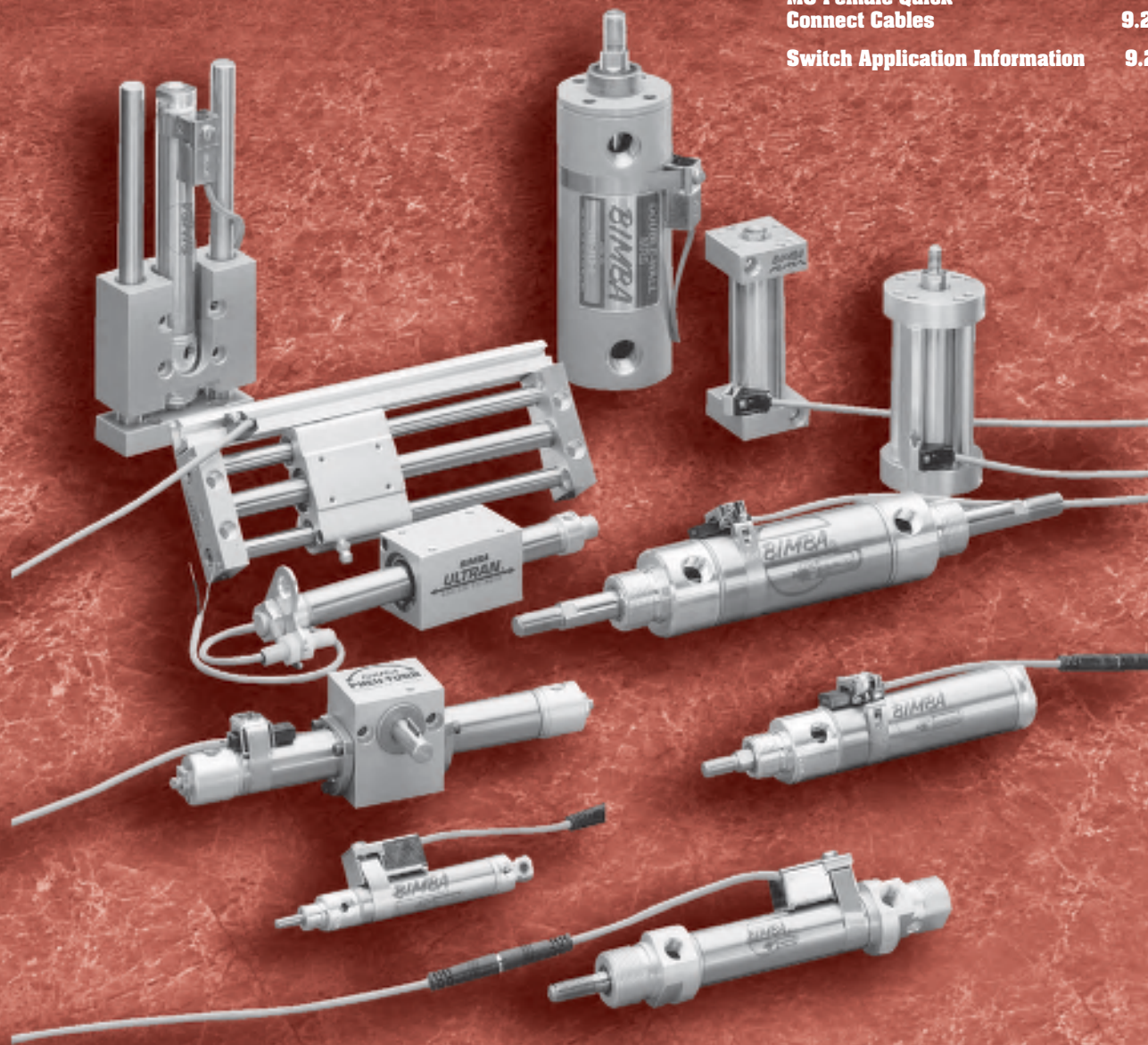


Switch Products

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Bimba Switch Products

Bimba offers pre-tested Switches for Bimba actuators. Our solutions provide a cost effective interface between the pneumatic actuators and electrical control systems. Our pre-tested solutions also eliminate costly, time-consuming design and fabrication required if switches are purchased separately and provide an aesthetically pleasing installation.

In this catalog section you will find both traditional Bimba switches as well as newer generations of Bimba switches to allow for maximum flexibility to fit your application.

The switches perform the same functions as conventional limit switches. They can be used as position indicators, cycle counters, or to confirm operation.

All Bimba switches are designed to sense a magnet that is incorporated into the piston of the cylinder. Magnets are standard in Bimba MRS cylinders, but must be purchased as an option on other Bimba actuators.

A variety of outputs are offered for each switch family including PNP (transistor sourcing), NPN (transistor sinking), normally open contacts, and higher power triac.

Actuator application data such as operating window and hysteresis for actuator/switch combinations is offered on page 9.28 of this catalog.

A section explaining how the switches work, helpful application tips, and terminology is located on page 9.30.

The Switch Selection Chart on page 9.3 can be used to choose switches for an actuator to ensure compatibility.

Benefits of the Magnetic Reed Switch

- Compact
- Lower cost
- Easy to mount on a variety of Bimba actuators
- Able to mount several switches on one actuator
- LED available in many models for ease of positioning and troubleshooting
- Many models:
 - Low, medium and high current models, AC or DC, and triac-type switches for inductive kickback or inrush current.
 - Track- and band-mounted models
 - Choice of pigtail leads in two lengths or quick connect with two cable length options.

Benefits of the Solid State Switch

- Compact
- Solid state reliability — no moving parts means longer life, no contact bounce
- Easy to mount on a variety of Bimba actuators
- Able to mount several switches on one actuator
- LED for ease of positioning and troubleshooting
- Reverse polarity and overvoltage protection
- Available with pigtail leads (in two lengths) or quick connect (with two cable length options)
- Faster signal speeds

Bimba Switch Products

Switch Selection Chart

Switch Type	Base Part Number	General Description	Original Line Original Line with Rod Lock	Double-Wall	EF/Twist Clamp Twin Bore/ ET Pneu-Moment Stopper/ LPA/NPA	Flat-1 Flat-II	Pneu Turn	Linear Thruster	Ultran	Ultran Slide High Load Ultran	Repairable Stainless Steel All Stainless OL	Ultran Band	ISO 6431	ISO 6432
Track Mounted	HC	PNP, LED				X				X6				
	HK	NPN, LED				X				X6				
	MR	Reed, 4mm round, LED	X3		X		X3	X3		X5		X7		
	MS	PNP or NPN, 4mm round, LED	X3		X		X3	X3		X5		X7		
	MSC	PNP, 4mm round, LED	X3		X		X3	X3		X5		X7		
	MSK	NPN, 4mm round, LED	X3		X		X3	X3		X5		X7		
	MRS-.027	Reed, 2 wire, No LED	X1											
	MRS-.087	Reed, 2 wire, No LED	X2							X6				
	MRS-1.5	Triac, 2 wire, No LED 1.5 amp, AC only	X2											
	MRS-1.5-S	Triac, 2 wire, No LED, 1.5 amp, AC only	X1											
	MRS-AB	Reed, Square slot, LED											X	
	HSC-AB	PNP, Square slot, LED											X	
	HSK-AB	NPN, Square slot, LED											X	
	Band Mounted	UBR	Reed, Square slot, LED										X8	
UBSC		PNP, Square slot, LED										X8		
UBSK		NPN, Square slot, LED										X8		
HSC		PNP, LED	X				X	X4						
HSK		NPN, LED	X				X	X4						
MSS		PNP/NPN, 2 wire LED	X								X			
MRS-.027-B		Reed, 2 wire, No LED, 3 watts												X
MRS-.027-BL		Reed, 3 wire, LED, 2.8 watts												X
MRS-.087-B		Reed, 2 wire, No LED, 10 watts	X	X			X	X						
MRS-.087-BL		Reed, 3 wire, LED, 9 watts	X	X			X	X						
MRS-.087-PBL		Reed, 2 wire, LED 2.5 watts	X	X			X	X						
MRS-1.5-B		Triac, 2 wire, No LED, 1.5 amp, AC only	X	X			X	X						
R10		Reed, 2 wire, LED	X								X			
RAC		Reed, 2 wire, No LED, AC only	X								X			
R10P	Reed, 2 wire, LED	X								X				
RHT	Reed, 2 wire, No LED, High Temperature	X								X				
End of Stroke (Ultran)	RSU-1	Reed, 2 wire, No LED							X	X				
	PCQ	PNP, Proximity, LED							X	X				
	PKQ	NPN, Proximity, LED							X	X				

X1 - MRS Series with -Z option 9/16" and 3/4" bore only
 X2 - MRS Series with -Z option 1-1/16" through 2" bore only
 X3 - "T" option required
 X4 - Not for use with 9/16" bore

X5 - "U" option required
 X6 - "T" option required
 X7 - 18mm bore only
 X8 - 25mm through 63mm bore only

Cables (Compatible with all Bimba Switches with the "Q" Option)

Part Number	Description
C4	Straight M8 Female Connector, Threaded Connection with 2 Meter Cable
C4-S	Straight M8 Female Connector, Threaded Connection with 2 Meter Shielded Cable
C4X	Straight M8 Female Connector, Threaded Connection with 5 Meter Cable
C4X-S	Straight M8 Female Connector, Threaded Connection with 5 Meter Shielded Cable
C5-S	Right Angle M8 Female Connector, Threaded Connection with 2 Meter Shielded Cable
C5X-S	Right Angle M8 Female Connector, Threaded Connection with 5 Meter Shielded Cable

Switch and Cable Selection Chart
 Specifications
 Band Mounted Solid State Switches
 Heavy Duty Band Mounted Switches
 High Illumination and High Power Band
 Track Mounted Solid State Switches
 Mini Round Track Mounted Switches
 Heavy Duty Track Mounted Switches
 5mm Square Track Mounted Switches
 Ultran End of Stroke Switches
 M8 Female Quick Connect Cables
 Switch Application Information

Bimba Switch Products

Switch Specifications

Switch Type	Base Part Number	General Description	Sensor Type	Output Type	Operating Voltage (V)	Actuating Time	Maximum Load Current	Reverse Polarity Protection	Over-voltage Protection	Transient Protection	Temperature Rating	Enclosure
Track Mounted	HC	PNP, LED	GMR	Sourcing, PNP	4.5 to 30 VDC	1.0 mS	150 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	HK	NPN, LED	GMR	Sinking, NPN	4.5 to 30 VDC	1.0 mS	150 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	MR	Reed, 4mm round, LED	Reed	Normally Open Contact	5 to 120 V AC or DC	1.0 mS	30 mA	No	No	No	-10°C to 60°C	IP67
	MS	PNP or NPN, 4mm round, LED	GMR	Auto Configure, Sinking or Sourcing	5 to 30 VDC	0.2 mS	100 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	MSC	PNP, 4mm round, LED	GMR	Sourcing, PNP	4.5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	MSK	NPN, 4mm round, LED	GMR	Sinking, NPN	4.5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	MRS-.027	Reed, 2 wire, No LED	Reed	Normally Open Contact	28 V max, AC or DC	1.0 mS	250 mA	No	No	No	-25°C to 85°C	IP65
	MRS-.087	Reed, 2 wire, No LED	Reed	Normally Open Contact	200 V max, AC or DC	1.0 mS	500 mA	No	No	No	-25°C to 85°C	IP65
	MRS-1.5	Triac, 2 wire, No LED 1.5 amp, AC only	Reed	Triac	12 to 230 V, AC only	2.0 mS	1.5 A	No	No	No	-25°C to 85°C	IP65
	MRS-1.5-S	Triac, 2 wire, No LED, 1.5 amp, AC only	Reed	Triac	12 to 230 V, AC only	2.0 mS	1.5 A	No	No	No	-25°C to 85°C	IP65
	MRS-AB	Reed, Square slot, LED	Reed	Normally Open Contact	5 to 240 V, AC or DC	1.0 mS	100 mA	No	No	No	-10°C to 70°C	IP67
	HSC-AB	PNP, Square slot, LED	GMR	Sourcing, PNP	5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-10°C to 70°C	IP67
	HSK-AB	NPN, Square slot, LED	GMR	Sinking, NPN	5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-10°C to 70°C	IP67
	UBR	Reed, Square slot, LED	Reed	Normally Open Contact	5 to 240 V, AC or DC	1.0 mS	100 mA	No	No	No	-10°C to 70°C	IP67
	UBSC	PNP, Square slot, LED	GMR	Sourcing, PNP	5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-10°C to 70°C	IP67
UBSK	NPN, Square slot, LED	GMR	Sinking, NPN	5 to 30 VDC	1.0 mS	200 mA	Yes	Yes	Yes	-10°C to 70°C	IP67	
Band Mounted	HSC	PNP, LED	GMR	Sourcing, PNP	4.5 to 30 VDC	1.0 mS	150 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	HSK	NPN, LED	GMR	Sinking, NPN	4.5 to 30 VDC	1.0 mS	150 mA	Yes	Yes	Yes	-20°C to 80°C	IP67
	MSS	PNP/NPN, 2 wire LED	GMR	Sinking or Sourcing	10 to 30 VDC	1.0 mS	300 mA	Yes	Yes	Yes	-20°C to 70°C	IP67
	MRS-.027-B	Reed, 2 wire, No LED, 3 watts	Reed	Normally Open Contact	28 V max, AC or DC	1.0 mS	250 mA	No	No	No	-25°C to 85°C	IP65
	MRS-.027-BL	Reed, 3 wire, LED, 2.8 watts	Reed	Normally Open Contact	6 to 24 V, AC or DC	1.0 mS	250 mA	No	No	No	-25°C to 85°C	IP65
	MRS-.087-B	Reed, 2 wire, No LED, 10 watts	Reed	Normally Open Contact	120 (200) V, AC or DC	1.0 mS	500 mA	No	No	No	-25°C to 85°C	IP65
	MRS-.087-BL	Reed, 3 wire, LED, 9 watts	Reed	Normally Open Contact	6 to 24 V, AC or DC	1.0 mS	500 mA	No	No	No	-25°C to 85°C	IP65
	MRS-.087-PBL	Reed, 2 wire, LED 2.5 watts	Reed	Normally Open Contact	3 to 120 V, AC or DC	1.0 mS	20 mA	No	No	No	-25°C to 85°C	IP65
	MRS-1.5-B	Triac, 2 wire, No LED, 1.5 amp, AC only	Reed	Triac	12 to 230 VAC	2.0 mS	1.5 A	No	No	No	-25°C to 85°C	IP65
	R10	Reed, 2 wire, LED	Reed	Normally Open Contact	5 to 120V AC or DC	1.0 mS	500 mA	No	No	No	-20°C to 70°C	IP67
	RAC	Reed, 2 wire, No LED, AC only	Reed	Triac	12 to 240 VAC	2.0 mS	800 mA	No	No	No	-20°C to 70°C	IP67
	R10P	Reed, 2 wire, LED	Reed	Normally Open Contact	5 to 120V AC or DC	1.0 mS	150 mA	No	Yes	Yes	-20°C to 70°C	IP67
RHT	Reed, 2 wire, No LED	Reed	Normally Open Contact	5 to 120V AC or DC	1.0 mS	500 mA	No	No	No	-40°C to 125°C	IP67	
End of Stroke (Ultran)	RSU-1	Reed, 2 wire, No LED	Reed	Normally Open Contact	200 VDC	1.0 mS	500 mA	No	No	No	-25°C to 85°C	IP65
	PCQ	PNP, Proximity, LED	Inductive	Sourcing, PNP	10 to 30 VDC	0.33 mS	100 mA	Yes	Yes	Yes	-25°C to 85°C	IP67
	PKQ	NPN, Proximity, LED	Inductive	Sinking, NPN	10 to 30 VDC	0.33 mS	100 mA	Yes	Yes	Yes	-25°C to 85°C	IP67

Quick Connect Cable Specifications

Contact Carrier Material: Nylon
Conductors: 3 x 24 AWG
Molded Connector Head: Polyurethane (PUR)
Contact Material: Gold plated brass
Power Rating: 125 V @ 3A

Wire Insulation Material: Polyvinyl Chloride (PVC)
Jacket Material: Polyurethane (PUR)
Temperature Range: -4°F to 200°F (-20°C to 90°C)
Protection Class: NEMA 1, 3, 4, 6 and IEC IP67
Insulation Resistance: 10⁹

Wire Color Codes

Generally the wire colors for Bimba switches conform to **CENELEC EN 50 044** wiring standard. All switches with the "Q" option used with Bimba cables conform to the standard which is: Brown – Positive, Blue – Ground, and Black – Output. Some legacy switches do not conform to the standard as indicated in the catalog and documentation provided with the switch.

Important Note: 2 wire switches use only the brown and blue wires. (Some legacy switches use red and black). Do not connect the blue and brown wires across the power supply without a load in series the switch, it will be destroyed by the short circuit.

Bimba Switch Products

Switch Selection

Band Mounted Solid State Switches HSC and HSK

Compatible and Tested for use with:
Original Line Cylinders, Pneu-Turn Rotary Actuators, and Linear Thrusters



BAND SIZE	
Bore Size	Band Size
No Band	Blank
9/16" (14mm)	02
3/4" (19mm)	04
7/8"	06
1-1/16" (27mm)	09
1-1/4"	12
1-1/2" (38mm)	17
1-3/4"	24
2" (50mm)	31
2-1/2"	50
3"	70

Part Numbers and List Prices

Part Number	Description	List Price
HSC	Sourcing Switch (PNP), LED, 30VDC, 150mA with 24" Pigtail Leads, No Band	\$ 28.80
HSC-□□ ¹	Sourcing Switch (PNP), LED, 30VDC, 150mA with 24" Pigtail Leads, Band Included	36.60
HSCQ	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector, No Band	56.50
HSCQ-□□ ¹	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector, Band Included	64.25
HSCQC	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable, No Band	83.30
HSCQC-□□ ¹	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable, Band Included	91.00
HSCQCX	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable, No Band	96.70
HSCQCX-□□ ¹	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable, Band Included	104.40
HSCX	Sourcing Switch (PNP), LED, 30VDC, 150mA with 144" Pigtail Leads, No Band	38.20
HSCX-□□ ¹	Sourcing Switch (PNP), LED, 30VDC, 150mA with 144" Pigtail Leads, Band Included	46.05
HSK	Sinking Switch (NPN), LED, 30VDC, 150mA with 24" Pigtail Leads, No Band	28.80
HSK-□□ ¹	Sinking Switch (NPN), LED, 30VDC, 150mA with 24" Pigtail Leads, Band Included	36.60
HSKQ	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector, No Band	56.50
HSKQ-□□ ¹	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector, Band Included	64.25
HSKQC	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable, No Band	83.30
HSKQC-□□ ¹	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable, Band Included	91.00
HSKQCX	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable, No Band	96.70
HSKQCX-□□ ¹	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable, Band Included	104.40
HSKX	Sinking Switch (NPN), LED, 30VDC, 150mA with 144" Pigtail Leads, No Band	38.20
HSKX-□□ ¹	Sinking Switch (NPN), LED, 30VDC, 150mA with 144" Pigtail Leads, Band Included	46.05

¹Replace boxes with band size.

Example Part Number with band size from table: HSC-02 is an HSC switch with a band for 9/16" or 14 mm cylinder.

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

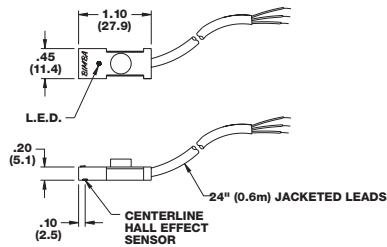
M8 Female Quick Connect Cables

Switch Application Information

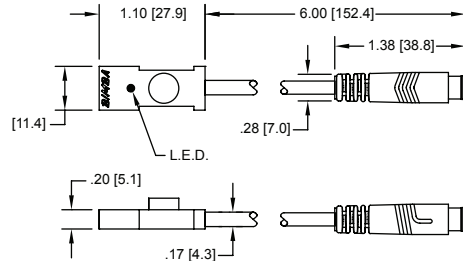
Bimba Switch Products

Band Mounted Solid State Switches HSC and HSK

Dimensions



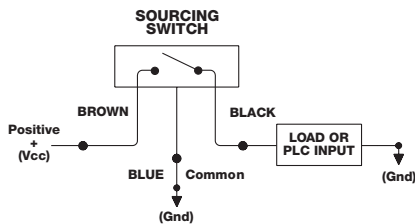
HSC, HSK



HSCQ, HSKQ

Wiring Diagrams

Typical Solid State Sourcing Configuration for HSC Models (PNP)

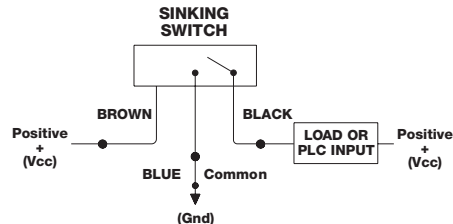


HSC, HC

Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

CAUTION: Shorting black wire to ground will damage switch

Typical Solid State Sinking Configuration for HSK Models (NPN)

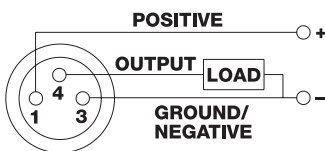


HSK, HK

Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

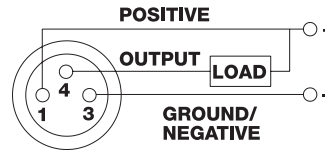
CAUTION: Shorting black wire to supply voltage will damage switch

8mm Male Connector Sourcing Solid State Switch



HSCQ, HCQ

8mm Male Connector Sinking Solid State Switch

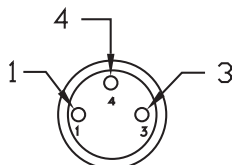


HSKQ, HKQ

Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

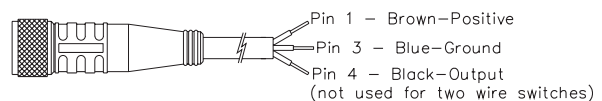
Face View of M8 **Male** Connector



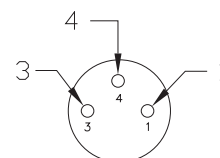
1. POSITIVE / HOT
 3. NEGATIVE / NEUTRAL
 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cble **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Bimba Switch Products

Switch Selection

Heavy Duty Band Mounted Switches
MRS-.087-B, MRS-.087-PB, and MRS-1.5-B

Compatible and Tested for use with:

Original Line Cylinders, Pneu-Turn Rotary Actuators, Linear Thrusters, and Double-Wall Cylinders



BAND SIZE	
Bore Size	Band Size
No Band	Blank
9/16" (14mm)	02
3/4" (19mm)	04
7/8"	06
1-1/16" (27mm)	09
1-1/4"	12
1-1/2" (38mm)	17
1-3/4"	24
2" (50mm)	31
2-1/2"	50
3"	70

Part Numbers and List Prices

Part Number	Description	List Price
MRS-.087-B	Reed Switch, 2 wire, No LED, 200 V, 500mA, 24" Pigtail Leads, No Band	\$ 19.00
MRS-.087-B-□□ ¹	Reed Switch, 2 wire, No LED, 200 V, 500mA, 24" Pigtail Leads, Band Included	22.90
MRS-.087-BQ	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, No Band	39.25
MRS-.087-BQ-□□ ¹	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, Band Included	43.20
MRS-.087-BQC	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, 2m Mating Cable, No Band	66.00
MRS-.087-BQC-□□ ¹	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, 2m Mating Cable, Band Included	70.00
MRS-.087-BQCX	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, 5m Mating Cable, No Band	79.50
MRS-.087-BQCX-□□ ¹	Reed Switch, 2 wire, No LED, 120 V, 500mA, M8 Male Connector, 5m Mating Cable, Band Included	83.40
MRS-.087-XB	Reed Switch, 2 wire, No LED, 200 V, 500mA, 144" Pigtail Leads, No Band	26.25
MRS-.087-XB-□□ ¹	Reed Switch, 2 wire, No LED, 200 V, 500mA, 144" Pigtail Leads, Band Included	30.15
MRS-.087-BL	Reed Switch, 3 wire, LED, 24 V, 500mA, 24" Pigtail Leads, No Band	23.70
MRS-.087-BL-□□ ¹	Reed Switch, 3 wire, LED, 24 V, 500mA, 24" Pigtail Leads, Band Included	27.55
MRS-.087-BLQ	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, No Band	47.50
MRS-.087-BLQ-□□ ¹	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, Band Included	51.60
MRS-.087-BLQC	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, 2m Mating Cable, No Band	74.45
MRS-.087-BLQC-□□ ¹	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, 2m Mating Cable, Band Included	78.40
MRS-.087-BLQCX	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, 5m Mating Cable, No Band	87.80
MRS-.087-BLQCX-□□ ¹	Reed Switch, 3 wire, LED, 24 V, 500mA, M8 Male Connector, 5m Mating Cable, Band Included	91.80
MRS-.087-XBL	Reed Switch, 3 wire, LED, 24 V, 500mA, 144" Pigtail Leads, No Band	32.40
MRS-.087-XBL-□□ ¹	Reed Switch, 3 wire, LED, 24 V, 500mA, 144" Pigtail Leads, Band Included	36.40
MRS-.087-PBL	Reed Switch, 2 wire, LED, 120 V, 20mA, 24" Pigtail Leads, No Band	23.70
MRS-.087-PBL-□□ ¹	Reed Switch, 2 wire, LED, 120 V, 20mA, 24" Pigtail Leads, Band Included	27.55
MRS-.087-PBLQ	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, No Band	47.50
MRS-.087-PBLQ-□□ ¹	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, Band Included	51.55
MRS-.087-PBLQC	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, 2m Mating Cable, No Band	74.45
MRS-.087-PBLQC-□□ ¹	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, 2m Mating Cable, Band Included	78.35
MRS-.087-PBLQCX	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, 5m Mating Cable, No Band	87.80
MRS-.087-PBLQCX-□□ ¹	Reed Switch, 2 wire, LED, 120 V, 20mA, M8 Male Connector, 5m Mating Cable, Band Included	91.75
MRS-.087-PXBL	Reed Switch, 2 wire, LED, 120 V, 20mA, 144" Pigtail Leads, No Band	32.40
MRS-.087-PXBL-□□ ¹	Reed Switch, 2 wire, LED, 120 V, 20mA, 144" Pigtail Leads, Band Included	36.40
MRS-1.5-B	Reed Switch, 2 wire, No LED, 12 to 230V AC only, 1.5A, 24" Pigtail Leads, No Band	28.30
MRS-1.5-B-□□ ¹	Reed Switch, 2 wire, No LED, 12 to 230V AC only, 1.5A, 24" Pigtail Leads, Band Included	32.25
MRS-1.5-XB	Reed Switch, 2 wire, No LED, 12 to 230V AC only, 1.5A, 144" Pigtail Leads, No Band	35.25
MRS-1.5-XB-□□ ¹	Reed Switch, 2 wire, No LED, 12 to 230V AC only, 1.5A, 144" Pigtail Leads, Band Included	39.25

¹Replace boxes with band size.

Example Part Number with band size from table: HSC-02 is an HSC switch with a band for 9/16" or 14 mm cylinder.

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

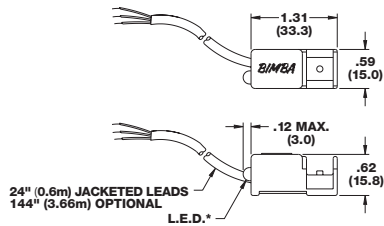
Switch Application Information

Bimba Switch Products

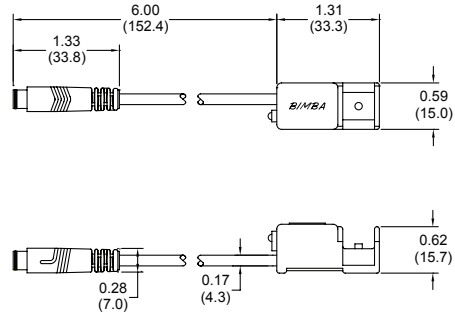
Heavy Duty Band Mounted Switches
 MRS-.087-B, MRS-.087-PB, and MRS-1.5-B

Dimensions

MRS-.087-B
 MRS-.087-BL
 MRS-.087-PBL
 MRS-1.5-B

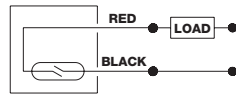


MRS-.087-BQ
 MRS-.087-BLQ
 MRS-.087-PBLQ

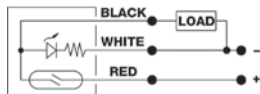


Wiring Diagrams

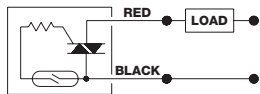
MRS-.087-B



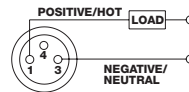
MRS-.087-BL



MRS-1.5-B

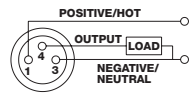


MRS-.087-BQ
 MRS-.087-PBLQ



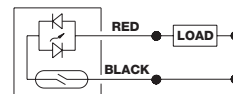
8mm Male Connector

MRS-.087-BLQ



8mm Male Connector

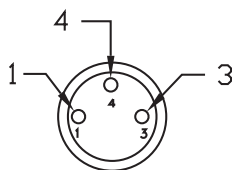
MRS-.087-PBL



Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

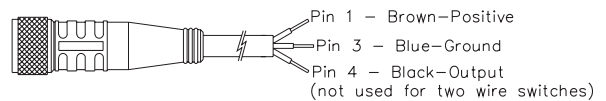
Face View of M8 **Male** Connector



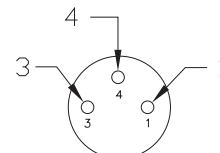
1. POSITIVE / HOT
 3. NEGATIVE / NEUTRAL
 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Bimba Switch Products

Switch Selection

Heavy Duty Band Mounted Switches
MRS-.027-B, MRS-.027-BL

Compatible and Tested for use with:
ISO 6432 Cylinders



BAND SIZE	
Bore Size	Band Size
No Band	Blank
10mm	M10
12mm	M12
16mm	M16
20mm	M20
25mm	M25

Part Numbers and List Prices

Part Number	Description	List Price
MRS-.027-B	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, 0.6m Pigtail Leads, No Band	\$ 19.00
MRS-.027-B-□□ ¹	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, 0.6m Pigtail Leads, Band Included	22.90
MRS-.027-XB	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, 3.6m Pigtail Leads, No Band	26.25
MRS-.027-XB-□□ ¹	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, 3.6m Pigtail Leads, Band Included	30.15
MRS-.027-BQ	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, M8 Male Connector, No Band	39.25
MRS-.027-BQ-□□ ¹	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250mA, M8 Male Connector, Band Included	43.20
MRS-.027-BQC	Reed Switch, 2 wire, No LED, 28 V AD/DC max., 250 mA, M8 Male Connector, 2m Mating Cable, No Band	66.00
MRS-.027-BQC-□□ ¹	Reed Switch, 2 wire, No LED, 28 V AD/DC max., 250 mA, M8 Male Connector, 2m Mating Cable, Band Included	70.00
MRS-.027-BQCX	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250 mA, M8 Male Connector, 5m Mating Cable, No Band	79.50
MRS-.027-BQCX-□□ ¹	Reed Switch, 2 wire, No LED, 28 V AC/DC max., 250 mA, M8 Male Connector, 5m Mating Cable, Band Included	83.40
MRS-.027-BL	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, 0.6m Pigtail Leads, No Band	23.70
MRS-.027-BL-□□ ¹	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, 0.6m Pigtail Leads, Band Included	27.55
MRS-.027-XBL	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, 3.6m Pigtail Leads, No Band	32.40
MRS-.027-XBL-□□ ¹	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, 3.6m Pigtail Leads, Band Included	36.40
MRS-.027-BLQ	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, M8 Male Connector, No Band	47.50
MRS-.027-BLQ-□□ ¹	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, M8 Male Connector, Band Included	51.55
MRS-.027-BLQC	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, M8 Male Connector, 2m Mating Cable, No Band	74.45
MRS-.027-BLQC-□□ ¹	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250 mA, M8 Male Connector, 2m Mating Cable, Band Included	78.35
MRS-.027-BLQCX	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250mA, M8 Male Connector, 5m Mating Cable, No Band	87.80
MRS-.027-BLQCX-□□ ¹	Reed Switch, 3 wire, LED, 6-24 V AC/DC, 250mA, M8 Male Connector, 5m Mating Cable, Band Included	91.75

¹Price includes band. Replace boxes with band size.

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

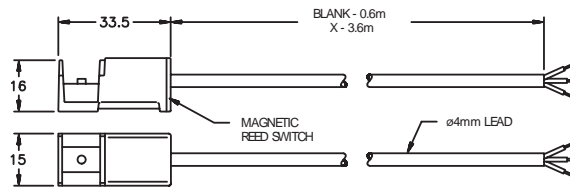
Switch Application Information

Bimba Switch Products

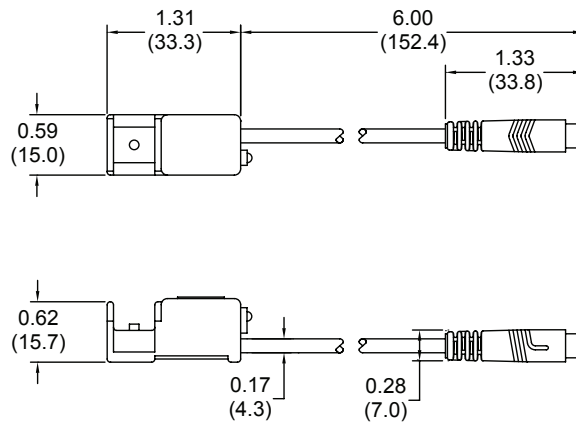
Heavy Duty Band Mounted Switches

MRS-.027-B, MRS-.027-BL

Dimensions

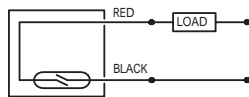


LED INDICATOR: A 'L' in the model number signifies the presence of a LED indicator.
CABLE LENGTH: The standard cable length is 0.6m. Switches with a 'X' in the model number indicate a cable length of 3.6m.



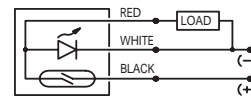
Wiring Diagrams

MRS-.027-B



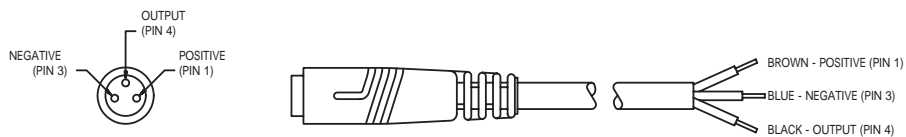
2 wire models, no LED

MRS-.027-BL



3 wire models, with LED

Pin and Wire Assignments for Quick Connect



Note: Terminal 4 is not connected for 2 wire switch models.

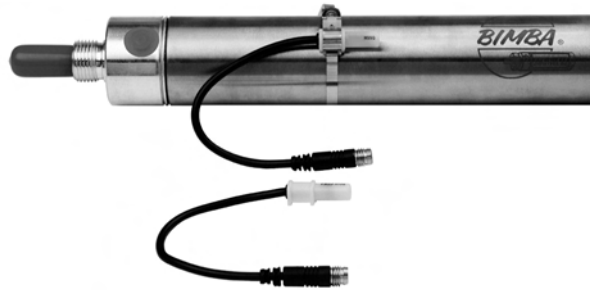
8mm *Female* Connector

Bimba Switch Products

Switch Selection

High Illumination and High Power Band Mounted Switches MSS, R10, R10P, RAC

Compatible and Tested for use with:
Original Line Cylinders, All Stainless Original Line Cylinders, Pneu-Turn Rotary Actuators, Linear Thrusters, and Repairable Stainless Steel Cylinders



Part Numbers and List Prices

Part Number	Description	List Price
MSS	Sourcing or Sinking Switch, 2 wire, High Illumination Body, 24 VDC, 300mA, 24" Pigtail Leads	\$ 46.40
MSSQ	Sourcing or Sinking Switch, 2 wire, High Illumination Body, 24 VDC, 300mA, M8 Male Connector	61.50
MSSQC	Sourcing or Sinking Switch, 2 wire, High Illumination Body, 24 VDC, 300mA, M8 Male Connector with 2m Mating Cable	90.05
MSSQCX	Sourcing or Sinking Switch, 2 wire, High Illumination Body, 24 VDC, 300mA, M8 Male Connector with 5m Mating Cable	103.15
MSSX	Sourcing or Sinking Switch, 2 wire, High Illumination Body, 24 VDC, 300mA, 120" Pigtail Leads	50.20
R10	Reed Switch, 2 wire, High Illumination Body, 120 V, 500mA, 24" Pigtail Leads	27.95
R10Q	Reed Switch, 2 wire, High Illumination Body, 120 V, 500mA, M8 Male Connector	43.80
R10QC	Reed Switch, 2 wire, High Illumination Body, 120 V, 500mA, M8 Male Connector with 2m Mating Cable	70.55
R10QCX	Reed Switch, 2 wire, High Illumination Body, 120 V, 500mA, M8 Male Connector with 5m Mating Cable	83.55
R10X	Reed Switch, 2 wire, High Illumination Body, 120 V, 500mA, 120" Pigtail Leads	32.25
R10P	Reed Switch with Transient and Overvoltage Protection, 2 wire, High Illumination Body, 120 V, 150mA, 24" Pigtail Leads	45.10
R10PQ	Reed Switch with Transient and Overvoltage Protection, 2 wire, High Illumination Body, 120 V, 150mA, M8 Male Connector	61.85
R10PQC	Reed Switch with Transient and Overvoltage Protection, 2 wire, High Illumination Body, 120 V, 150mA, M8 Male Connector with 2m Mating Cable	87.40
R10PQCX	Reed Switch with Transient and Overvoltage Protection, 2 wire, High Illumination Body, 120 V, 150mA, M8 Male Connector with 5m Mating Cable	100.45
R10PX	Reed Switch with Transient and Overvoltage Protection, 2 wire, High Illumination Body, 120 V, 150mA, 120" Pigtail Leads	49.10
RAC	High Current Reed Switch, 2 wire, No LED, 240 V AC only, 800mA, 24" Pigtail Leads	38.90
RACX	High Current Reed Switch, 2 wire, No LED, 240 V AC only, 800mA, 120" Pigtail Leads	42.80
RHT	High Temperature Reed Switch, 2 wire, No LED, 120 V, 500 mA, 24" Pigtail Leads	87.90
RHTX	High Temperature Reed Switch, 2 wire, No LED, 120 V, 500 mA, 120" Pigtail Leads	104.85
USB25 ¹	Mounting band for cylinders up to 2-1/2" bore	11.80
USB50 ¹	Mounting band for cylinders with 2-1/2" bore up to 5" bore	14.10
USB80 ¹	Mounting band for cylinders with greater than 5" bore	15.15

¹All switches above are band mounted, band is ordered separately.

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

High Illumination and High Power Band Mounted Switches

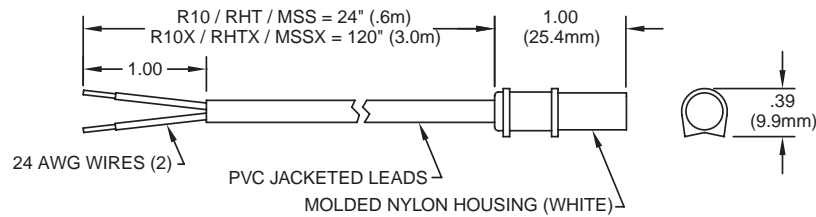
MSS, R10, R10P, RAC

Compatible and Tested for use with:

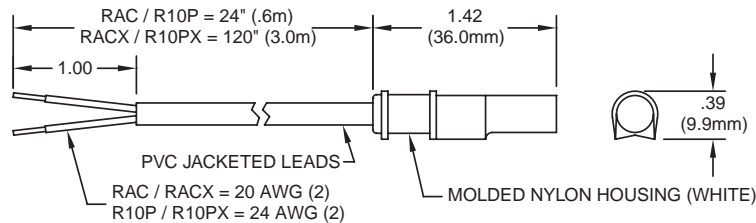
Original Line Cylinders, All Stainless Original Line Cylinders, Pneu-Turn Rotary Actuators, Linear Thrusters, Double-Wall Cylinders, and Repairable Stainless Steel Cylinders

Dimensions

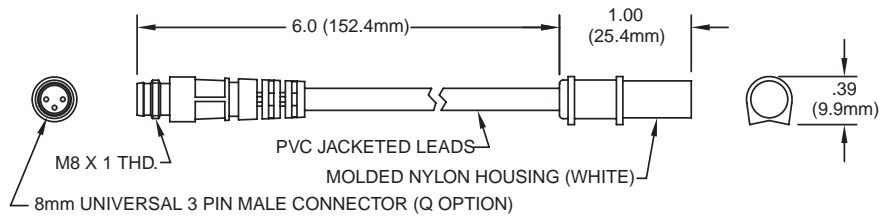
R10, R10X, MSS, MSSX, RHT, RHTX



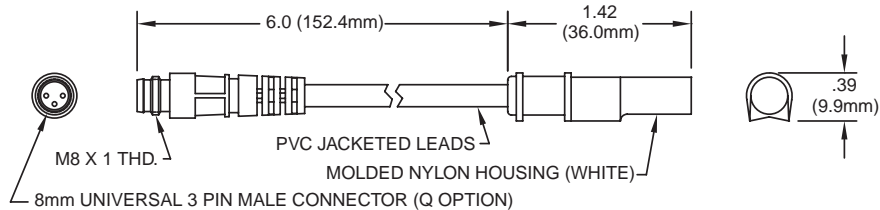
RAC, RACX, R10P, R10PX



R10Q, MSSQ



R10PQ



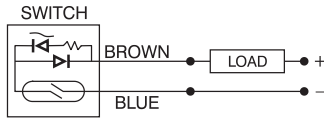
Bimba Switch Products

High Illumination and High Power Band Mounted Switches MSS, R10, R10P, RAC

Wiring Diagrams

R10 / R10X / RHT (No LED) / RHTX

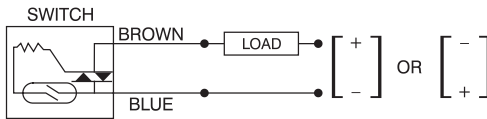
Miniature Reed Switch, Cable Type,
(2 Wire Switch)



Input Voltage 120 Volts Max. (AC or DC)
Maximum Load Current 500 mA Max. (Resistive)
Operating Temperature -20° C to 70° C

RAC / RACX

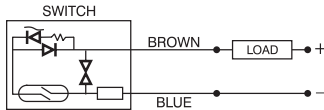
High Power AC Reed Switch, Cable Type,
(2 Wire Switch)



Contact Rating 200 Watts Max.
Input Voltage 12 to 240 Volts (AC only)
Minimum Load Current 80 mA
Maximum Load Current 800 mA

R10P / R10PX

Miniature Reed Switch, Cable Type,
Circuit Protected (2 Wire Switch)



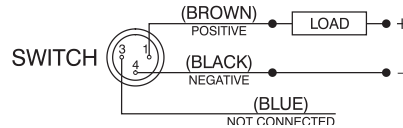
Input Voltage 120 Volts Max. (AC or DC)
Maximum Load Current 150 mA Max.
Operating Temperature -20° C to 70° C

Circuit Protection

Varistor 138 Volts
Choke 680 µH

R10Q / R10PQ

Miniature Reed Switch, 8mm Male Quick Connect,
(2 Wire Switch)



Input Voltage 120 Volts Max. (AC or DC)
Maximum Load Current 500 mA Max. (Resistive)
Operating Temperature -20° C to 70° C

MSS / MSSX

Miniature Solid State Switch, Cable Type,
(2 Wire Switch)



Typical Current Sourcing (PNP) Configuration

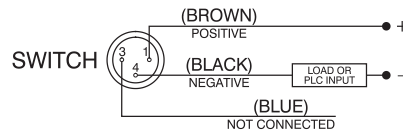


Typical Current Sinking (NPN) Configuration

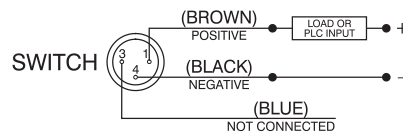
Input Voltage 10 to 30 V DC
Minimum Load Current 4 mA
Maximum Load Current 300 mA
On Voltage Drop 2.5 Volts @ 4 mA
3.5 Volts @ 300 mA
Operating Temperature -20° C to 70° C

MSSQ

Miniature Solid State Switch, 8mm Male Quick Connect,
(2 Wire Switch)



Typical Current Sourcing (PNP) Configuration



Typical Current Sinking (NPN) Configuration

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band Switches

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Selection

Track Mounted Solid State Switches

HC and HK

Compatible and Tested for use with:

Flat-1 Cylinders, Square Flat-1 Cylinders, Flat-II Cylinders, Square Flat-II Cylinders, and Ultram Rodless Actuators (with -T option)



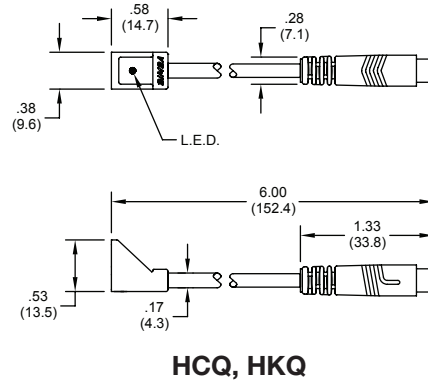
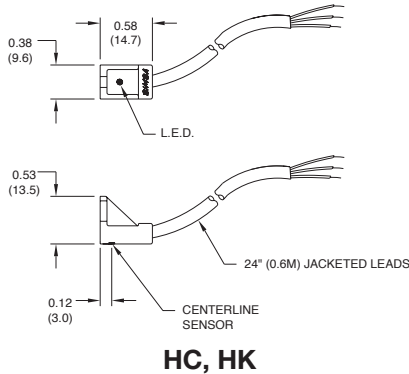
Part Numbers and List Prices

Part Number	Description	List Price
HC	Sourcing Switch (PNP), LED, 30VDC, 150mA with 24" Pigtail Leads	\$ 42.65
HCQ	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector	61.75
HCQC	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable	88.55
HCQCX	Sourcing Switch (PNP), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable	101.85
HCX	Sourcing Switch (PNP), LED, 30VDC, 150mA with 144" Pigtail Leads	60.00
HK	Sinking Switch (NPN), LED, 30VDC, 150mA with 24" Pigtail Leads	42.65
HKQ	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector	61.75
HKQC	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 2m Mating Cable	88.55
HKQCX	Sinking Switch (NPN), LED, 30VDC, 150mA with M8 Male Connector and 5m Mating Cable	101.85
HKX	Sinking Switch (NPN), LED, 30VDC, 150mA with 144" Pigtail Leads	60.00

Bimba Switch Products

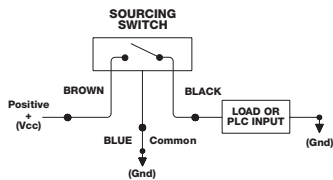
Track Mounted Solid State Switches HC and HK

Dimensions



Wiring Diagrams

Typical Solid State Sourcing Configuration for HC Models (PNP)

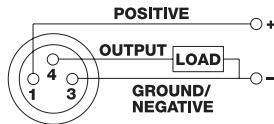


HSC, HC

Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

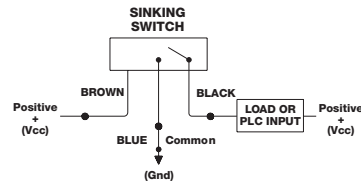
CAUTION: Shorting black wire to ground will damage switch

8mm Male Connector Sourcing Solid State Switch



HCQ

Typical Solid State Sinking Configuration for HK Models (NPN)

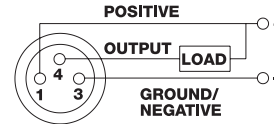


HSK, HK

Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

CAUTION: Shorting black wire to ground will damage switch

8mm Male Connector Sinking Solid State Switch

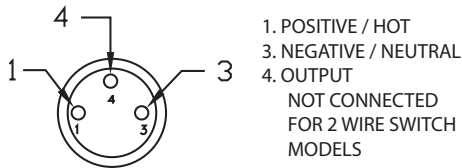


HKQ

Pin and Wire Assignments for Quick Connect

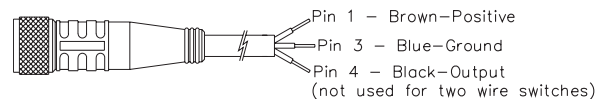
Switch "Q" Option **Male** Connector

Face View of M8 **Male** Connector

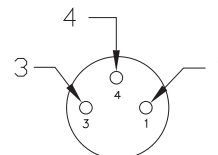


C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Selection

Mini Round Track Mounted Switches

MR, MS, MSC, and MSK

Compatible and Tested for use with:

Original Line Cylinders, Pneu-Turn Rotary Actuators, Linear Thrusters (-T option required), Ultram Band Cylinders (18mm bore only), Extruded Flat, Twist Clamp, Twin Bore, Stopper Cylinders, Extruded Flat Lift Table, Narrow Profile Air Table, and Low Profile Air Table



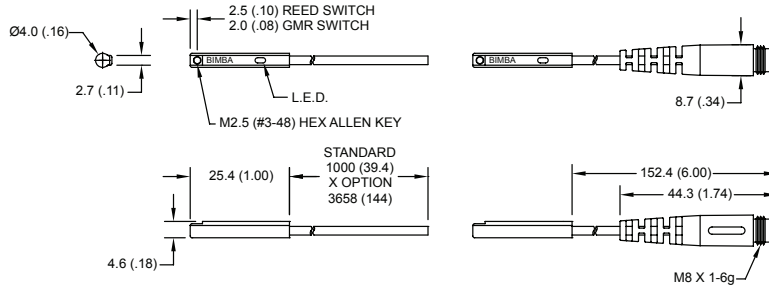
Part Numbers and List Prices

Part Number	Description	List Price
MR	Reed Switch, 2 wire, LED, 5-120 VAC/VDC, 30mA, 1m Pigtail Leads	\$ 22.50
MRQ	Reed Switch, 2 wire, LED, 5-120 VAC/VDC, with M8 Male Connector	42.95
MRQC	Reed Switch, 2 wire, LED, 5-120 VAC/VDC, with M8 Male Connector and 2m Mating Cable	68.50
MRQCX	Reed Switch, 2 wire, LED, 5-120 VAC/VDC, with M8 Male Connector and 5m Mating Cable	81.25
MRX	Reed Switch, 2 wire, LED, 5-120 VAC/VDC, with 144" Pigtail Leads	36.55
MS	Auto Configure, PNP or NPN, 3 wire, LED, 30VDC, 100mA with 24" Pigtail Leads	45.80
MSQ	Auto Configure, PNP or NPN, 3 wire, LED, 30VDC, 100mA with M8 Male Connector	61.90
MSQC	Auto Configure, PNP or NPN, 3 wire, LED, 30VDC, 100mA with M8 Male Connector and 2m Mating Cable	87.45
MSQCX	Auto Configure, PNP or NPN, 3 wire, LED, 30VDC, 100mA with M8 Male Connector and 5m Mating Cable	100.25
MSX	Auto Configure, PNP or NPN, 3 wire, LED, 30VDC, 100mA with 144" Pigtail Leads	57.60
MSC	Sourcing Switch (PNP), LED, 30VDC, 50 mA with 24" Pigtail Leads	36.90
MSCQ	Sourcing Switch (PNP), LED, 30VDC, 200 mA with M8 Male Connector	57.40
MSCQC	Sourcing Switch (PNP), LED, 30VDC, 200 mA with M8 Male Connector and 2m Mating Cable	82.95
MSCQCX	Sourcing Switch (PNP), LED, 30VDC, 200 mA with M8 Male Connector and 5m Mating Cable	95.70
MSCX	Sourcing Switch (PNP), LED, 30VDC, 200 mA with 144" Pigtail Leads	50.90
MSK	Sinking Switch (NPN), LED, 30VDC, 200 mA with 24" Pigtail Leads	36.90
MSKQ	Sinking Switch (NPN), LED, 30VDC, 200 mA with M8 Male Connector	57.40
MSKQC	Sinking Switch (NPN), LED, 30VDC, 200 mA with M8 Male Connector and 2m Mating Cable	82.95
MSKQCX	Sinking Switch (NPN), LED, 30VDC, 200 mA with M8 Male Connector and 5m Mating Cable	95.70
MSKX	Sinking Switch (NPN), LED, 30VDC, 200 mA with 144" Pigtail Leads	50.90

Bimba Switch Products

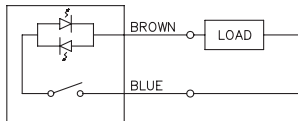
Mini Round Track Mounted Switches MR, MS, MSC, and MSK

Dimensions



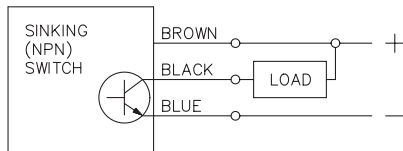
Wiring Diagrams

MR, MRX, MRQ (Reed Switch)

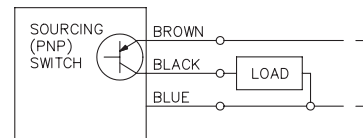


NOTE: On Quick Connect reed switch models, connect only the Blue and Brown wires on the mating cable and cut back the Black wire. **Do Not** connect switch to a mating cable that has been previously wired for a 3 wire solid state switch, as it will short the MRQ switch.

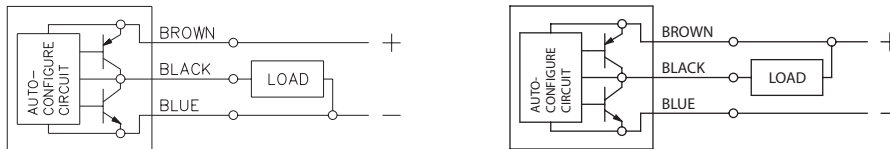
MSK, MSKX, MSKQ (Sinking, Solid State)



MSC, MSCX, MSCQ (Sourcing, Solid State)



MS, MSX, MSQ

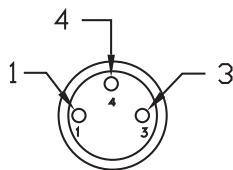


Color Codes	
Brown	(+) Positive
Black	Output
Blue	(-) Negative

Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

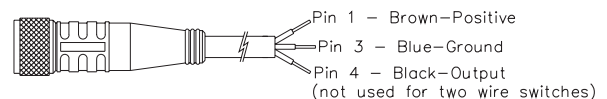
Face View of M8 **Male** Connector



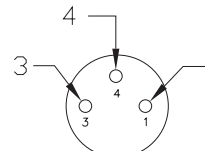
1. POSITIVE / HOT
 3. NEGATIVE / NEUTRAL
 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Selection

Heavy Duty Track Mounted Switches

MRS-.027, MRS-.087, and MRS-1.5-S

Compatible and Tested for use with:

Original Line Cylinders and MRS Series Cylinders with -Z option



Part Numbers and List Prices

Part Number	Description	List Price
MRS-.027 ¹	Reed Switch, 2 wire, No LED, 28 V, 250mA, 24" Pigtail Leads	\$ 16.10
MRS-.027-Q ¹	Reed Switch, 2 wire, No LED, 28 V, 250mA, with M8 Male Connector	36.80
MRS-.027-QC ¹	Reed Switch, 2 wire, No LED, 28 V, 250mA, with M8 Male Connector and 2m Mating Cable	64.10
MRS-.027-QCX ¹	Reed Switch, 2 wire, No LED, 28 V, 250mA, with M8 Male Connector and 5m Mating Cable	77.85
MRS-.087 ²	Reed Switch, 2 wire, No LED, 200 V, 500mA, 24" Pigtail Leads	16.10
MRS-.087-Q ²	Reed Switch, 2 wire, No LED, 200 V, 500mA, with M8 Male Connector	36.80
MRS-.087-QC ²	Reed Switch, 2 wire, No LED, 200 V, 500mA, with M8 Male Connector and 2m Mating Cable	64.10
MRS-.087-QCX ²	Reed Switch, 2 wire, No LED, 200 V, 500mA, with M8 Male Connector and 5m Mating Cable	74.85
MRS-1.5 ²	Reed Switch, 2 wire, No LED, 230 V AC only, 1.5A, 24" Pigtail Leads	29.45
MRS-1.5-S ¹	Reed Switch, 2 wire, No LED, 230 V AC only, 1.5A, 24" Pigtail Leads	29.45

¹MRS Series with -Z option 9/16" and 3/4" bore only

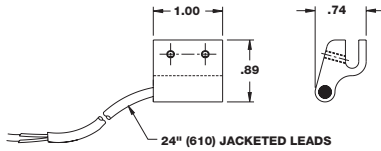
²MRS Series with -Z option 1-1/16" through 2" bore only

Bimba Switch Products

Heavy Duty Track Mounted Switches MRS-.027, MRS-.087, and MRS-1.5-S

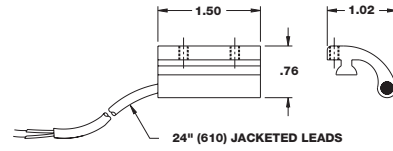
Dimensions

MRS-.027



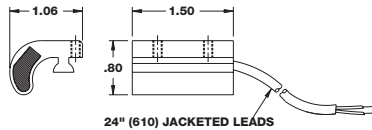
To order longer leads, specify D-12660-A-lead length in inches. Consult BIMBA distributor or factory for prices.

MRS-.087



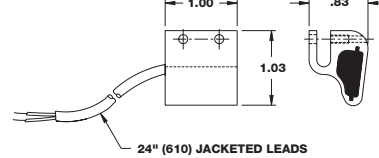
To order longer leads, specify D-7000-A-lead length in inches. Consult BIMBA distributor or factory for prices.

MRS-1.5



To order longer leads, specify D-7001-A-lead length in inches. Consult BIMBA distributor or factory for prices.

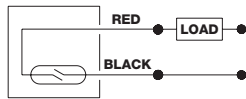
MRS-1.5-S



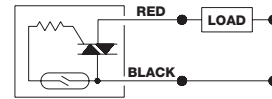
To order longer leads, specify D-16312-A-lead length in inches. Consult BIMBA distributor or factory for prices.

Wiring Diagrams

MRS-.027
MRS-.087



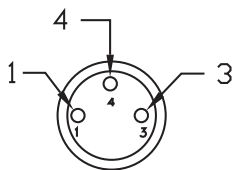
MRS-1.5
MRS-1.5-S



Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

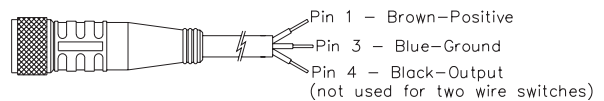
Face View of M8 **Male** Connector



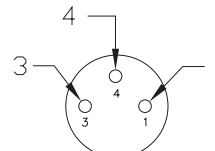
- 1. POSITIVE / HOT
- 3. NEGATIVE / NEUTRAL
- 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cble **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Selection

5mm Square Track Mounted Switches

HSC-AB, HSK-AB, and MRS-AB

Compatible and Tested for use with:

ISO-6431 Cylinders



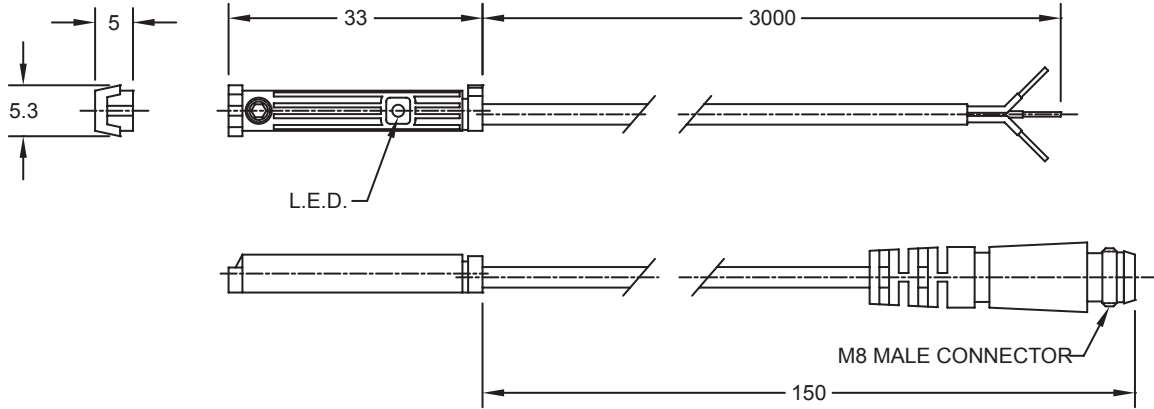
Part Numbers and List Prices

Part Number	Description	List Price
MRS-AB	Reed Switch, 2 wire, LED, 240 V, 100mA, 24" Pigtail Leads	\$ 23.15
MRS-ABQ	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector	35.05
MRS-ABQC	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector and 2m Mating Cable	61.20
MRS-ABQCX	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector and 5m Mating Cable	74.20
HSC-AB	Sourcing Switch (PNP), LED, 30VDC, 200mA with 24" Pigtail Leads	35.05
HSC-ABQ	Sourcing Switch (PNP), LED, 30VDC, 200mA with M8 Male Connector	46.10
HSC-ABQC	Sourcing Switch (PNP), LED, 30VDC, 200mA with M8 Male Connector and 2m Mating Cable	72.15
HSC-ABQCX	Sourcing Switch (PNP), LED, 30VDC, 200mA with M8 Male Connector and 5m Mating Cable	85.20
HSK-AB	Sinking Switch (NPN), LED, 30VDC, 200mA with 24" Pigtail Leads	35.05
HSK-ABQ	Sinking Switch (NPN), LED, 30VDC, 200mA with M8 Male Connector	46.10
HSK-ABQC	Sinking Switch (NPN), LED, 30VDC, 200mA with M8 Male Connector and 2m Mating Cable	72.15
HSK-ABQCX	Sinking Switch (NPN), LED, 30VDC, 200mA with M8 Male Connector and 5m Mating Cable	85.20

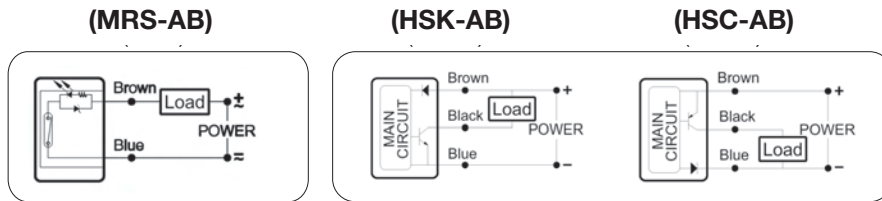
Bimba Switch Products

5mm Square Track Mounted Switches HSC-AB, HSK-AB, and MRS-AB

Dimensions



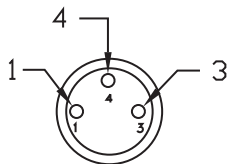
Wiring Diagrams



Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

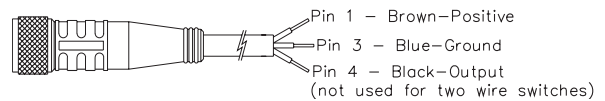
Face View of M8 **Male** Connector



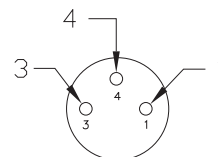
1. POSITIVE / HOT
 3. NEGATIVE / NEUTRAL
 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Bimba Switch Products

Switch Selection

5mm Square Track Mounted Switches

UBR, UBSC, and UBSK

Compatible and Tested for use with:
Ultran Band Cylinders (25mm to 63mm bore sizes)



Part Numbers and List Prices

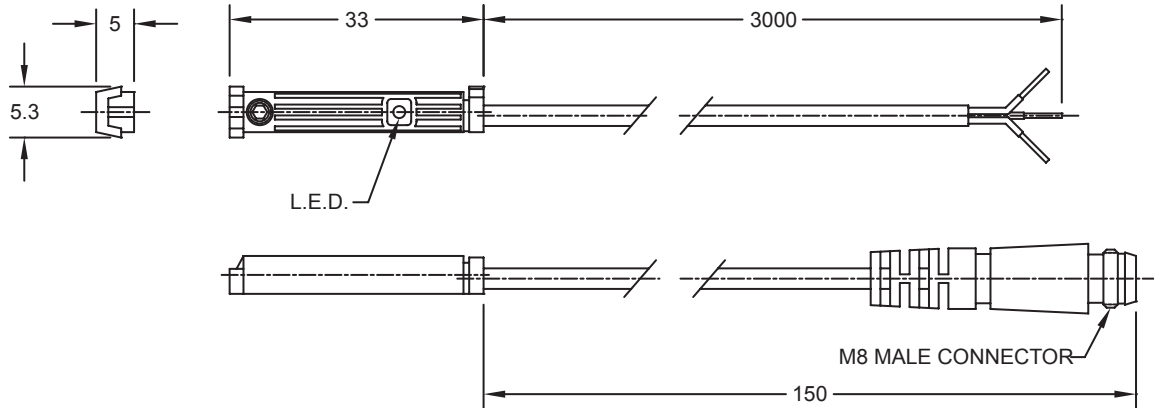
Part Number	Description	List Price
UBR	Reed Switch, 2 wire, LED, 240 V, 100mA, 24" Pigtail Leads	\$ 22.50
UBRQ	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector	42.95
UBRQC	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector and 2m Mating Cable	65.20
UBRQCX	Reed Switch, 2 wire, LED, 240 V, 100mA, with M8 Male Connector and 5m Mating Cable	77.70
UBSC	Sourcing Switch (PNP), LED, 30 VDC, 200mA with 24" Pigtail Leads	36.90
UBSCQ	Sourcing Switch (PNP), LED, 30 VDC, 200mA with M8 Male Connector	57.40
UBSCQC	Sourcing Switch (PNP), LED, 30 VDC, 200mA with M8 Male Connector and 2m Mating Cable	78.60
UBSCQCX	Sourcing Switch (PNP), LED, 30 VDC, 200mA with M8 Male Connector and 5m Mating Cable	91.15
UBSK	Sinking Switch (NPN), LED, 30 VDC, 200mA with 24" Pigtail Leads	36.90
UBSKQ	Sinking Switch (NPN), LED, 30 VDC, 200mA with M8 Male Connector	57.40
UBSKQC	Sinking Switch (NPN), LED, 30 VDC, 200mA with M8 Male Connector and 2m Mating Cable	78.60
UBSKQCX	Sinking Switch (NPN), LED, 30 VDC, 200mA with M8 Male Connector and 5m Mating Cable	91.15

Bimba Switch Products

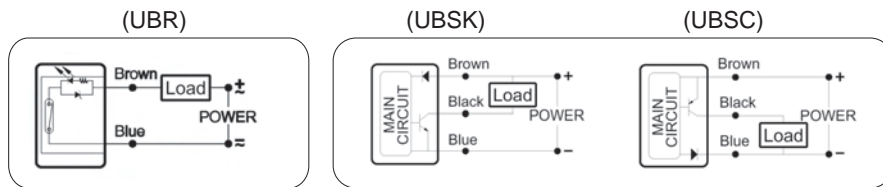
5mm Square Track Mounted Switches UBR, UBSC, and UBSK

Dimensions

Magnetic Sensor Dimensional Data



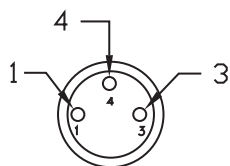
Wiring Diagrams



Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

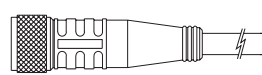
Face View of M8 **Male** Connector



- 1. POSITIVE / HOT
- 3. NEGATIVE / NEUTRAL
- 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

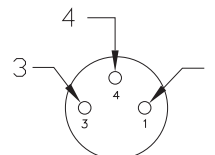
C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



- Pin 1 - Brown-Positive
- Pin 3 - Blue-Ground
- Pin 4 - Black-Output (not used for two wire switches)

Face View of M8 **Female** Connector



Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Selection

Ultran End of Stroke Switches

PCQ, PKQ, RSU-1

Compatible and Tested for use with:

Ultran Rodless Cylinders



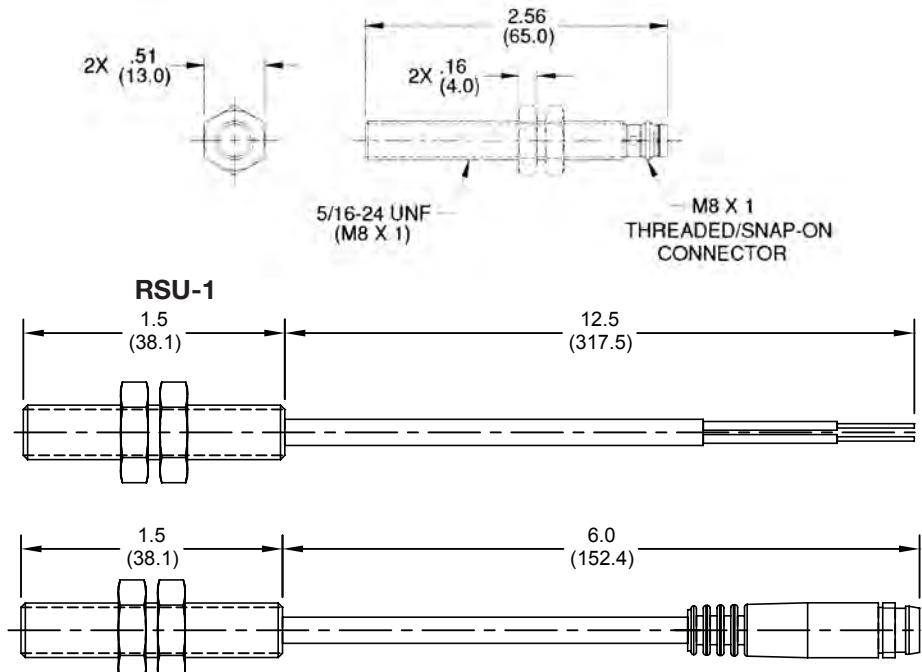
Part Numbers and List Prices

Part Number	Description	List Price
PCQ	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sourcing (PNP) Output, M8 Male Connector	\$ 89.55
PKQ	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sinking (NPN) Output, M8 Male Connector	89.55
RSU-1	5/16-24 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, 12.5" Pigtail Leads	14.90
RSU-1-Q	5/16-24 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, M8 Male Connector	42.75
PCQC	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sourcing (PNP) Output, M8 Male Connector and 2m Mating Cable	115.10
PKQC	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sinking (NPN) Output, M8 Male Connector and 2m Mating Cable	115.10
RSU-1-QC	5/16-24 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, M8 Male Connector and 2m Mating Cable	69.75
PCQCX	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sourcing (PNP) Output, M8 Male Connector and 5m Mating Cable	127.85
PKQCX	5/16-24 Threaded Barrel Type Inductive Proximity Sensor with Sinking (NPN) Output, M8 Male Connector and 5m Mating Cable	127.85
RSU-1-QCX	5/16-24 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, M8 Male Connector and 5m Mating Cable	83.20
RSUM-1	M8 by 1.25 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, 12.5" Pigtail Leads	15.85
RSUM-1-Q	M8 by 1.25 Threaded Barrel Type Magnetic Reed Sensor with Normally Open Contact Output, M8 Male Connector and 5m Mating Cable	42.75

Bimba Switch Products

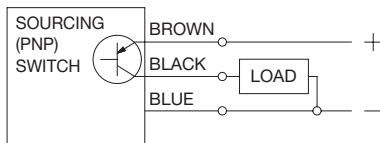
Ultran End of Stroke Switches PCQ, PKQ, RSU-1

Dimensions

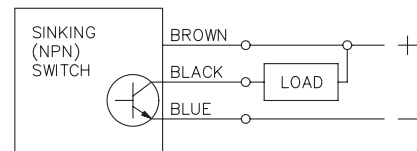


Wiring Diagrams

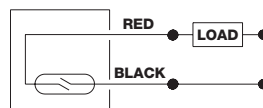
MSC, MSCX, MSCQ (Sourcing, Solid State)



PKQ



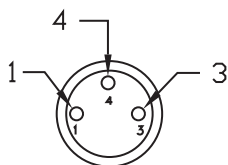
RSU-1



Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

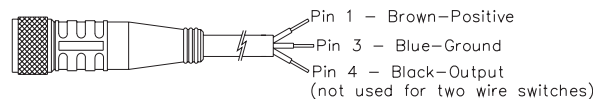
Face View of M8 **Male** Connector



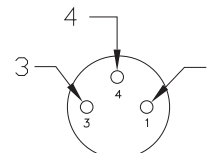
1. POSITIVE / HOT
 3. NEGATIVE / NEUTRAL
 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Bimba Switch Products

Switch Selection

M8 Female Quick Connect Cables
C4 and C5

Compatible and Tested for use with:
All Bimba Actuators with "Q" Option



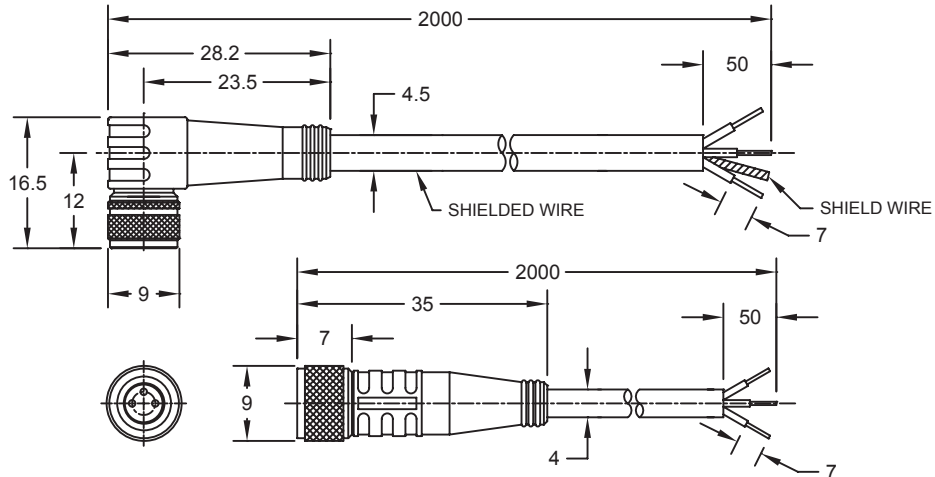
Part Numbers and List Prices

Part Number	Description	List Price
C4	Straight M8 Female Connector, Threaded Connection with 2 Meter Cable	\$ 26.20
C4-S	Straight M8 Female Connector, Threaded Connection with 2 Meter Shielded Cable	28.95
C4X	Straight M8 Female Connector, Threaded Connection with 5 Meter Cable	39.20
C4X-S	Straight M8 Female Connector, Threaded Connection with 5 Meter Shielded Cable	44.85
C5-S	Right Angle M8 Female Connector, Threaded Connection with 2 Meter Shielded Cable	28.95
C5X-S	Right Angle M8 Female Connector, Threaded Connection with 5 Meter Shielded Cable	44.85

Bimba Switch Products

M8 Female Quick Connect Cables C4 and C5

Dimensions

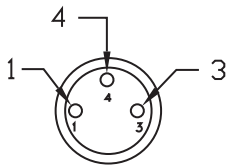


Wiring Diagrams

Pin and Wire Assignments for Quick Connect

Switch "Q" Option **Male** Connector

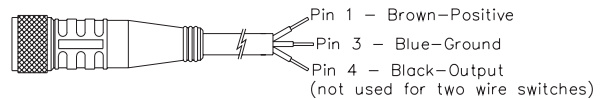
Face View of M8 **Male** Connector



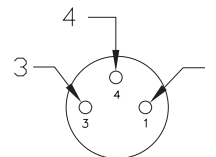
- 1. POSITIVE / HOT
- 3. NEGATIVE / NEUTRAL
- 4. OUTPUT
- NOT CONNECTED FOR 2 WIRE SWITCH MODELS

C4 and C5 Cable **Female** Connector

Side View of M8 **Female** Connector



Face View of M8 **Female** Connector



Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

M8 Female Quick Connect Cables

Switch Application Information

Bimba Switch Products

Switch Application Information

Actuator Application Data

Hysteresis and Operating Windows

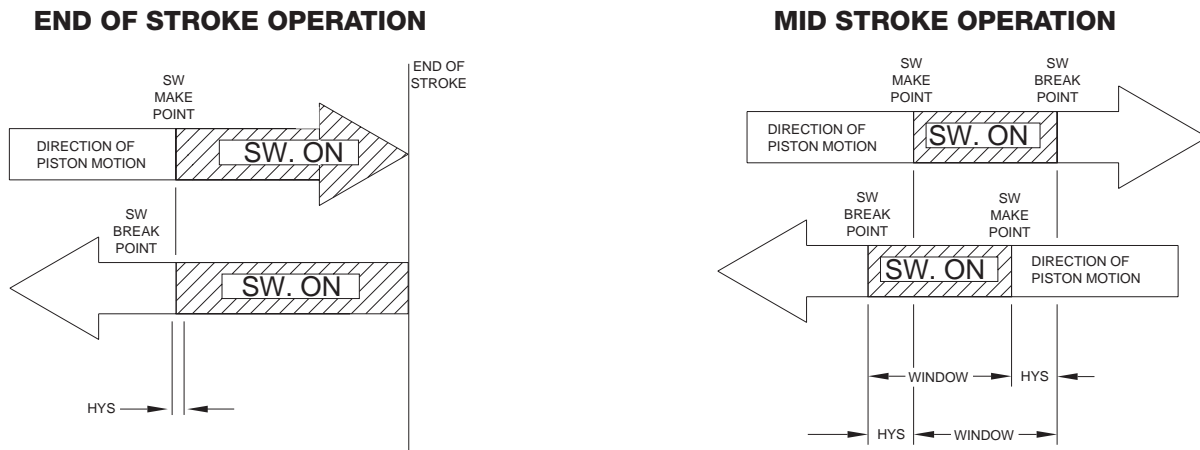
Hysteresis

Bimba Solid State switches are subject to hysteresis. Hysteresis is the difference in magnetic field strength needed to initiate switch operation versus the field strength needed to sustain switch operation. The effect is that the switch break point will be different from the switch make point in the piston travel.

Operating Window

The operating window is the distance the piston travels while the switch is in the "ON" state, and includes the hysteresis action. For the Solid State Switch, hysteresis is greater on one side of the operating window because this switch is sensitive to only one side of the magnet.

For high speed equipment, the time duration of the switch signal may be critical. The time duration is a function of the operating window length and the speed of operation of the actuator. It is calculated by dividing the minimum travel in the operating window by the piston speed, taking into account the hysteresis effect. The illustrations and chart below show the operating windows for the Solid State Switch.



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Original Line Cylinders with Indicated Switches

Bore Size		MR, MS, MSC, MSK			HSC, HSK			MRS-.087, MRS-1.5			MRS-.027, MRS-1.5-S		
		Operating Window	Maximum Hysteresis	Repeat-ability	Operating Window	Maximum Hysteresis	Repeat-ability	Operating Window	Maximum Hysteresis	Repeat-ability	Operating Window	Maximum Hysteresis	Repeat-ability
007	5/16"	0.250"	0.040"	±0.010"			±0.015"						
01	7/16"	0.275"	0.040"	±0.010"			±0.015"						
02	9/16"	0.350"	0.040"	±0.010"	0.290"	0.040"	±0.015"	0.350"	0.040"	±0.015"	0.345"	0.015"	±0.015"
04	3/4"	0.375"	0.045"	±0.010"	0.310"	0.040"	±0.015"	0.350"	0.040"	±0.015"	0.345"	0.015"	±0.015"
06	7/8"	0.425"	0.045"	±0.010"	0.320"	0.040"	±0.015"	0.350"	0.040"	±0.015"			
09	1-1/16"	0.450"	0.045"	±0.010"	0.330"	0.040"	±0.015"	0.350"	0.040"	±0.015"			
12	1-1/4"	0.450"	0.050"	±0.010"	0.340"	0.040"	±0.015"	0.440"	0.040"	±0.015"			
17	1-1/2"	0.450"	0.050"	±0.010"	0.350"	0.040"	±0.015"	0.440"	0.040"	±0.015"			
24	1-3/4"	0.450"	0.050"	±0.010"	0.350"	0.040"	±0.015"	0.440"	0.040"	±0.015"			
31	2"	0.450"	0.050"	±0.010"	0.360"	0.040"	±0.015"	0.440"	0.040"	±0.015"			
50	2-1/2"	0.450"	0.050"	±0.010"	0.370"	0.040"	±0.015"	0.440"	0.040"	±0.015"			
70	3"	0.500"	0.050"	±0.010"	0.380"	0.040"	±0.015"	0.440"	0.040"	±0.015"			

Flat Cylinders with Track Mounted Switches

HK, HC, MR, MS, MSC, MSK

Bore Size		Operating Window	Maximum Hysteresis	Repeat-ability
02	9/16"	0.250"	0.040"	±0.015"
04	3/4"	0.300"	0.040"	±0.015"
09	1-1/16"	0.300"	0.040"	±0.015"
17	1-1/2"	0.300"	0.040"	±0.015"
31	2"	0.325"	0.040"	±0.015"
50	2-1/2"	0.325"	0.040"	±0.015"
70	3"	0.375"	0.040"	±0.015"
125	4"	0.400"	0.040"	±0.015"

Pneu-Turn Rotary Actuators with Indicated Switches

Bore Size		MR, MS, MSC, MSK			HSC, HSK			MRS-.087 -B		
		Operating Window	Maximum Hysteresis	Repeat-ability	Operating Window	Maximum Hysteresis	Repeat-ability	Operating Window	Maximum Hysteresis	Repeat-ability
02	9/16"	73°	8°	±2°	84°	7°	±3°	62°	9°	±3°
04	3/4"	57°	7°	±1.5°	61°	5°	±2°	51°	7°	±2°
09	1-1/16"	57°	6°	±1.5°	55°	5°	±2°	54°	9°	±2°
17	1-1/2"	47°	5°	±1°	41°	4°	±2°	40°	6°	±2°
31	2"	33°	4°	±0.75°	29°	3°	±1°	30°	5°	±1°

Switch and Cable Selection Chart

Switch and Cable Specifications

Band Mounted Solid State Switches

Heavy Duty Band Mounted Switches

High Illumination and High Power Band

Track Mounted Solid State Switches

Mini Round Track Mounted Switches

Heavy Duty Track Mounted Switches

5mm Square Track Mounted Switches

Ultra End of Stroke Switches

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Bimba Switch Products

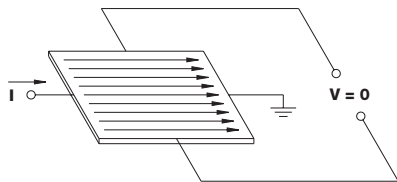
Switch Application Information

Bimba Solid State Switch

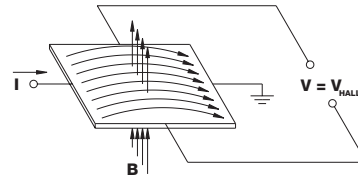
This is a three-wire, solid state device recommended for low current DC loads such as interfacing with programmable controller. It provides compact, reliable sensing for virtually infinity life. An LED indicator light illuminates when switching occurs. Models are available in current sinking (NPN) and current sourcing (PNP) models. Either can be used for loads such as counters and solid state relays. Selection of sinking or sourcing models depends on the requirements of the programmable controller.

How it works:

The Bimba Solid State Switch is based on giant magnetoresistive (GMR) technology, which was first developed in 1988. It includes 4 Solid State resistors (2 active, 2 shielded), each of which has many thin layers of magnetoresistive material. In each layer, the electrons are oriented opposite the adjacent layer, providing a great deal of resistance to electrical flow. The presence of a magnetic field overcomes the magnetic coupling between the adjacent layers, causing parallel alignment of magnetic moments between layers, and resistance drops significantly. By connecting the 4 resistors in a classic Wheatstone bridge configuration, the voltage across a single resistor is doubled, providing a linear output. This voltage is then amplified, and sent to a comparator that switches the sensor output when it detects that a minimum magnetic field strength is present. High voltage transistors provide TTL-compatible output rated at 25 milliamps. The switch includes reverse polarity, overvoltage and transient protection.



PRINCIPLE OF SOLID STATE (NO MAGNETIC FIELD)



PRINCIPLE OF SOLID STATE (MAGNETIC FIELD PRESENT)

Sinking vs. Sourcing

Bimba offers both sinking and sourcing Solid State Switch models.

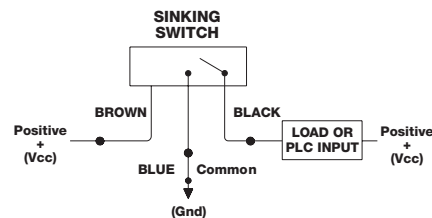
Sinking switches are applied to the **negative** side of a load. When the switch is activated, the negative (ground) is connected, completing the circuit.

Sourcing switches are applied to the **positive** side of a load. When the switch is activated, power is connected, completing the circuit.

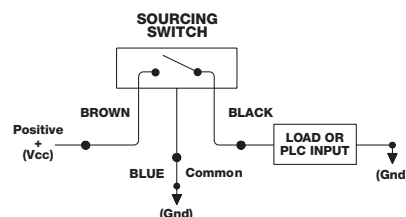
The model needed will be determined by a number of factors, including:

- Company standards.
- PLC input cards. (You may have sinking input cards available or your PLC only has a sinking type. Be aware that for some PLC manufacturers, sourcing input cards require a sinking switch or sinking input cards require a sourcing switch; check the specifications to clarify.)
- Type of circuit. PLC manufacturers typically filter input modules that use sourcing field devices and use unfiltered input modules with sinking field devices.

Typical Solid State Sinking Configuration (NPN)



Typical Solid State Sourcing Configuration (PNP)



Bimba Switch Products

Switch Application Information

Helpful Hints

- Be sure your actuator has a magnet option.
- Be sure to match your Solid State Switches to the proper circuits, i.e., sinking switches for sinking circuits and sourcing switches for sourcing circuits.
- Be sure to choose the correct input voltage for the switch ratings.
- Don't try to use a switch with a low current output to drive a high power circuit.
- If you have a high speed application, be sure your load circuitry doesn't have a high signal delay (some circuits have filters which cause signal delays).

Bimba has technical bulletins that describe the following situations:

1. Contact Protection (transient suppression for Reed Switches) for inductive or capacitive load switching.
2. "Or" logic operation for Solid State Switches connected in parallel.
3. "And" logic operation for Solid State Switches connected in Series.

Call 1-800-44-BIMBA to speak to our Technical Assistance Center and request a copy at no charge or visit our website at www.bimba.com and click Tech Center.

Glossary

Actuating Time Average	Average time to close contacts on a reed switch.	Operating Window	See charts. The active window that the sensor will be in the "on" state.
Solid State	Solid State switching device activated by magnetic field.	R-C Network	A filter network that combines a resistor and capacitor in series across a reed switch, that filters the switch from inductive kickback or transients.
Hysteresis	The difference (in distance) between the spot where the switch turns "on" when the piston moves in one direction, and when the switch turns "off" when the piston moves in the opposite direction. This difference occurs because it takes more magnetic force to turn the switch "on" than it does to <u>keep</u> it on.	Response	Same as turn on/off time or actuating time average.
Inductive Load	The characteristic of an electrical load or device that enables it to store energy while operating and to return that energy to the circuit, as electricity, when the current is turned off, i.e., solenoids.	Reverse Polarity Protection	Protects switch damage caused by switching the positive and negative leads.
Input Current	The amount of current needed to power switch.	Self-Commutation	A condition inherent in triac switching devices. Self-commutation occurs when transients cause the triac to momentarily turn on, even though a magnetic field is not present.
Inrush Current	Initial current draw from inductive loads. May be two or three times the rated holding current for such devices.	Signal Repeatability	Range at which switch will turn on or off, given the same physical switching point.
Kickback, Inductive	Occurs when inductive loads are switched off. This may cause transients that can damage reed switches.	Sinking	Term used for device that switches a load to ground (NPN).
MRS	Magnetic Reed Switch is a mechanical switch activated by magnetic field.	Sourcing	Term used for device that switches power supply to load (PNP).
Off-state Leakage	Amount of current flow to output in the off state.	Triac	A solid state device used to switch inductive AC loads.
		Turn On/Off Time	The amount of time it takes to turn on or off a Solid State device.

Switch and Cable Selection Chart

Specifications Switch and Cable

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