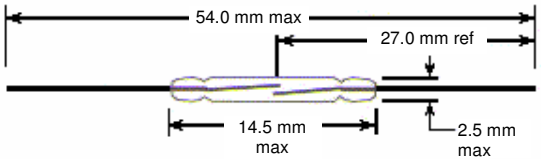
Switch type	TS501	TR501	TS560	TR560	TS100	TR100
Physical Characteristics						
Glass dia (max) - a	2.3mm	2.3mm	2.3mm	2.3mm	2.5mm	2.5mm
Glass length max - b	12.7mm	12.7mm	14.2mm	14.2mm	21.0mm	21.0mm
Lead dia nominal - c	0.45mm	0.45mm	0.6mm	0.6mm	0.7mm	0.7mm
Overall length - d	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm	54.0mm
Electrical Characteristics						
Contact material	Noble metal	Noble metal	Noble metal	Noble metal	Noble metal	Noble metal
Power rating maximum	7 VA	10 VA	8 VA	10 VA	8 VA	10 VA
Switching current maximum	0.3 Amp DC & AC	0.5 Amp DC & AC	0.5 Amp DC & AC	1.0 Amp DC & AC	0.5 Amp DC & AC	1.0 Amp DC & AC
Carry current maximum	0.5 Amp DC & AC	0.8 Amp DC & AC	1.0 Amp DC & AC	1.5 Amp DC & AC	1.0 Amp DC & AC	1.5 Amp DC & AC
Switching voltage maximum	50 VDC 75 VAC	100 VDC 125 VAC	75 VDC 100 VAC	100 VDC 125 VAC	100 VAC 125 VDC	100 VAC 150 VDC
Breakdown volt minimum @20AT	150 Volts DC	200 Volts DC	150 Volts DC	200 Volts DC	200 Volts DC	250 Volts DC
Contact resistance	250 mΩ	200 mΩ	250 mΩ	200 mΩ	250 mΩ	200 mΩ
Insulation resistance minimum	10^9 Ω	10^{12} Ω	10^9 Ω	10^{12} Ω	10^9 Ω	10^{12} Ω
Contact capacitance pf maximum	0.3 pF	0.3 pF	0.2 pF	0.2 pF	0.2 pF	0.2 pF
Operating Characteristics						
Magnetic sensitivity (range - pull in)	10 to 30 AT	7 to 30 AT	10 to 35 AT	10 to 50 AT	10 to 35 AT	10 to 35 AT
Operate time, inc. bounce typical	1.5 msecs	1.0 msecs	1.0 msecs	0.6 msecs	1.0 msecs	0.8 msecs
Release time typical	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs	0.1 msecs
Resonant Frequency	3.2 kHz	3.2 kHz	3.0 kHz	3.0 kHz	2.2 kHz	2.2 kHz
Vibration, 10-2000Hz maximum	30 G	50 G	30 G	50 G	30 G	40 G
Shock, 11-ms. ½ sine wave maximum	100 G	100 G	100 G	100 G	100 G	100 G
Operating temperature	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃	-40℃ to +125℃
Storage temperature	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃	-50℃ to +155℃

 www.StandexElectronics.com

TS501

- Commercial grade reed switch for cost sensitive applications.

Physical Characteristics:



Glass Diameter (Max.)	2.5mm
Glass Length (Max.)	14.5mm
Lead Dia. (Nominal)	0.45mm
Overall Length (Max.)	54.0mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble metal
Power Rating [1]	7 VA maximum
Switching Current (Max.)	0.3 Amp. DC, 0.3 Amp. AC
Carry Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Switching Voltage (Max.)	50 VDC, 75 VAC
Breakdown Voltage (Min. @20AT) [2]	150 Volts DC
Contact Resistance [3]	250 Milliohms
Insulation Resistance (Min.)	10^9 ohms
Contact Capacitance (pf Max.)	0.3 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

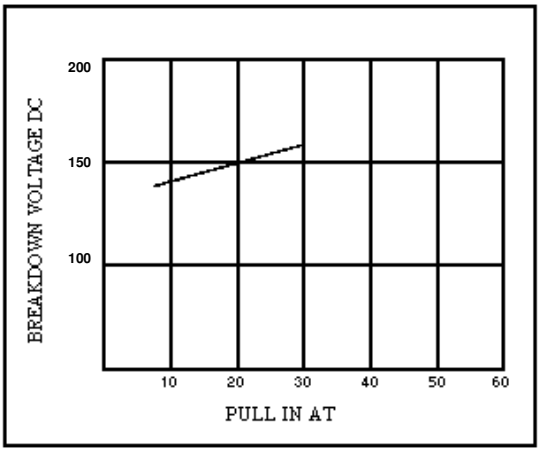
Minimum Switching Life with Standard Test Loads, using 20AT switch:

Voltage	12 VDC	75 VDC
Current	10 mA	100 mA
Life	> 2 million	> 1 million
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.		

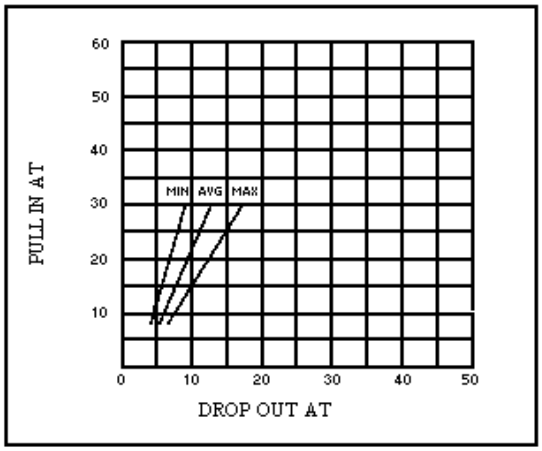
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 30 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	20 to 98% of Pull-In
Operate Time, including bounce (typ.)	1.5 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	30 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

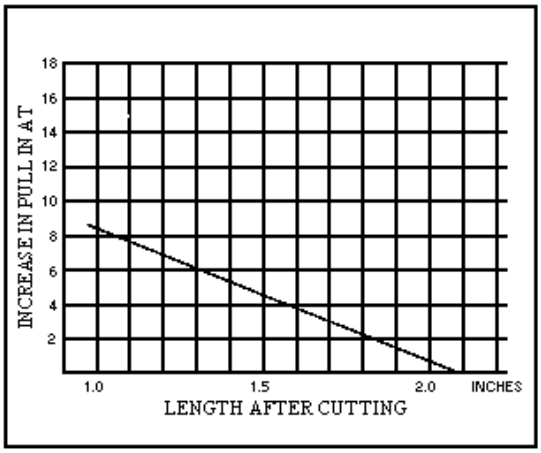
Charts:



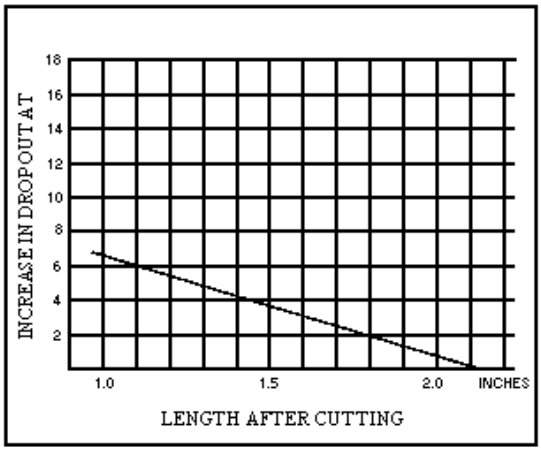
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

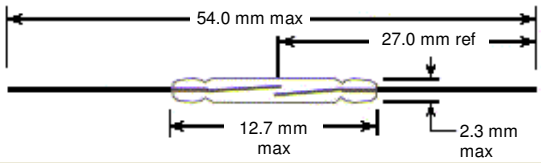
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

TR501

➢ Commercial grade general-purpose miniature reed switch.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	12.7mm
Lead Dia. (Nominal)	0.45 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble metal
Power Rating [1]	10VA maximum
Switching Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Carry Current (Max.)	0.8 Amp. DC, 0.8 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	200 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.3 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

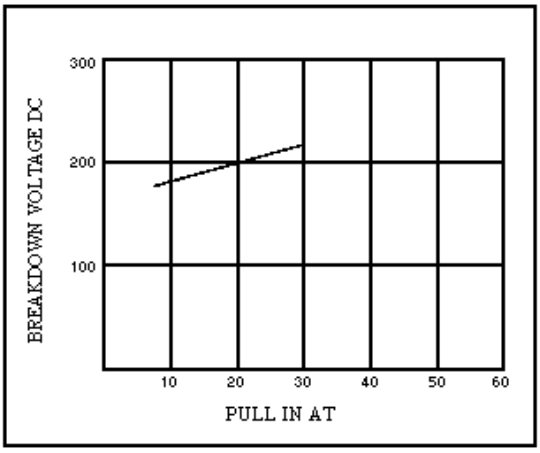
Minimum Switching Life with Standard Test Loads, using 20AT switch;

Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	50×10^6	0.25×10^6	5×10^6	1×10^6	0.25×10^6	0.25×10^6
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.						

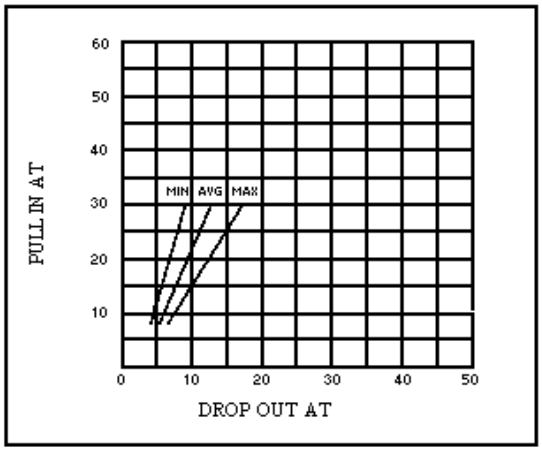
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	7 to 30 Ampere Turns
Magnetic Sensitivity (Range - Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	1.0 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

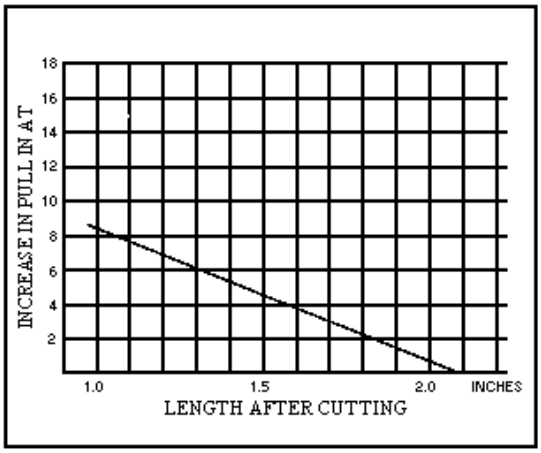
Charts:



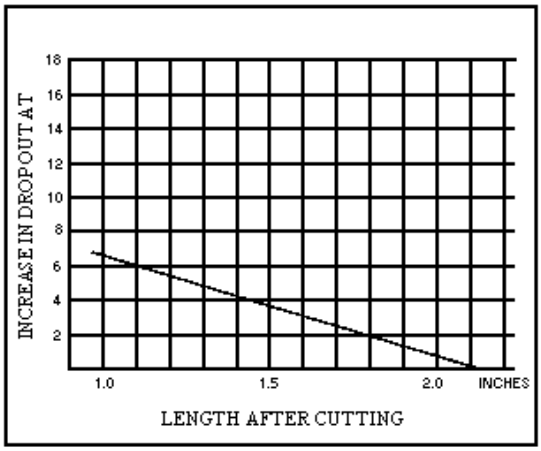
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

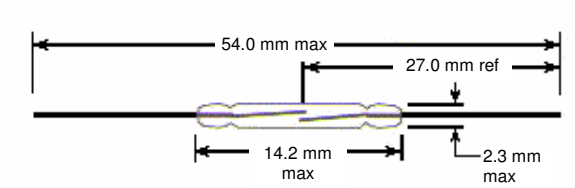


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

TS560

- Commercial grade reed switch for cost sensitive applications

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	14.2mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble Metal
Power Rating [1]	8VA maximum
Switching Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Carry Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Switching Voltage (Max.)	75 VDC, 100 VAC
Breakdown Voltage (Min. @20AT) [2]	150 Volts DC
Contact Resistance [3]	250 Milliohms
Insulation Resistance (Min.)	10^9 ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

Voltage	12 VDC	75 VDC
Current	10 mA	100 mA
Life	> 2 million	> 1 million
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.		

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

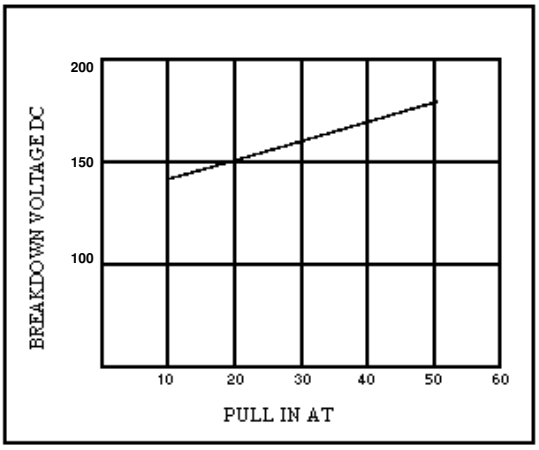
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

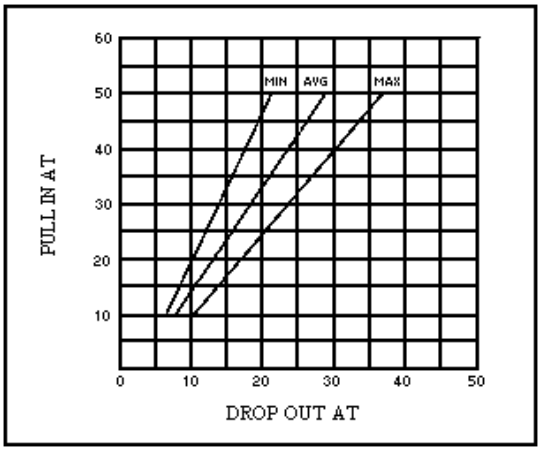
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 35 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	20 to 98% of Pull-In
Operate Time, including bounce (typ.)	1.0 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.0 kHz
Vibration, 10-2,000 Hz (G's Max.)	30 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

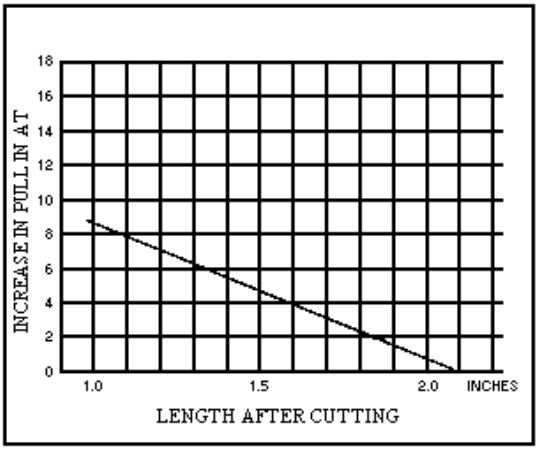
Charts:



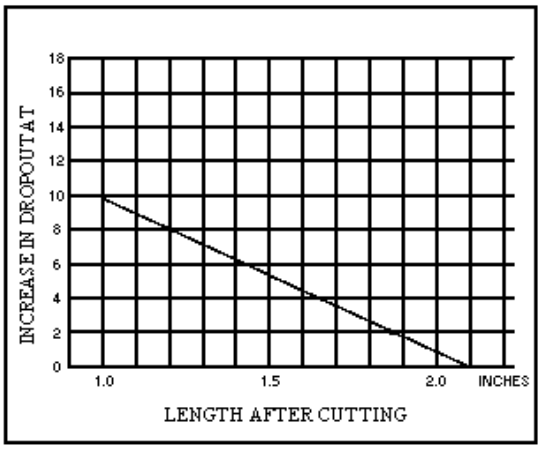
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

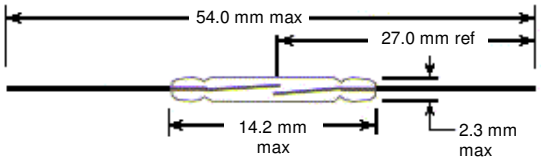


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

TR560

- Commercial grade general-purpose miniature reed switch.

Physical Characteristics:



Glass Diameter (Max.)	2.3mm
Glass Length (Max.)	14.2mm
Lead Dia. (Nominal)	0.6 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble metal
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	200 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches. Standex Electronics will run life tests specific to a customers load upon request.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

Minimum Switching Life with Standard Test Loads, using 20AT switch:

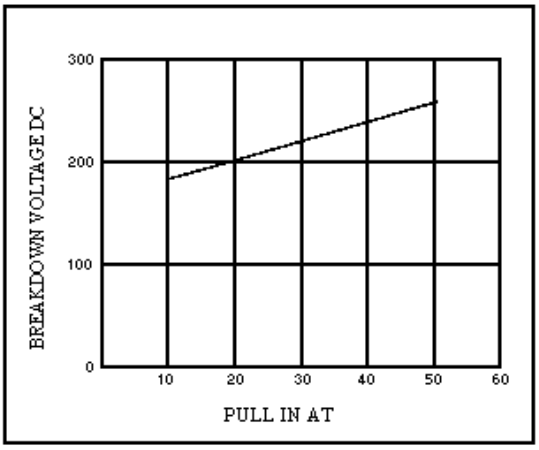
Voltage	5 VDC	10 VDC	12 VDC	24 VDC	100 VDC	125 VAC
Current	2 mA	1 A	10 mA	10 mA	100 mA	80 mA
Life	50×10^6	0.5×10^6	50×10^6	2.5×10^6	0.5×10^6	0.5×10^6

Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.

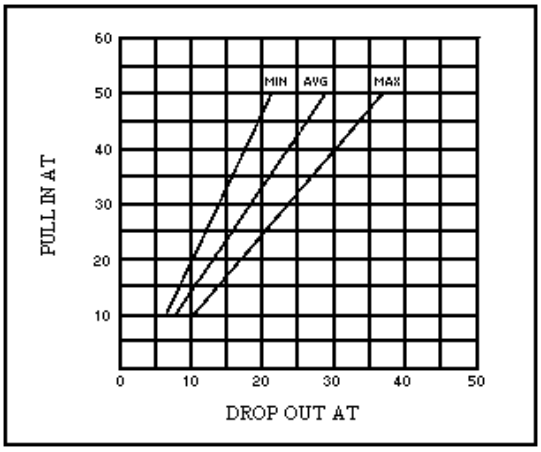
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 50 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	(See chart below)
Operate Time, including bounce (typ.)	0.6 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	3.0 kHz
Vibration, 10-2,000 Hz (G's Max.)	50 G
Shock, 11-ms. ½ Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

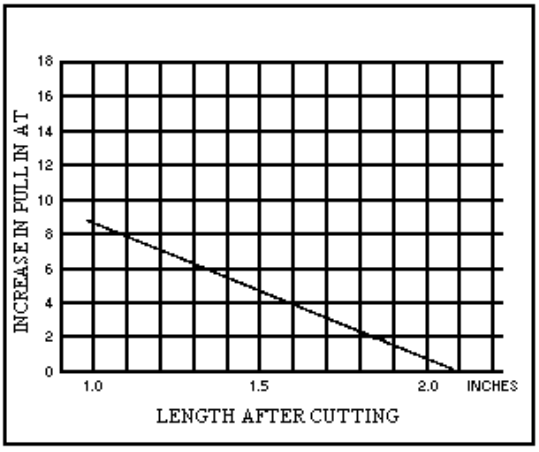
Charts:



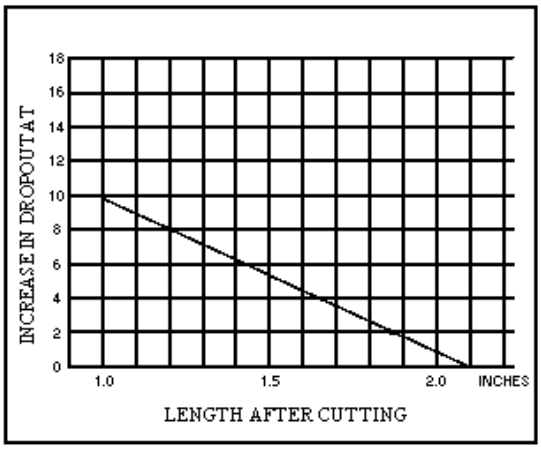
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting

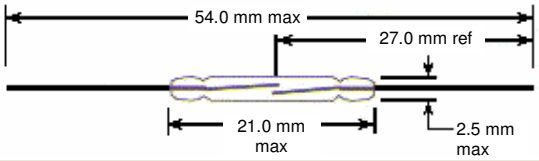


Change In Drop-Out Ampere Turns
After Switch Lead Cutting

TS100

- Commercial grade reed switch for cost sensitive applications.

Physical Characteristics:



Glass Diameter (Max.)	2.5mm
Glass Length (Max.)	21.0mm
Lead Dia. (Nominal)	0.7 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble Metal
Power Rating [1]	8VA maximum
Switching Current (Max.)	0.5 Amp. DC, 0.5 Amp. AC
Carry Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Switching Voltage (Max.)	100 VDC, 125 VAC
Breakdown Voltage (Min. @20AT) [2]	200 Volts DC
Contact Resistance [3]	250 Milliohms
Insulation Resistance (Min.)	10^9 ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

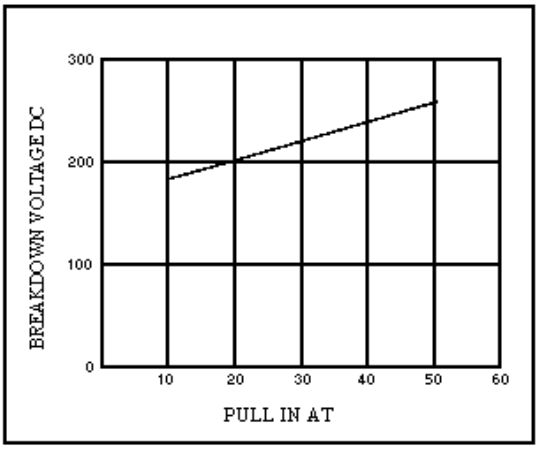
Minimum Switching Life with Standard Test Loads, using 20AT switch:

Voltage	12 VDC	100 VDC
Current	10 mA	100 mA
Life	> 2 million	> 1 million
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.		

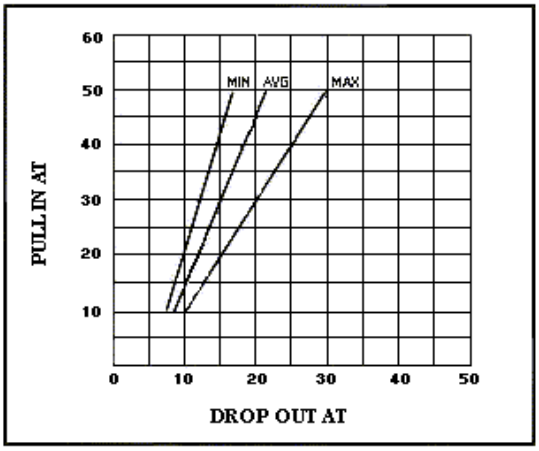
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 35 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	20 to 98% of Pull In
Operate Time, including bounce (typ.)	1.0 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	30 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

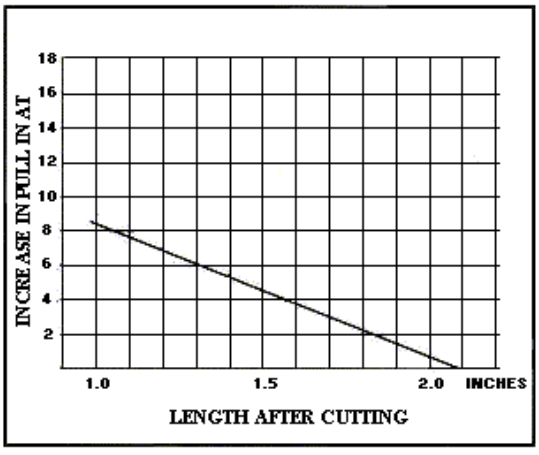
Charts:



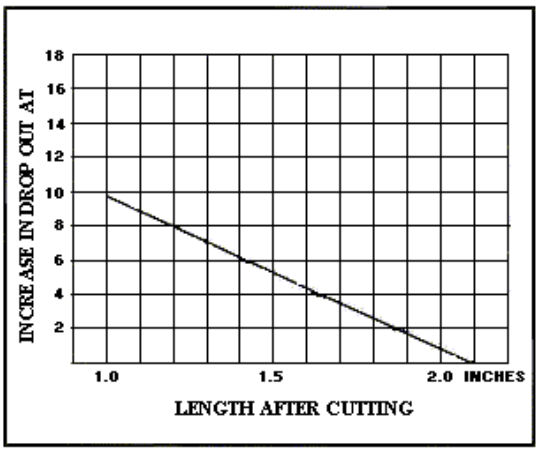
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

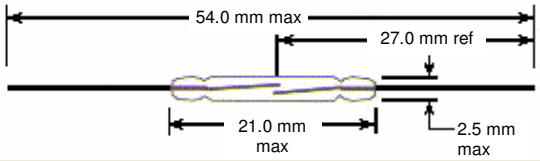
Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

TR100

- Commercial grade general-purpose miniature reed switch.

Physical Characteristics:



Glass Diameter (Max.)	2.5mm
Glass Length (Max.)	21.0mm
Lead Dia. (Nominal)	0.7 mm
Overall Length (Max.)	54.0 mm

Electrical Characteristics:

Contact Arrangement	Form A (SPST), Centre Gap
Contact Material	Noble Metal
Power Rating [1]	10VA maximum
Switching Current (Max.)	1.0 Amp. DC, 1.0 Amp. AC
Carry Current (Max.)	1.5 Amp. DC, 1.5 Amp. AC
Switching Voltage (Max.)	100 VDC, 150 VAC
Breakdown Voltage (Min. @20AT) [2]	250 Volts DC
Contact Resistance [3]	200 Milliohms
Insulation Resistance (Min.)	10^{12} ohms
Contact Capacitance (pf Max.)	0.2 pf

1. The specification for VA rating may sometimes be exceeded for less sensitive (higher AT) switches, and should be decreased for very sensitive (lower AT) switches.
2. Breakdown voltage is measured in the presence of an ionising source. Switch leakage current is limited to 100 microamperes.
3. Contact resistance measurements are made at 10ma from a 1-volt source, with 50% overdrive, using a 4-wire (Kelvin) measuring system. Contact probes are located on 43 mm centres.

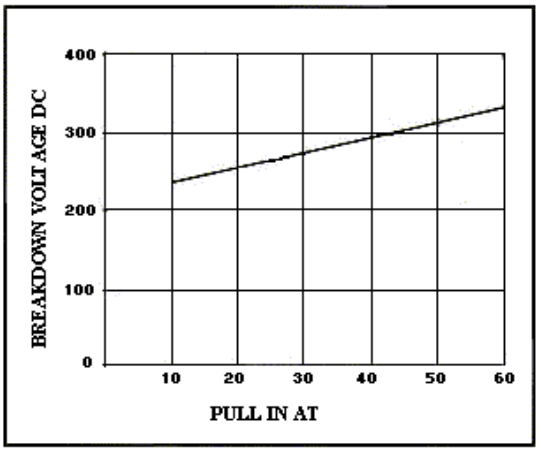
Minimum Switching Life with Standard Test Loads, using 20AT switch:

Voltage	12 VDC	100 VDC
Current	10 mA	100 mA
Life	> 2 million	> 1 million
Note: End of life is defined as contact resistance exceeding one ohm and/or failure to operate.		

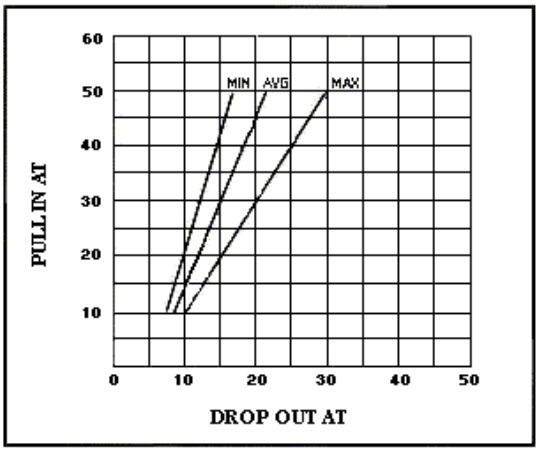
Operating Characteristics:

Magnetic Sensitivity (Range - Pull In)	10 to 35 Ampere Turns
Magnetic Sensitivity (Range – Drop Out)	20 to 98% of Pull In
Operate Time, including bounce (typ.)	0.8 Milliseconds
Release Time (typ.)	0.1 Milliseconds
Resonant Frequency (typ.)	2.2 kHz
Vibration, 10-2,000 Hz (G's Max.)	40 G
Shock, 11-ms. 1/2 Sine wave (G's Max.)	100 G
Operating Temperature	-40°C to + 125°C
Storage Temperature	-50°C to + 155°C

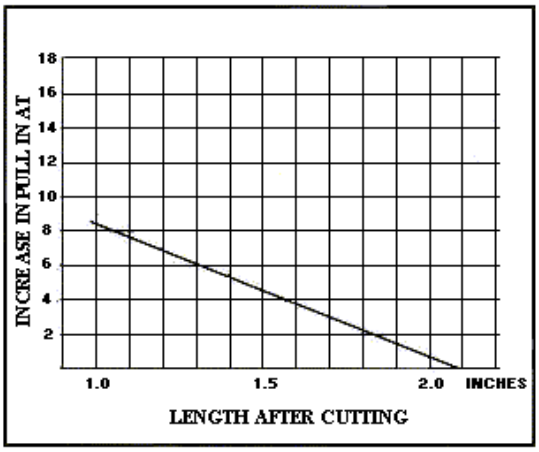
Charts:



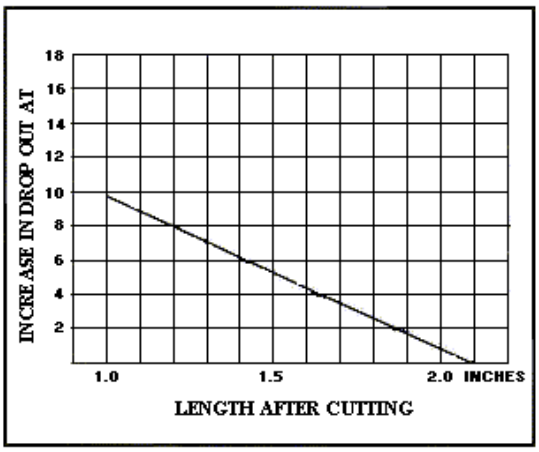
Breakdown Voltage Plotted
Against Pull-In Ampere Turns



Pull-In Ampere Turns Plotted
Against Drop-Out Ampere Turns



Change In Pull-In Ampere Turns
After Switch Lead Cutting



Change In Drop-Out Ampere Turns
After Switch Lead Cutting

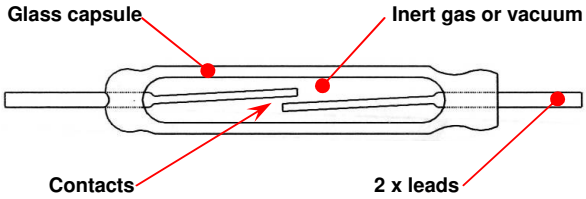
Cincinnati, Ohio USA
Phone +513 871 3777
Fax +513 871 3779

Tonbridge, United Kingdom
Phone +44 1732 77 10 23
Fax +44 1732 77 01 22

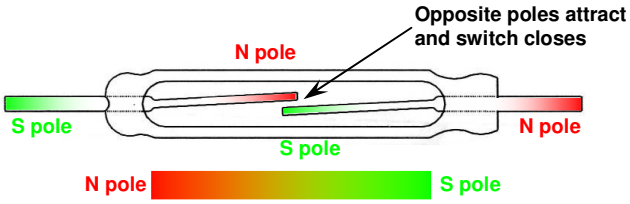
Tianjin, China
Tel: +86 22 86 99 68 81~5
Fax: +86 22 86 99 68 86

Reed switch structure and operation:

The form A reed switch comprises of two ferromagnetic reeds placed with a gap in-between and hermetically sealed in a glass tube. The glass tube is filled with an inert gas, (nitrogen), or a vacuum to prevent the oxidation of the contacts. The surfaces of the reed contacts are plated with metals from the platinum group such as rhodium, ruthenium, palladium or iridium either by electroplating or sputtering.



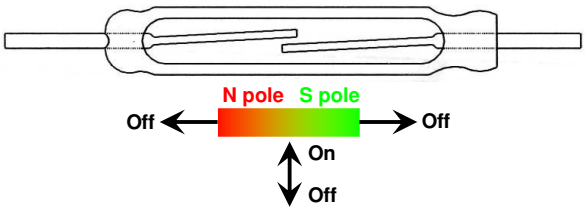
The reed switch is operated by the magnetic field of an energised coil or a permanent magnet which induces north (N) and south (S) poles on the reeds. The reed contacts are closed by this magnetic attractive force. When the magnetic field is removed, the reed elasticity causes the contacts to open the circuit



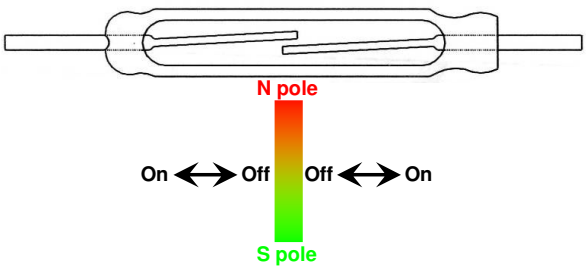
Reed switch actuation:

In all systems, magnet and reed switch must be brought to within a specific proximity of each other. This distance will vary in accordance with the sensitivity of the reed switch, the amount of lead that is cropped and the strength of the magnet. As the lead is cut the switch sensitivity decreases as there is less ferro-magnetic material to attract the magnet flux. When the magnet is close enough, the normally open contacts will close, when the magnet is removed the contacts will open. The relative distance for operation is always less than that for a release. Examples of proximity motion switching are shown below:

Provides only one closure with maximum magnet travel:

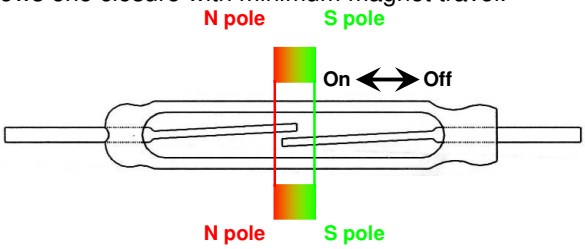


Provides as many as three closures with maximum magnet travel:

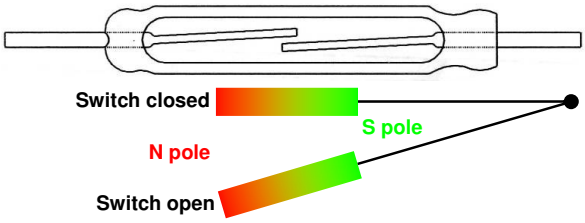


 www.StandexElectronics.com

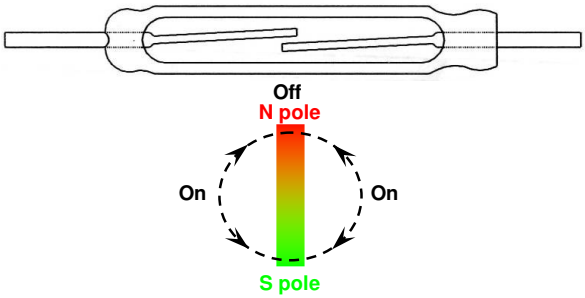
Ring magnet actuation allows one closure with minimum magnet travel.



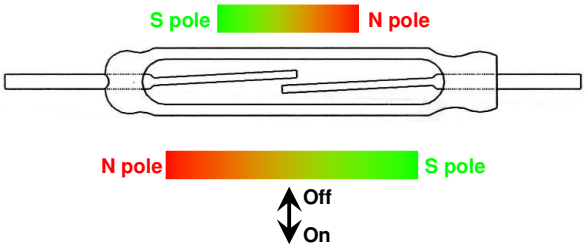
Large angular magnet travel necessarv to achieve one switch closure.



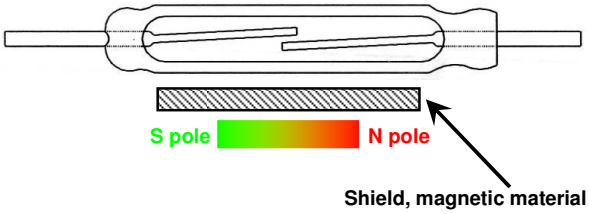
Rotating the magnet or reed switch, normal to their axes, reverses magnetic polarity resulting in two closures per revolution. When these axes are parallel, the switch closes. When the axes are perpendicular, the switch opens. Although the poles reverse, they still induce the opposite poles that close the reed switch.



A biasing effect is produced by placing a stationary magnet near the reed switch, to keep it normally closed. The approach of another magnet with reversed polarity cancels the magnetic lines of force, and the reed switch opens. Care should be taken not to bring the actuating magnet too close to the biased reed switch, as it could close again. The same effect can be achieved using only two leads of a form C switch.



In this type of actuation, magnet and reed switch are permanently fixed in such a position that the reed switch contacts are closed. A piece of ferromagnetic material is passed between the magnet and the reed switch, to cause drop out. The magnetic field is shunted, eliminating the attraction between the reeds. When the shield is removed, the reed switch closes.



Typical applications for reed switches are:

- Proximity sensors.
- General fluid level sensors including the following automotive specific applications:
  - Brake fluid level.
  - Windscreen washer fluid level.
  - Engine coolant fluid level.
- Flow sensors.
- Reed relays.
- Pedometers.
- Bicycle computers.
- Exercise machines.
- Gas, water and electricity meters.
- Rice cookers.
- Security, (door and window contacts).
- Electric toothbrushes.
- Humidifiers.

Glossary:

Ampere Turn (AT):
The product of the number of turns of wire in an electromagnetic coil winding and the current in amperes passing through the winding. This is a direct measure of the magnetic field generated, and of a reed contact's sensitivity.

Bounce:
Intermittent opening and closing of closed contacts or closing and opening of open contacts, usually implying the motion resulting from contact impact.

Bounce Time (in milliseconds):
Time taken for a bounce.

Breakdown Voltage:
The voltage which may be applied between insulated parts of a reed contact without damage, arcing, breakdown, or causing excessive leakage.

Carry Current (in Amps):
The maximum current that can be applied to an already closed contact.

Contact Rating (in Watts):
The maximum power, a reed contact can switch.

Contact Resistance (CR):
The electrical resistance of closed contacts.

Curie temperature:
Temperature at which a magnet is totally demagnetized.

Differential:
The difference between operate AT and release AT often expressed as %.

Drop Out (DO):
See Release AT.

Form A:
A normally open type of reed contact.

Form B:
A normally closed type of reed contact.

Form C:
A change-over type of reed contact where break happens before make.

Form D:
A change-over type of reed contact where make happens before break.

Form E:
A latching, or bi-stable type of contact, which stays in the last energised state, without the need for maintaining the field.

Hysteresis:
See differential.

Insulation Resistance:
The electrical resistance measured between insulated terminals.

Omni-polar:
A type of device that will function with either pole of a magnet.

Operate AT (OAT):
The measured value, in AT, at which a reed contact closes. This is valid for the closing operation of form A, B, and E type reed contacts and the change over operation from the normally closed contact to the normally open contact for form C and D type reed contacts.

Operating Temperature:
The temperature range over which the reed contact will meet all specified operating parameters.

Operate Time:
The time interval from coil energisation, to the closing of the reed contact. Where not otherwise stated, the functioning time of the reed contact in question is taken as its initial functioning time, not including contact bounce.

Over-drive (in AT):
The AT given above OAT, before measurement of CR.

Pull In (PI):
See Operate AT.

Release AT (RAT):
The measured value, in AT, at which a reed contact opens. This is valid for the opening of form A, B, and E type reed contacts, and the change over from the closed normally open contact to the open normally closed contact for form C and D type contacts.

Release Time:
The time interval from coil de-energisation to the opening or change over of the reed contact. Where not otherwise stated, the functioning time of the reed contact in question is taken as its initial functioning time, not including contact bounce.

Resonance Frequency (in Hz):
The frequency where a reed contact will chatter, or starts sympathetic vibration.

Saturation:
Magnetic saturation exists when an increase of magnetisation applied to a reed contact does not increase the magnetic flux.

Switching Voltage (in Volts):
The maximum voltage a reed contact can switch.

Switching Current (in Amps):
The maximum current a reed contact can switch.

Standex Electronics

An Engineered Solution Provider
and Manufacturer of Custom
Electro-Magnetic Components
and Sub-Assemblies

Fluid Level, Proximity, Motion and Current Sensors

Leading the way in Magnetic, Inductive, Conductive and Current Sense Technologies.

www.standexelectronics.com • info@standexelectronics.com • +1.866.STANDEX (+1.866.782.6339)

Custom Electronics for a Shrinking World

Before consumer, medical and industrial products can get smaller and smarter – the components within them must be reduced in size. Standex Electronics is leading the way by reducing the footprint of custom electronic components while increasing their capabilities. Our GR150 magnetic reed switch is the smallest in the world – yet it retains very tight performance characteristics. In fact, we manufacture the widest range of magnetic Reed Switches with the tightest sensitivity parameters. In addition to sensors, we also manufacture custom transformers, power supplies, chokes, antenna coils and other electronic components used in many applications and industries.

Magnetic Sensor Technology

- Used in magnetic based proximity, motion and fluid level sensors
- Hall effect and variable reluctance technologies for custom sensor designs available
- Proven in automotive, domestic appliances, process control equipment, telecommunications, office equipment, security systems, construction equipment and more
- Fluid level sensors monitor the level of fuel, windshield washer fluid, coolant, brake fluid, oil, DI water, HVAC condensate, boiling water and viscous food processing fluids

Conductive Sensing Technology

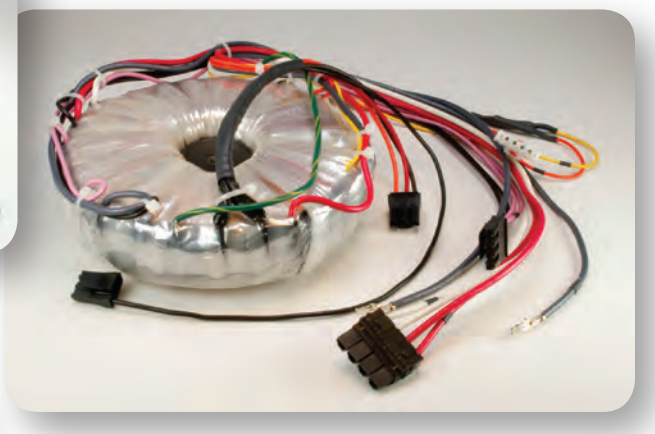
- Basic sensors to "turn key" sensors with switched output engineered to meet specific customer requirements
- Patented "bias ring" eliminates the issues of sensitivity changes which can occur due to buildup of conductive materials near the sensors
- Applications include soap levels in clothes or dish washers, sensing food syrup levels in dispensing equipment, sensing basement flood water or the backup of fixed or mobile septic systems

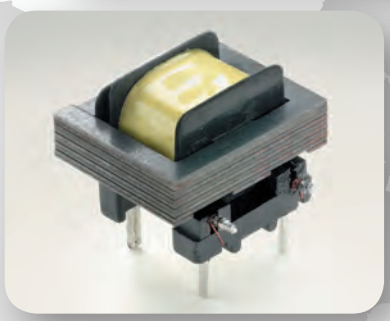
Inductive Sensing Technology

- Detect metallic objects without touching them – used for proximity sensing applications such as speed sensors
- Each project designed to exacting customer standards including the ability to withstand harsh environments
- Proven in appliance safety applications with thousands of cycles, and extreme "under hood" automotive applications

Current Sensing Technology

- Standard products like CSB series plug-in solutions for P.C. board mounting to custom designs to address individual customer requirement
- Can be configured for extreme conditions and hazards including temperature, radiation, humidity and more
- Proven in consumer, commercial and industrial applications like food service equipment, circuit breakers, home and commercial appliances, and more



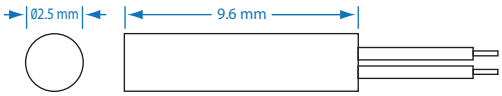


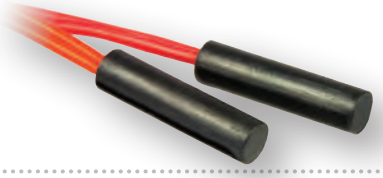
Ultra Miniature Proximity and Motion Sensors - Magnetic Technology

A world leader in the manufacturing of magnetic Reed Switches, Standex offers the widest range of sizes with the tightest sensitivity parameters – including the world's smallest magnetic Reed Switch. This proven technology forms the basis of our broad line of magnetic based proximity and motion sensors. Our products are used in medical devices such as pacemakers and hearing aids, as well as automotive, domestic appliances, process control equipment, telecommunications, office equipment, security systems, construction equipment and more.

R12575 Series

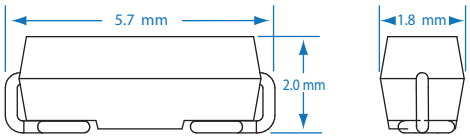
- Proximity sensor with a 9.6mm X 2.5mm body
- Switch rated 0.1A/50V/3VA max
- Magnetic Sensitivity from 3 to 15AT
- Form A (normally open) operation

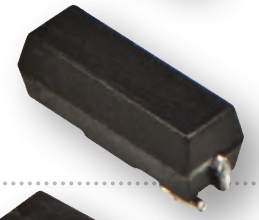




SR4MJ Series

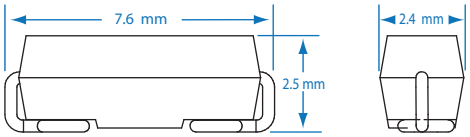
- SMT Proximity Sensor with 5.13mm length body
- Switch rated 0.1A/50V/3VA max
- Magnetic Sensitivity from 3 to 15AT
- Form A (normally open) operation





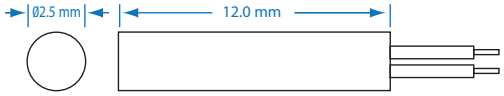
SR4J Series

- SMT Proximity Sensor with 6.8mm length body
- Switch rated 0.1A/50V/3VA max
- Magnetic Sensitivity from 3 to 15AT
- Form A (normally open) operation



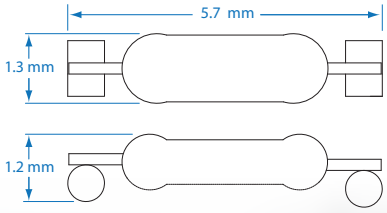
R12584 Series

- Proximity sensor with 12.0mm X 2.5mm body
- Hi-Rel - with extended operating & storage temperature ratings
- Magnetic Sensitivity from 3 to 15AT
- Form A (normally open) operation



GS30745 Series

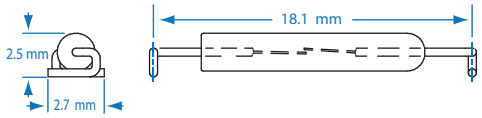
- Custom Proximity sensor with 5.8mm body length
- Ultra-sensitive 2/4 AT
- Design includes magnetic flux concentrators
- Conformally coated
- Form A (normally open) operation



Miniature Proximity and Motion Sensors - Magnetic Technology

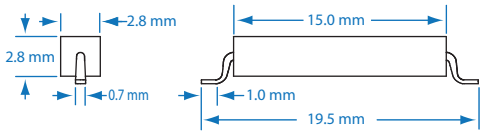
SM501 Series

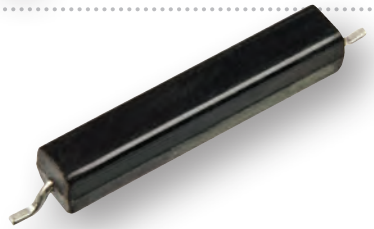
- SMT Reed Switch
- Switch rated 0.5A/100V/10VA max
- Magnetic sensitivity from 7 to 30AT
- Form A (normally open) operation
- Supplied taped and reeled



R12476 Series

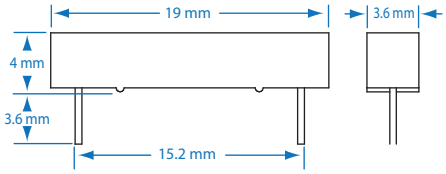
- Insert molded SMT Reed Switch
- Switch rated 0.5A/100V/10VA max
- Magnetic sensitivity from 7 to 30AT
- Form A (normally open) operation
- Supplied taped and reeled





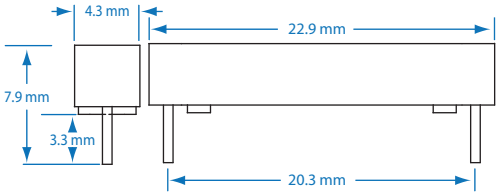
R12464 Series

- Insert molded PCB Mounted Reed Switch
- Switch rated 0.5A/100V/10VA max
- Magnetic sensitivity from 10 to 30AT
- Form A (normally open) operation



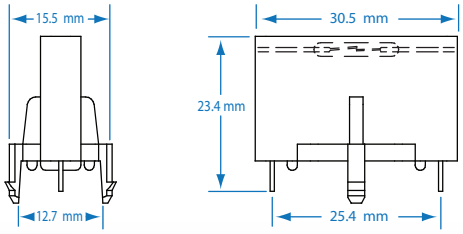
R12459 Series

- Insert molded PCB Mounted Reed Switch
- Switch rated 0.5A/100V/10VA max
- Magnetic sensitivity from 10 to 30AT
- Form A (normally open) operation



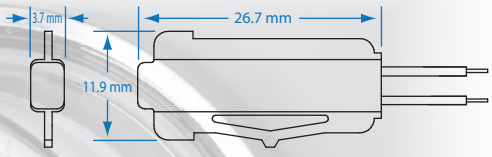
R11808 Series

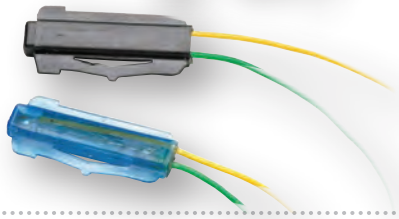
- PCB mounted Reed Switch
- Design lifts switch off PCB surface
- Switch rated 1.5A/200V/50VA max
- Magnetic sensitivity from 10 to 30AT
- Form A (normally open) operation



R12303 Series

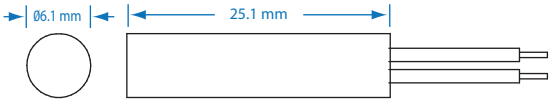
- Miniature snap lock mounting
- Switch rated 0.5A/100V/10VA max
- Magnetic sensitivity from 10 to 30AT
- Form A (normally open) operation
- Wire length as required



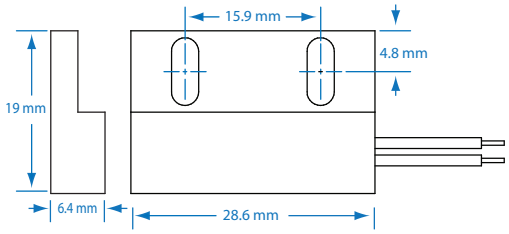


Miniature Proximity and Motion Sensors - Magnetic Technology

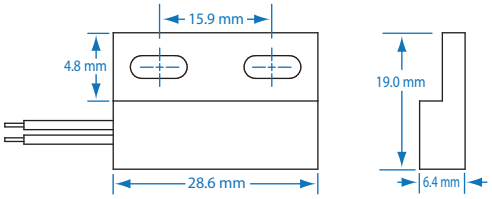
R12457 Series
- Cylinder design
- Switch rated 0.5A/100V/10VA max
- Switch sensitivity 10 to 30 AT
- Form A (normally open) operation
- Wire length as required

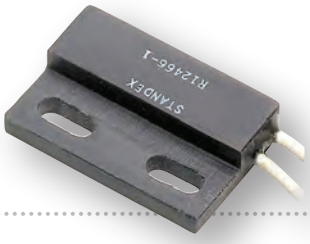


R12465 Series
- General purpose proximity senor
- Switch rated 0.5A/100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Operates with B124172 and B12473
- Maximum operate distance of 0.6"

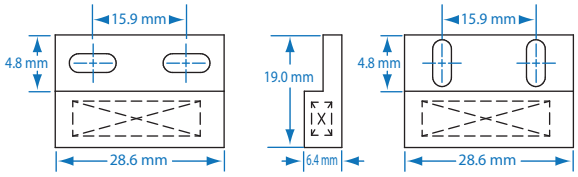


R12466 Series
- General purpose proximity senor
- Switch rated 0.5A/100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Operates with B124172 and B12473
- Maximum operate distance of 0.6"

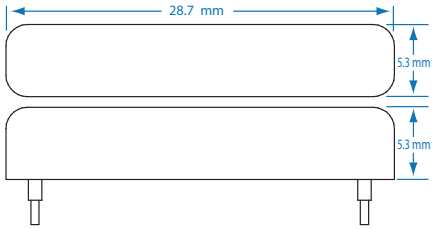




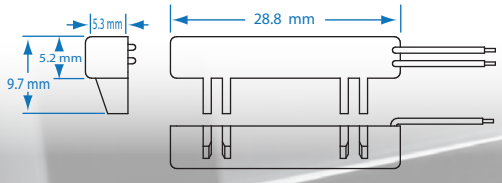
B12472 and B12473 Actuators
- Operate with P/N's R12465 and R12466
- B12472 provides adjustment perpendicular to length axis
- B12473 provides adjustment along length axis



R11883 Series
- Miniature proximity sensor
- Switch rated 0.5A/100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Wire length as required

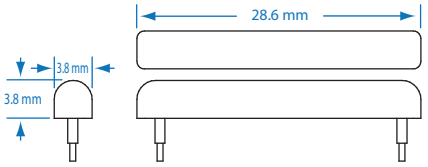


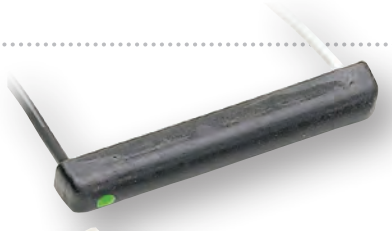
R11883A Series
- Miniature proximity sensor
- Switch rated 0.5A/100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Wire length as required



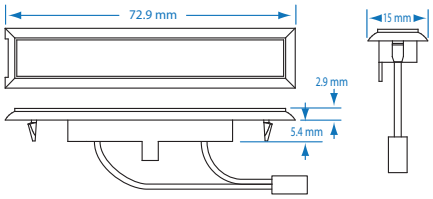
Proximity and Motion Sensors - Magnetic Technology

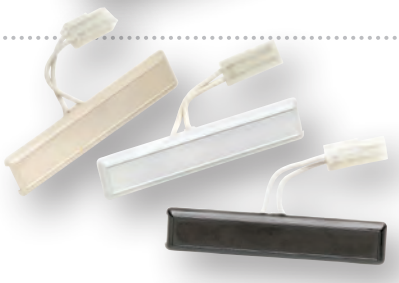
R12075 Series
- Miniature proximity sensor
- Switch rated 0.5A /100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Wire length as required



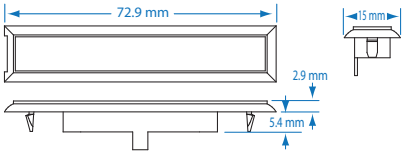


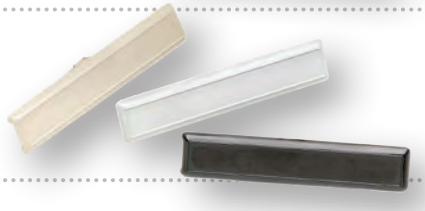
R12391 Series
- Flush mount proximity sensor
- Snap lock mounting
- Switch rated 0.5A/100V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Wire length as required



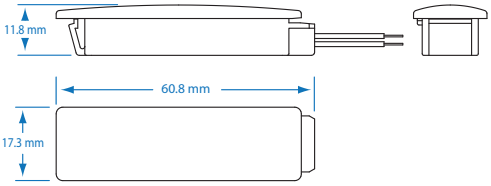


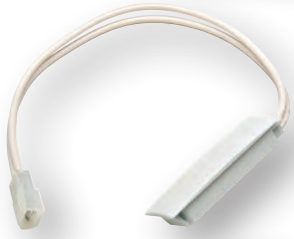
B12392 Series Actuator
- Flush mount/ snap lock mounting
- Operates with R12391 series



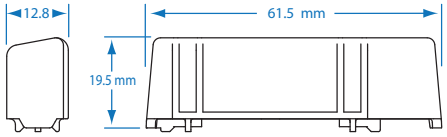


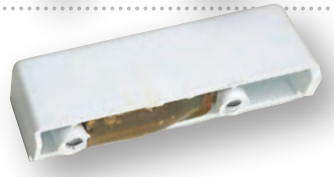
R12444 Series
- Flush mount proximity sensor
- Snap lock mounting
- Switch rated 1.5A /200V/50VA max
- Switch sensitivity 20 to 40 AT
- Form A (normally open) operation
- Wire length and termination as required
- Available with 300V/70VA switch



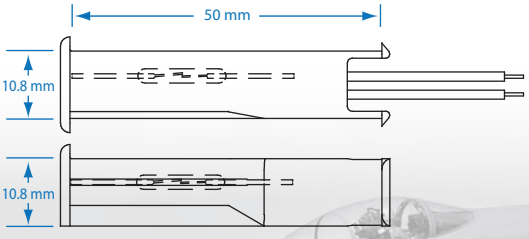


B12427 Series Actuator
- Operates with R12444 proximity sensor
- Screw mounting
- Ceramic 8 magnet





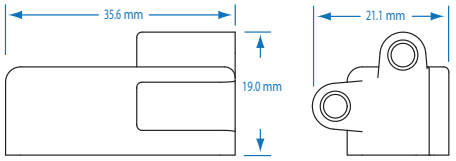
R12454 Series
- Custom proximity sensor
- Snap locking feature
- Switch rated 1.5A/200V/50VA max
- Switch sensitivity 20 to 40 AT
- Form A (normally open) operation
- Wire length and termination as required
- Available with 300V/70VA switch



Proximity and Motion Sensors - Magnetic Technology

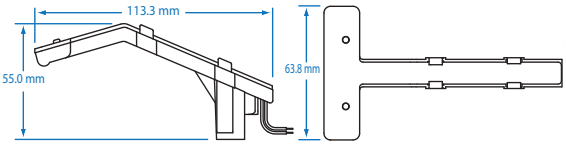
B12455 Series Actuator

- Operates with R12454 proximity sensor
- Screw down mounting



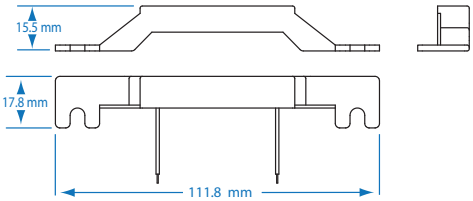
R12199 Series

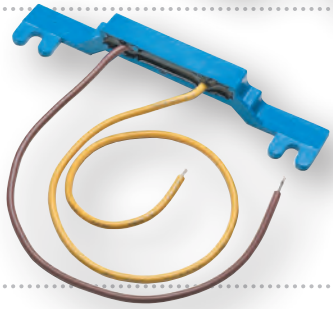
- Custom appliance rotation sensor
- Switch rated 0.5A/200V/10VA max
- Form A (normally open) operation
- Switch sensitivity 7 to 20 AT
- Maximum operating distance 2"
- Wire length and termination as required



R11737 Series

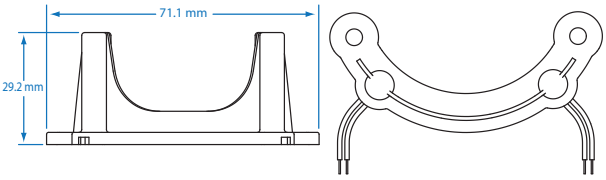
- Appliance lamp switch assembly
- Switch rated 1.5A/200V/50VA max
- Form B (normally closed) operation
- Switch sensitivity 20 to 40 AT
- Wire length and termination as required
- Available with 300V/70VA switch

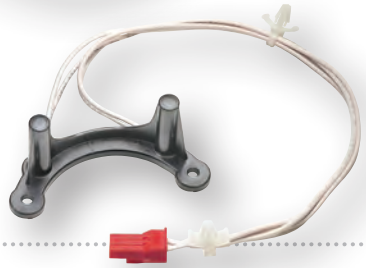




R12355 Series

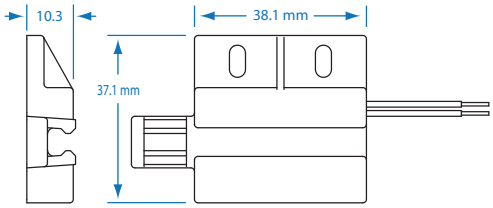
- Two switch tachometer
- Switch rated 0.5A/200V/10VA max
- Form A (normally open) operation
- Switch sensitivity 10 to 30 AT
- Wire length and termination as required





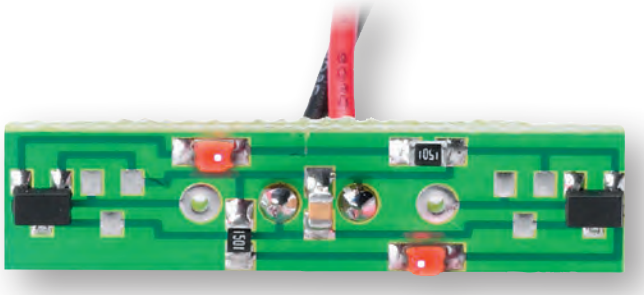
R12320 Series

- Safety switch
- Switch rated 1.5A/200V/50VA max
- Form B (normally closed) operation
- Switch sensitivity 20 to 40 AT
- Wire length and termination as required
- Available with 300V/70VA switch



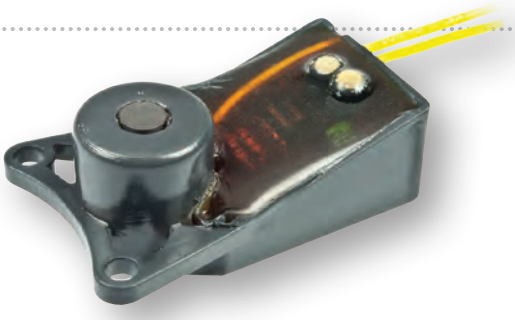
Proximity and Motion Sensors - Custom Magnetic Technology

Custom Hall Effect Position Sensors
- Multiple Switching Points
- Low profile
- Wide range of switching options
- On-board signal conditioning available
- Local LED indication available



Proximity and Motion Sensors - Inductive Technology

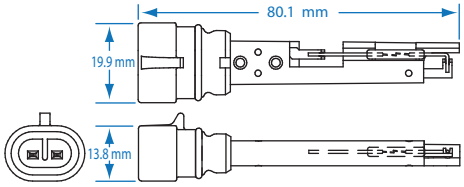
Custom Inductive Speed Sensors
- Designed for harsh environments
- Ideal for appliance safety applications
- Wide range of switching options
- On-board signal conditioning available



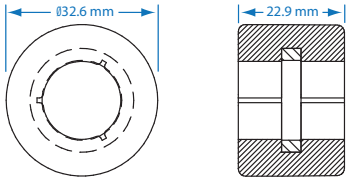
Custom Inductive Proximity Sensors
- Includes winding designed to specific project parameters
- Circuit board to gather and relay information to the onboard computer and then initiate a particular fault sequence for the "check engine light" diagnostics
- Packaged in custom molding to include a connector
- Fits within the tight space constraints and function in a harsh "under-hood" environment

Fluid Level Sensors - Magnetic Technology

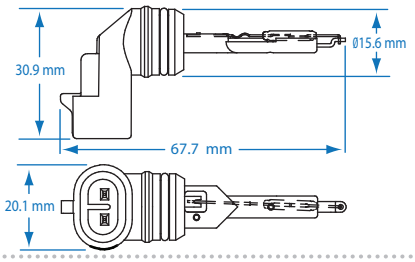
R12468 Series
- External sensor for injection molded bottles
- Form A or Form B operation with separate float
- Bottom mount with O-ring seal
- Switch rated 1.5A /200V/50VA max
- Mates with Packard P/N 12052641

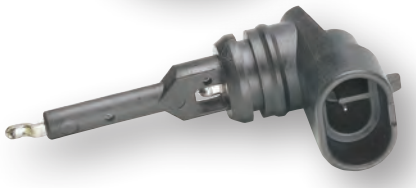


B12469 Series
- Float / magnet assembly operates with R12468 sensor assembly
- Float locates in the bottle assembly
- Foamed PP
- Specific gravity per application

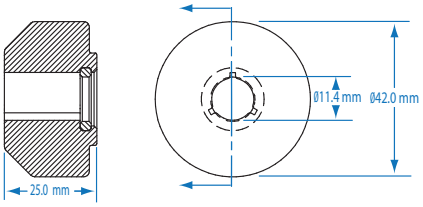


R12481 Series
- External sensor for injection molded bottles
- Form A or Form B operation with separate float
- Bottom mount with O-ring seal
- Switch rated 0.5A/100V/10VA max
- Mates with Packard P/N 12052641

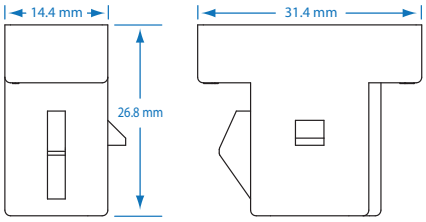




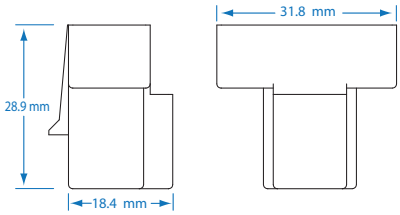
B12482 Series
- Float / magnet assembly operates with R12481 sensor assembly
- Float locates in bottle assembly
- Foamed PP
- Specific gravity per application



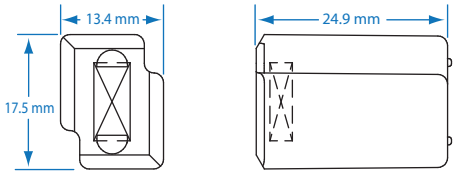
R11774 Series
- External sensor for injection molded bottles
- Form A (normally open) operation with separate float
- Switch rated 0.5A/100V/10VA max
- Snap lock mounting
- Integral connector

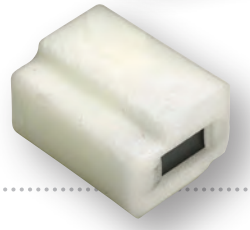


R12180 Series
- External sensor for injection molded bottles
- Form A (normally open) operation with separate float
- Switch rated 0.5A/100V/10VA max
- Snap lock mounting
- Integral connector



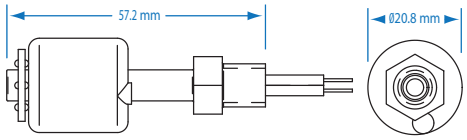
B12450 Series Float
- Float / magnet assembly operates with R11774 and R12180 series sensors
- Float locates in bottle assembly
- Foamed PP
- Operates with fluid SG at 0.79 min





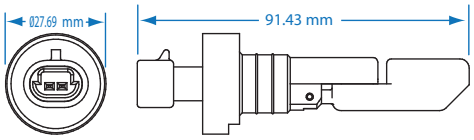
FS100 Series

- Float sensor first used to control condensate within industrial air handlers
- 3/8-16 UNC straight thread and 1/8-27 NPT thread standard
- Optional switches available, rated up to 240VAC, 70VA max switching
- Optional O-rings available
- Wire length, termination and wire type as required



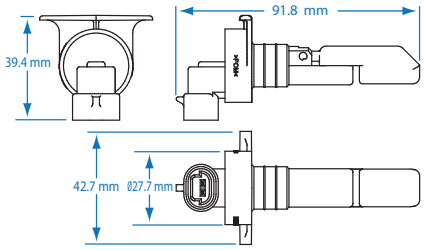
R12544 Series

- For blow or injection molded bottles
- Side mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Connector meets requirements of Packard Taxi Drawing 12162289 type 101



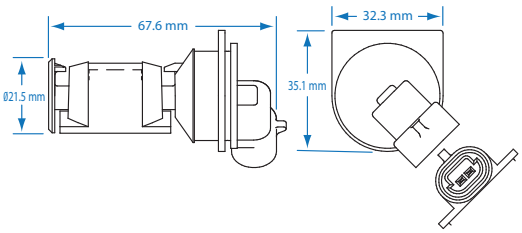
R12571 Series

- For blow or injection molded bottles
- Side mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Connector meets requirements of Packard taxi drawing 12162269 type 101



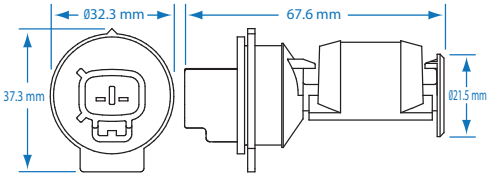
R12431 Series

- For blow or injection molded bottles
- Side mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Connector meets requirements of Packard Taxi Drawing 12162289



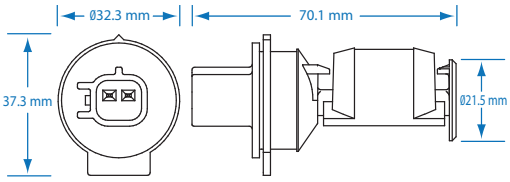
R12449 Series

- For blow or injection molded bottles
- Side mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Mates with Toyota connector P/N 90980-11068



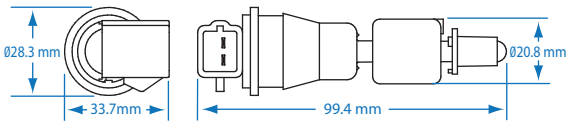
R12456 Series

- For blow or injection molded bottles
- Side mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Mates with Yazaki 7283-6434-40

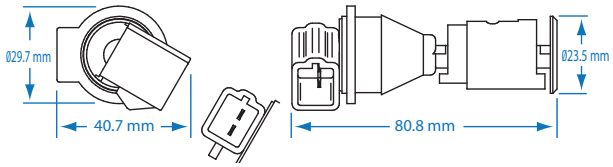


Fluid Level Sensors - Magnetic Technology

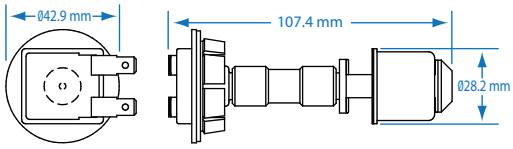
R12347 Series
- For blow or injection molded bottles
- Bottom mount design
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Mates with Ford E57B14A464AA

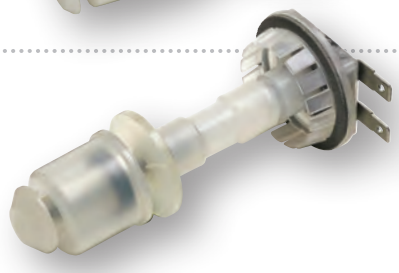


R12349 Series
- For blow or injection molded bottles
- Side mount design
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/100V/10VA max
- Internal snubber resistor
- Mates with Ford E57B14A464AA

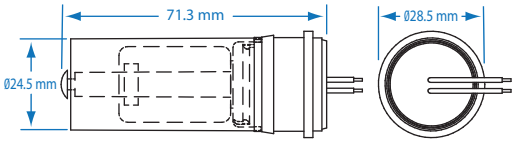


R12072 Series
- For blow or injection molded bottles
- Top mount/ snap in design
- Form A (normally open) operation
- Switch rated 1.5A/200V/50VA max
- Adjustable sensing point up to 18 inches from top of bottle
- Standard termination-0.25 inch open spade

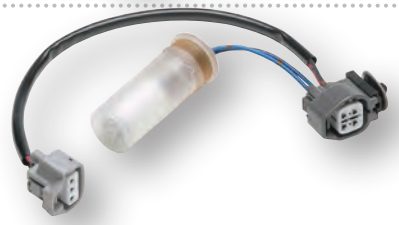




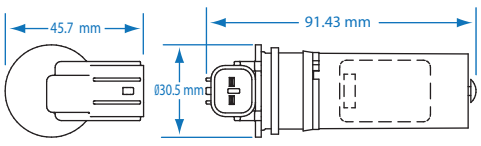
R12421 Series
- For blow or injection molded bottles
- Indication delay feature
- Bottom mount design uses separate seal grommet
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 1.5A/200V/50VA max



R12406 Series
- For blow or injection molded bottles
- Indication delay feature
- Bottom mount design with power harness
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 1.5A/200V/50VA max



R12518 Series
- For blow or injection molded bottles
- Indication delay feature
- Form A (normally open) and Form B (normally closed) operation
- Switch rated 0.5A/200V/50VA max
- Mates with Yazaki 62 Series P/N 7123-8521-80

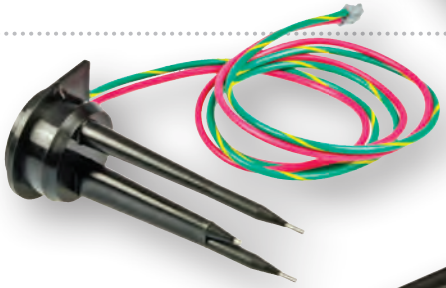


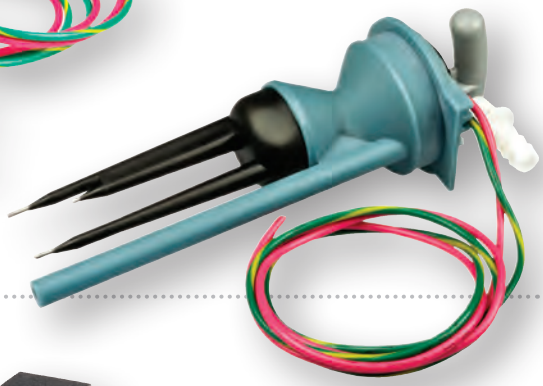
Fluid Level Sensors - Conductive Technology

LS100 Series

Conductivity Fluid Level Sensor is a passive device with no internal electronics

- Driven from external electronics
- Suitable for most conductive fluids with minimal particulate matter
- May be operated from user's electronics in a "pulsing" mode to reduce electrolysis
- May be operated with a bipolar pulsing current from user electronics, eliminating electrolysis

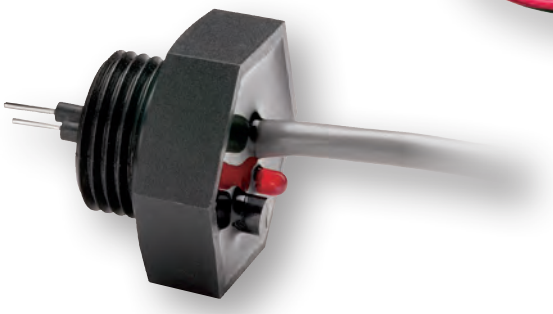




LS200 Series

Conductive Fluid Level Sensors with False Full Protection and current level shift to indicate fluid level

- Available as a two-wire device
- Capable of substantial miniaturization
- Equipped with Standex patented "bias ring" concept
- Suitable for most conductive fluids
- Suitable in fluids with substantial particulate matter
- Operated by a DC current pulse supplied from user's electronics; current draw indicates fluid level
- Optional LED available for local fluid level indication

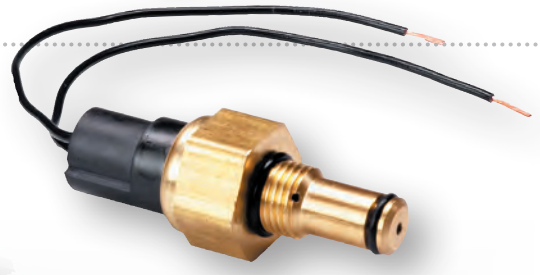


LS300 Series

Conductive Fluid Level Sensors with Sensitivity Shift / False Full Protection

- Full electronics and substantial probe miniaturization
- Equipped with Standex patented "bias ring" concept
- Available as a three-wire device
- Suitable for most conductive fluids
- Suitable in fluids with substantial particulate matter
- Internal electronics used to eliminate electrolysis
- Input is 9V to 30 V DC
- Provided with a switched output; 30 volt open collector sync, TTL or CMOS
- Optional LED available for local fluid level indication

Fluid Pressure Sensor - Magnetic Technology

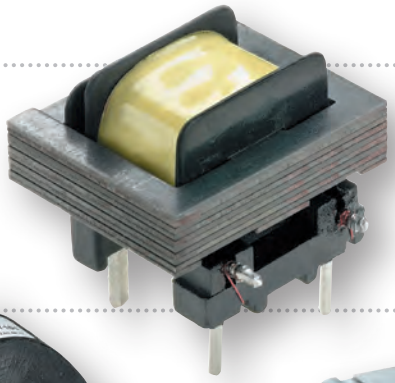


Hydraulic Fluid Pressure Indicators

- Operating Pressure 1,000 psid
- Options for Visual and Electrical indication
- Contacts rated 0.5A, 100VDC, 10VA max
- Set points of 15 and 35 psid
- NO and NC contact configurations

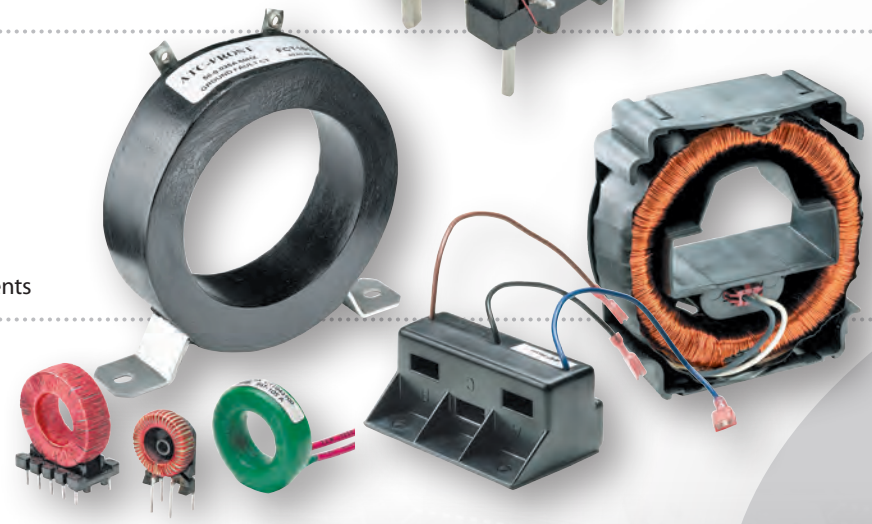
Current Sensors

Standex current sense technology is at work in many commercial and industrial applications worldwide. Our standard products - like the CSB series- offer plug-in solutions for PC board mounting, and provide an integrated winding in a low-cost compact package. We also engineer current sense solutions which address individual customer requirements. Various terminations – PC mount, flying lead, custom leads and connectors, termination by terminals and more are available. Designs are available in open toroidal construction or custom moldings – and can be developed to suit any current ratio, output or capacitance desired. They can be configured for extreme conditions and hazards (temperature, radiation, humidity and more). Applications include over-current sensing for circuit breakers, isolated current sensing for appliances, load variation sensing for frozen drink machines, over current sensing for home appliances, and more.



CSB Series

- Standard product available with short lead times in small quantity
- Primary and secondary windings are PC integrated – no need for customers to install primary winding separately
- Varnish impregnated to reduce audible noise
- Plastic bobbin meets UL 94 flammability requirements



Custom designs

- Engineered to specific customer requirements
- Open toroid or custom molded
- Can be configured for severe environments – humidity, temperature, radiation, and more
- Various terminations available – flying lead, PC mount, custom leads and connectors, termination by terminals – to meet customer requirements

Gobal Reach With a Personal Touch

We manufacture custom and standard electro-magnetic components in state-of-the-art facilities around the world to better serve the supply chain requirements of customers worldwide. Our global footprint means that we can design and prove our products in higher cost facilities and then manufacture them worldwide in lower cost facilities as appropriate to simplify shipping, logistics and lower overall costs. All while meeting the required quality standards – including UL, CSA, ETL, and more.

Our engineers provide ideas, engineering expertise and assistance throughout the process. Industry-leading engineering is augmented with in-house molding, stamping, winding, termination and assembly. We back up these world class designs in an unparalleled test lab – to ensure that our components will perform in the field.

Standex Electronics

An Engineered Solution Provider and
Manufacturer of Custom Components & Assemblies

Standex Electronics, Inc.
Divisional Headquarters

4538 Camberwell Road
Cincinnati, Ohio 45209 USA
+1.513.871.3777
+1.513.871.3779 Fax
+1.866.STANDEX (+1.866.782.6339) Toll Free
info@standexelectronics.com

www.standexelectronics.com

Standex Electronics Ltd
United Kingdom

40 Morley Road, Tonbridge
Kent, TN9 1RA, UK
+44.1732.771.023
+44.1732.770.122 Fax
sales@standex.co.uk

Standex Electronics Canada
Formerly ATC-Frost Magnetics, Inc.

1130 Eighth Line
Oakville, Ontario, LH6 2R4 Canada
+1.905.844.6681
+1.905.844.6895 Fax
info@standexelectronics.com

Standex Electronics China
Standex Electronics (Tianjin) Co., LTD.

No.4 Factory Building
61# Huasheng Road
East of Jinwei Ave.
Beichen High-Tech Industrial Park
Tianjin 300402 China
+86.22.86996881~5
+86.22.86996886 Fax
electronics@standexchina.com

Standex Electronics Mexico
S.I de Mexico S. A. de C. V .

Calle Primera #2552
Agua Prieta, Sonora, Mexico 84270

Mexico Shipping and Receiving
510 Chiricahua Avenue
Douglas, Arizona 85607

SENSORS11