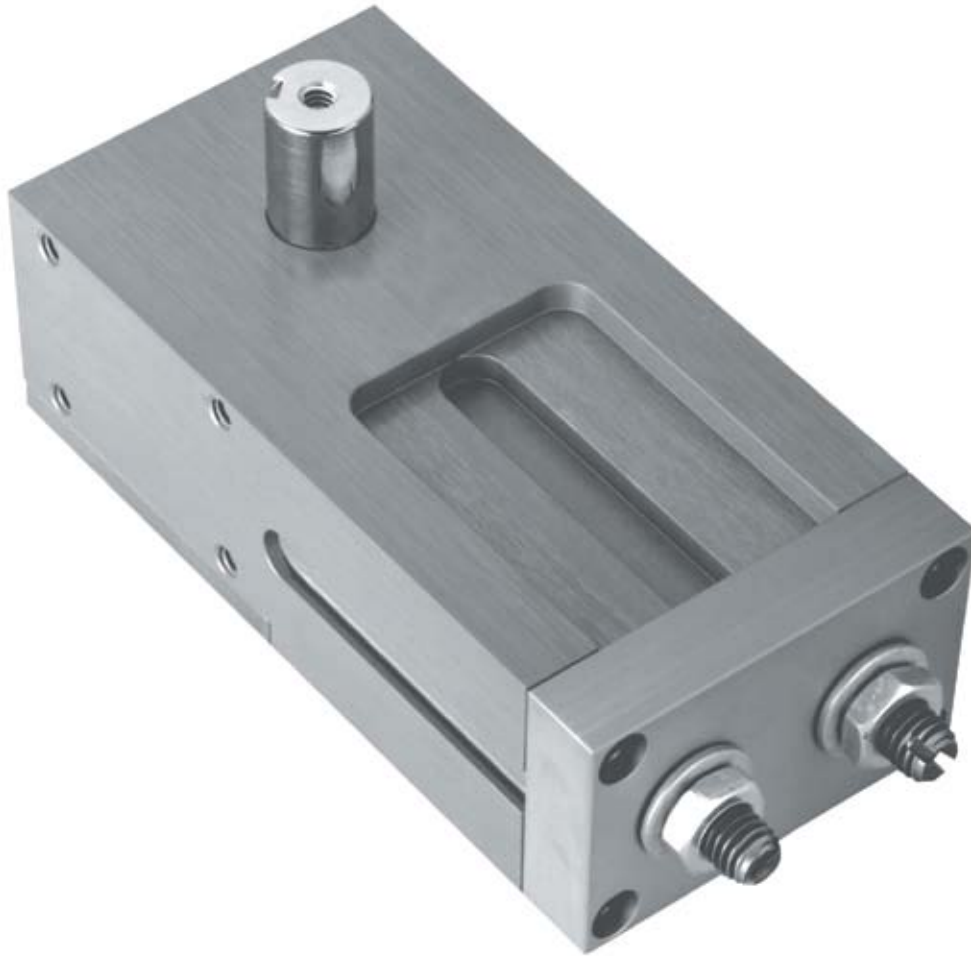


NUMATICS®

RW Series

90 Degree Rotary Actuators



www.numatics.com

RW Series

| | |
|---|-----|
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RW-Series Rotary Actuator: Designed to handle real world rotary actuator applications.

The RW-Series Rotary Actuator design utilizes two independent piston cylinders. Each piston has a crank arm attached to a crankshaft. As the piston strokes in its bore, the crankshaft rotates. Pressurizing the opposite bore reverses rotation. This unique design has many features and benefits over conventional rotary actuators.

A. Body:

Hardcoat Anodized Aluminum

Lightweight, durable, high strength to weight ratio, PTFE impregnated inside and out

Multiple mounting surfaces

Flexible, easy access mounting

B. Output Shaft:

Hardened electroless nickel

Corrosion and wear resistance

Oversized diameter

Increased strength and rigidity, supported by both roller and thrust bearings

Hollow shaft

Reduced weight, thru shaft access

C. Stroke Adjustment:

Clockwise and Counter Clockwise Adjustment

Infinite adjustment in both directions of rotation, easy access, secured by jam nut

D. Sensor Mounting Channel:

Machined into body

Accepts Numatics Motion Control dovetail switches, easy access, easy adjustment

Magnetic piston is standard on all models.

Permanently lubricated seals are standard on all models, no lube required. FKM compound for high temperature applications, optional.

Factory lubricated, fluorinated grease. (Non-toxic, non-migrating and no chlorine, silicones or chlorofluorocarbons (CFCs).) Cleanroom applied.

Additional options:

- Shock absorbers
- Double output shaft



How to Order

RW 030 A 1 A E Z C 1

Bore Sizes

- 030 = 30 in.-lb
- 075 = 75 in.-lb
- 125 = 125 in.-lb

Rotation

- A = 90°

Seal Option

- 1 = Buna-N
- 2 = FKM

Shaft Option

- A = Standard Single Shaft End
- B* = Single Shaft Tapped NPTF Port
- C* = Single Shaft Tapped "G" Port
- X* = Double Shaft Tapped "G" Port
- Y* = Double Shaft Tapped NPTF Port
- Z* = Double Shaft End

*Tapped both ends.

Shock Options

- 1 = Shocks Yes
- 2 = Shocks No

Sensing Position

- A = Single Position CW
- B = Single Position CCW
- C = Two Position
- D = No Sensing

Sensing Type

- Standard Cord Set
 - 1 = Hall Effect - PNP (sourcing)
 - 2 = Hall Effect - NPN (sinking)
 - 3 = Reed Switch
 - 6 = No Sensing
- Quick Disconnect Cord Set
 - Z = Hall Effect - PNP (sourcing)
 - Y = Hall Effect - NPN (sinking)
 - X = Reed Switch

See page 7.

Example order:

Part Number: RW030A1AEZC1*

Part Description: RW rotary with 30 in.-lb torque, 90° rotation, standard seals, standard single output shaft, Hall PNP quick disconnect sensing, two positions, with shocks.

*When entering an order, DO NOT use spaces or dashes. Follow example above.

Replacement Components and Kits

Shock Retro Fit Kits*

| Model No. | Part No. |
|-----------|----------|
| RW030 | RW030SK |
| RW075 | RW075SK |
| RW125 | RW125SK |

Replacement Shocks

| Model No. | Part No. |
|-----------|----------|
| RW030 | SK030 |
| RW075 | SK106 |
| RW125 | SK150 |

*Kits include hardware and shocks.

RW Rotary Seal Kit with Shock Option

| Series | Buna Seals | FKM Seals |
|--------|-------------|-------------|
| RW030 | RWSKB-030SK | RWSKV-030SK |
| RW075 | RWSKB-075SK | RWSKV-075SK |
| RW125 | RWSKB-125SK | RWSKV-125SK |

Sensing Kits

| Standard Cord Set | |
|----------------------------|--------------|
| Switch | Part No. |
| Hall Effect PNP (Sourcing) | PNP-FL2-00-U |
| Hall Effect NPN (Sinking) | NPN-FL2-00-U |
| Reed Switch | REED-FL2-00 |
| Quick Disconnect Cord Set | |
| | Part No. |
| Hall Effect PNP (Sourcing) | PNP-QDS-M8-U |
| Hall Effect NPN (Sinking) | NPN-QDS-M8-U |
| Reed Switch | REED-QDS-M8U |
| 90° 5 meter cable | PXC90 |
| Straight 5 meter cable | PXCST |

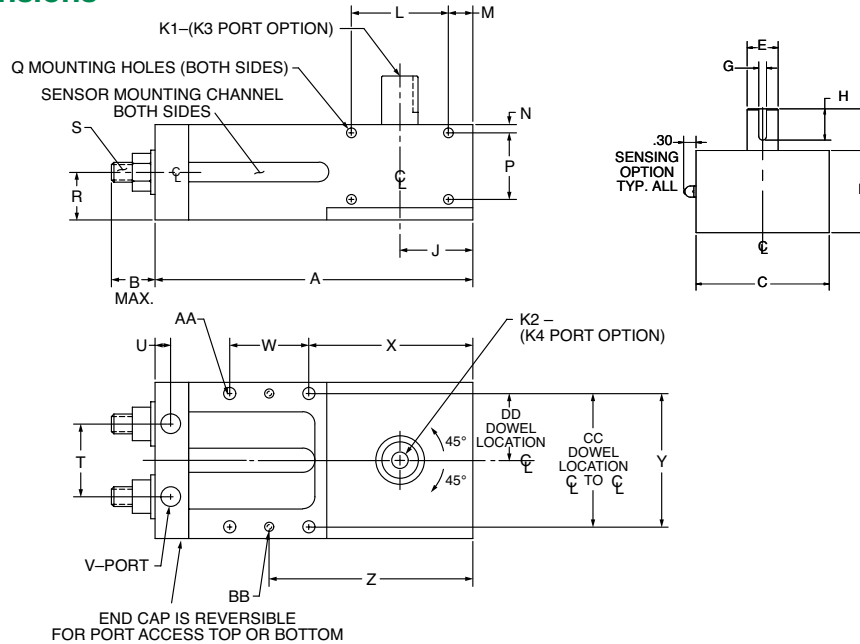
*All mounting hardware included with sensors.

RW Rotary Seal Kit

| Series | Buna Seals | FKM Seals |
|--------|------------|-----------|
| RW030 | RWSKB-030 | RWSKV-030 |
| RW075 | RWSKB-075 | RWSKV-075 |
| RW125 | RWSKB-125 | RWSKV-125 |

Dimensions: Inches

RW Series Dimensions



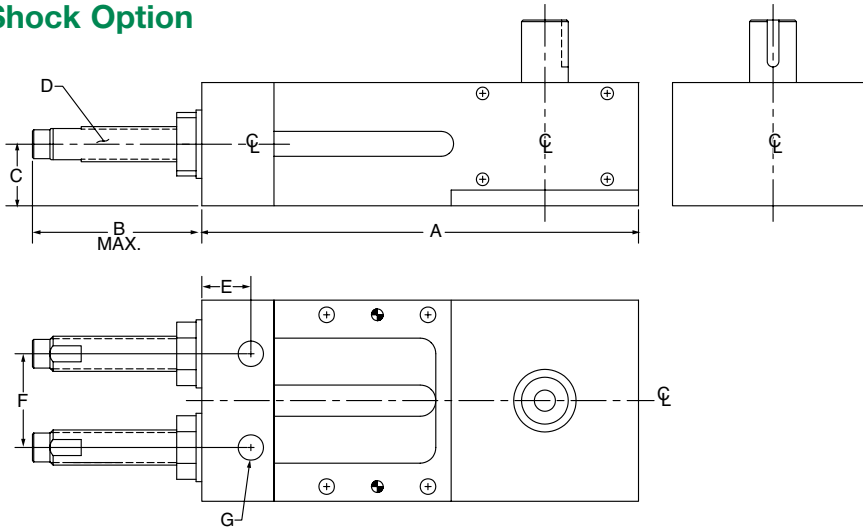
| | RW030 | RW075 | RW125 |
|----|-------------------------|--------------------------------|--------------------------------|
| A | 4.75 | 6.53 | 7.95 |
| B | 0.79 | 0.82 | 0.82 |
| C | 2.44 | 3.22 | 3.88 |
| D | 1.60 | 1.97 | 2.40 |
| E | 0.4995/0.4990 | 0.7495/0.7490 | 0.9995/0.9990 |
| F | 0.75 | 1.00 | 1.50 |
| G | 0.125 X 0.070/0.074 DP | 0.1875 X 0.106/0.110 DP | 0.250 X 0.141/0.145 DP |
| H | 0.65 | 0.75 | 1.25 |
| J | 1.17 | 1.50 | 1.94 |
| K1 | # 10-32 TAPPED | 1/4-20 TAPPED | 3/8-16 TAPPED |
| K2 | 0.159 THRU | .339 DIA. X 1.75 DP | 7/16 DIA X 2.45 DP |
| K3 | NO OPTION | OPTIONAL 1/8 NPT OR 1/8 G-PORT | OPTIONAL 1/4 NPT OR 1/4 G-PORT |
| K4 | OPTIONAL # 10-32 TAPPED | OPTIONAL 1/8 NPT OR 1/8 G-PORT | OPTIONAL 1/4 NPT OR 1/4 G-PORT |
| L | 1.88 | 2.00 | 2.56 |
| M | 0.45 | 0.50 | 0.66 |
| N | 0.15 | 0.17 | 0.25 |
| P | 1.00 | 1.38 | 1.70 |
| Q | #10-32 | 1/4 - 20 | 1/4-20 |
| R | 0.80 | 0.99 | 1.20 |
| S | 3/8 - 24 | 7/16-14 | 7/16-14 |
| T | 1.13 | 1.50 | 2.00 |
| U | 0.20 | 0.37 | 0.37 |
| V | #10-32 | 1/8 NPTF | 1/8 NPTF |
| W | 1.13 | 1.63 | 2.25 |
| X | 2.64 | 3.38 | 4.13 |
| Y | 2.00 | 2.75 | 3.25 |
| Z | 3.209/3.211 | 4.187/4.189 | 5.374/5.376 |
| AA | #10-32 | 1/4 - 20 | 5/16-18 |
| BB | 0.124/0.125 | 0.187/0.188 | 0.187/0.188 |
| CC | 1.9995/2.0005 | 2.7495/2.7505 | 3.2495/3.2505 |
| DD | 0.9995/1.0005 | 1.3745/1.3755 | 1.6245/1.6255 |

RW Series

| Model | Torque @ 100PSI | Dynamic Thrust Load | Dynamic Radial Load | Displacement Per Degree | Unit Weight | Maximum Pressure |
|-------|---------------------|---------------------|---------------------|-------------------------|-------------|------------------|
| RW030 | 30 inlb (3.4 N-m) | 646 lbf (2875 N) | 197 lbf (877 N) | 0.007 cuin. (0.115 cc) | 1.75 | 250 psi |
| RW075 | 82 inlb (9.2 N-m) | 1034 lbf (4600 N) | 357 lbf (1589 N) | 0.020 cuin. (0.335 cc) | 4.20 | 250 psi |
| RW125 | 133 inlb (15.0 N-m) | 1330 lbf (5917 N) | 518 lbf (2307 N) | 0.033 cuin. (0.538 cc) | 7.00 | 250 psi |

Typical breakaway 5.0 psi. Backlash max. ± 1/4 degree.

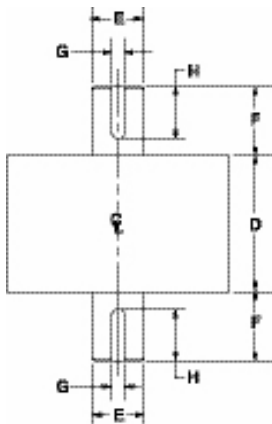
Shock Option



Shock Option

| | RW030 | RW075 | RW125 |
|---|--------|----------|----------|
| A | 5.56 | 7.00 | 8.42 |
| B | 2.72 | 2.72 | 2.69 |
| C | 0.80 | 0.99 | 1.20 |
| D | SK030 | SK106 | SK150 |
| E | 0.91 | 0.84 | 0.84 |
| F | 1.13 | 1.50 | 2.00 |
| G | #10-32 | 1/8 NPTF | 1/8 NPTF |

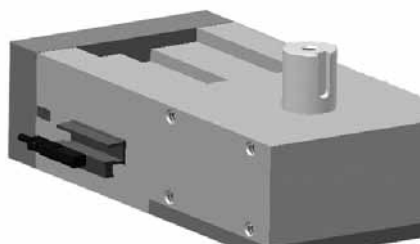
Dual Output Shaft



| | RW030 | RW075 | RW125 |
|---|------------------------|-------------------------|------------------------|
| D | 1.60 | 1.97 | 2.40 |
| E | 0.4995/0.4990 | 0.7493/0.7488 | 0.9995/0.9990 |
| F | 0.75 | 1.00 | 1.50 |
| G | 0.125 X 0.070/0.074 DP | 0.1875 X 0.106/0.110 DP | 0.250 X 0.141/0.145 DP |
| H | 0.65 | 0.75 | 1.25 |

RW Series Rotary

| Bore | Bracket P/N |
|-------|-------------|
| RW030 | N99-1185 |
| RW075 | N99-1185 |
| RW125 | N99-1185 |

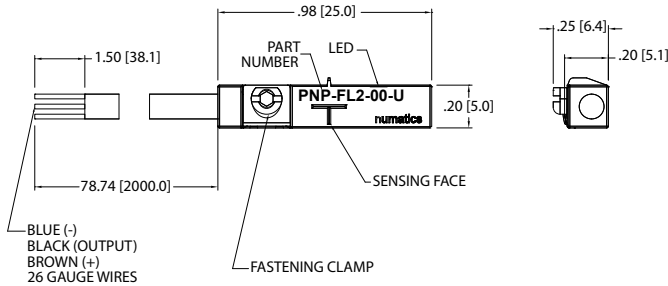


| Sensor Description | Standard Cord Set | Quick Disconnect |
|--------------------|-------------------|------------------|
| Reed Switch | REED-FL2-00 | REED-QDS-M8U |
| Hall PNP | PNP-FL2-00-U | PNP-QDS-M8-U |
| Hall NPN | NPN-FL2-00-U | NPN-QDS-M8-U |

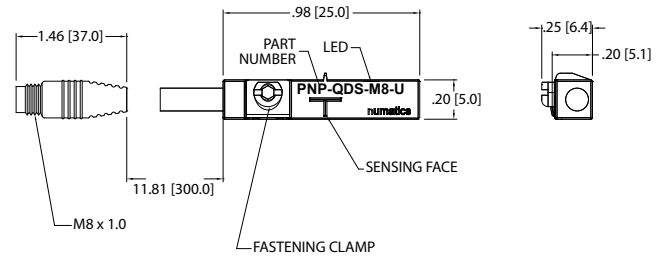
See page 7, 8, & 9 for sensor specifications




Sensing Part Numbers




PNP-FL2-00-U



PNP-QDS-M8-U

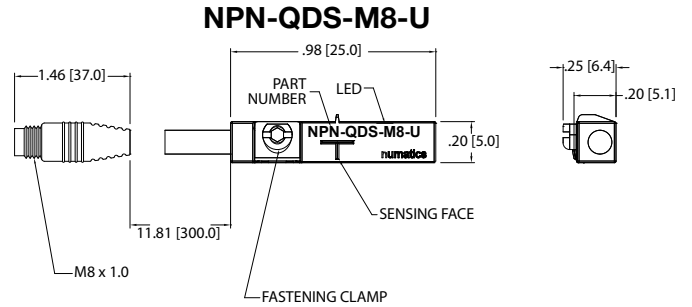
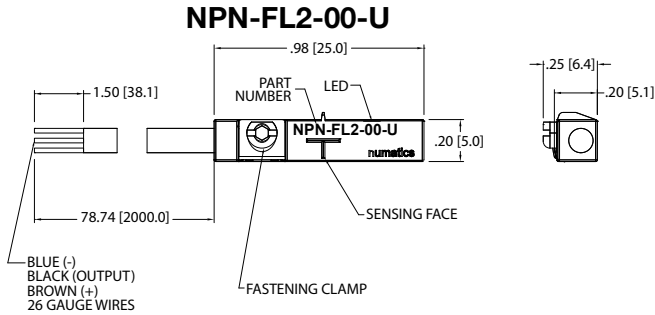


| ELECTRICAL DESIGN | DC PNP |
|-----------------------------------|---|
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | 10-30 VDC |
| CURRENT RATING | 100 mA |
| SHORT-CIRCUIT PROTECTION | Yes |
| OVERLOAD PROTECTION | Yes |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 2.5 V |
| CURRENT CONSUMPTION | < 12 mA |
| REPEATABILITY | < .2mm |
| POWER-ON DELAY TIME | < 30 ms |
| SWITCH FREQUENCY | > 3000 Hz |
| AMBIENT TEMPERATURE | -25°C to 85°C |
| PROTECTION | IP 67, III |
| HYSTERESIS | 1.0mm |
| MAGNETIC SENSITIVITY | 2.0 mT |
| TRAVEL SPEED | > 10 m/s |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire) |
| REMARKS | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS |    |

| ELECTRICAL DESIGN | DC PNP |
|-----------------------------------|---|
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | 10-30 VDC |
| CURRENT RATING | 100 mA |
| SHORT-CIRCUIT PROTECTION | Yes |
| OVERLOAD PROTECTION | Yes |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 2.5 V |
| CURRENT CONSUMPTION | < 12 mA |
| REPEATABILITY | < .2mm |
| POWER-ON DELAY TIME | < 30 ms |
| SWITCH FREQUENCY | > 3000 Hz |
| AMBIENT TEMPERATURE | -25°C to 85°C |
| PROTECTION | IP 67, III |
| HYSTERESIS | 1.0mm |
| MAGNETIC SENSITIVITY | 2.0 mT |
| TRAVEL SPEED | > 10 m/s |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | M8 Connector (Snap Fit) , Pur Cable (.3 m) |
| REMARKS | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS |    |

*Switches are not designed for wet environments. Please see your distributor for additional information.

Sensing Part Numbers



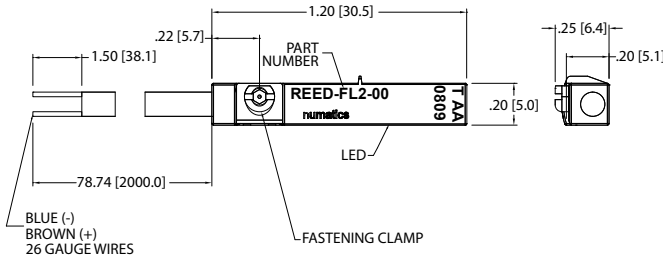
| | |
|-----------------------------------|---|
| ELECTRICAL DESIGN | DC NPN |
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | 10-30 VDC |
| CURRENT RATING | 100 mA |
| SHORT-CIRCUIT PROTECTION | Yes |
| OVERLOAD PROTECTION | Yes |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 2.5 V |
| CURRENT CONSUMPTION | < 12 mA |
| REPEATABILITY | < .2mm |
| POWER-ON DELAY TIME | < 30 ms |
| SWITCH FREQUENCY | > 3000 Hz |
| AMBIENT TEMPERATURE | -25°C to 85°C |
| PROTECTION | IP 67, III |
| HYSTERESIS | 1.0mm |
| MAGNETIC SENSITIVITY | 2.0 mT |
| TRAVEL SPEED | > 10 m/s |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire) |
| REMARKS | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS | |

| | |
|-----------------------------------|---|
| ELECTRICAL DESIGN | DC NPN |
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | 10-30 VDC |
| CURRENT RATING | 100 mA |
| SHORT-CIRCUIT PROTECTION | Yes |
| OVERLOAD PROTECTION | Yes |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 2.5 V |
| CURRENT CONSUMPTION | < 12 mA |
| REPEATABILITY | < .2mm |
| POWER-ON DELAY TIME | < 30 ms |
| SWITCH FREQUENCY | > 3000 Hz |
| AMBIENT TEMPERATURE | -25°C to 85°C |
| PROTECTION | IP 67, III |
| HYSTERESIS | 1.0mm |
| MAGNETIC SENSITIVITY | 2.0 mT |
| TRAVEL SPEED | > 10 m/s |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | M8 Connector (Snap Fit) , Pur Cable (.3 m) |
| REMARKS | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS | |

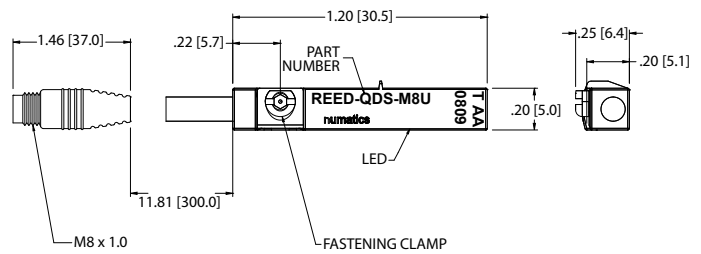
*Switches are not designed for wet environments. Please see your distributor for additional information.

Sensing Part Numbers

REED-FL2-00



REED-QDS-M8U

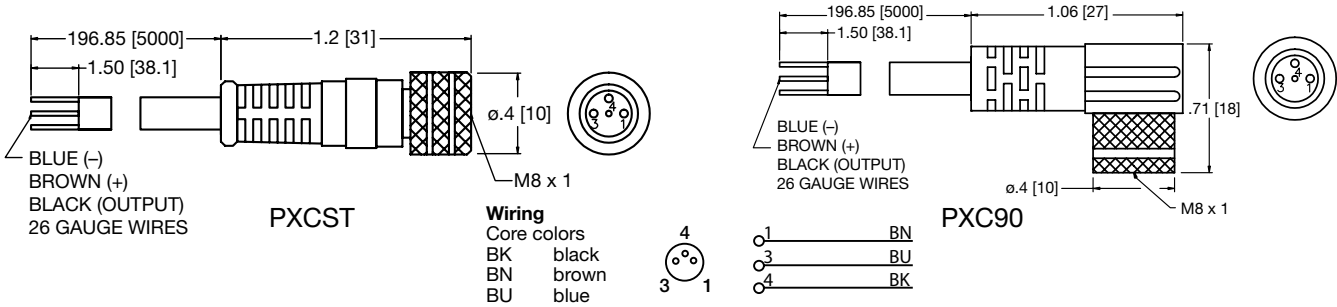


| | |
|-----------------------------------|--|
| ELECTRICAL DESIGN | AC/DC REED |
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | 5-120 VAC/DC |
| CURRENT RATING | 100 mA* |
| SHORT-CIRCUIT PROTECTION | No |
| OVERLOAD PROTECTION | No |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 5 V |
| REPEATABILITY | ± .2mm |
| MAKETIME INCLUDING BOUNCE | < .6 ms |
| BREAKTIME | < .1 ms |
| SWITCHING POWER (MAX) | 5 W |
| SWITCH FREQUENCY | 1000 Hz |
| AMBIENT TEMPERATURE | -25°C to 70°C |
| PROTECTION | IP 67, II |
| HYSTERESIS | .9mm |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | Flying Leads, Pur Cable (2m Long, 2 x26 Gauge Wire) |
| REMARKS | *External Protective Circuit for Inductive Load (Valve, Contactor, Etc.) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5. No LED Function in case of Polarity in DC Operation |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS | CE RoHS |

| | |
|-----------------------------------|--|
| ELECTRICAL DESIGN | AC/DC REED |
| OUTPUT | Normally Open |
| OPERATING VOLTAGE | *5-60 VDC / 5-50 VAC |
| CURRENT RATING | 100 mA |
| SHORT-CIRCUIT PROTECTION | No |
| OVERLOAD PROTECTION | No |
| REVERSE POLARITY PROTECTION | Yes |
| VOLTAGE DROP | < 5 V |
| REPEATABILITY | ± .2mm |
| MAKETIME INCLUDING BOUNCE | < .6 ms |
| BREAKTIME | < .1 ms |
| SWITCHING POWER (MAX) | 5 W |
| SWITCH FREQUENCY | 1000 Hz |
| AMBIENT TEMPERATURE | -25°C to 70°C |
| PROTECTION | IP 67, II |
| HYSTERESIS | .9mm |
| HOUSING MATERIAL | PA (Polyamide) Black; Fastening Clamp: Stainless Steel |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED |
| CONNECTION | M8 Connector (Snap Fit), Pur Cable (.3m) |
| REMARKS | *External Protective Circuit for Inductive Load (Valve, Contactor, Etc.) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits M8 Connector voltage limited to 5-60 vdc / 5-50 vac to conform with 2008 IEC 61076-2-104 Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5. No LED Function in case of Polarity in DC Operation |
| ACCESSORIES | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch |
| AGENCY APPROVALS | CE RoHS |

*Switches are not designed for wet environments. Please see your distributor for additional information.

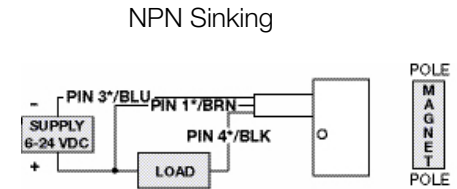
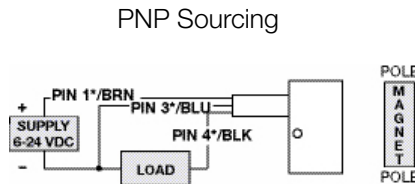
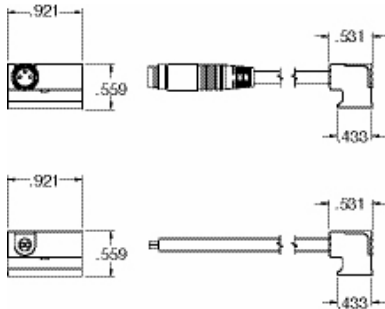
Quick Disconnect Cables



| Order Code | Type | Operating Voltage | Current Rating | Cable Material | Protection | Connector |
|------------|--|-------------------|----------------|----------------|------------|-----------|
| PXCST | Straight 5 m Cable (3 x 26 Gauge wire) | 60 AC/75 DC | 3 A | PUR | IP 68, III | M8 |
| PXC90 | 90° 5 m Cable (3 x 26 Gauge wire) | 60 AC/75 DC | 3 A | PUR | IP 68, III | M8 |

RW Series World Switch Hall Effect Part Numbers

| P/N | Switch Style | Electrical Design | Output | Operating Voltage | Current Rating | Switching Power | Voltage Drop | NEMA IP Rating | Temperature Rating |
|---------|--------------|-------------------|---------------|-------------------|----------------|-----------------|--------------|----------------|--------------------|
| SH6-031 | Flying Lead | DC PNP | Normally Open | 6-24 VDC | 0.3 Amps Max. | 7.2 Watts Max. | .5 Volts | NEMA 6 | -25° to +75° C |
| SH6-032 | Flying Lead | DC PNP | Normally Open | 6-24 VDC | 0.3 Amps Max. | 7.2 Watts Max. | .5 Volts | NEMA 6 | -25° to +75° C |
| SH6-021 | M8 Connector | DC NPN | Normally Open | 6-24 VDC | 0.3 Amps Max. | 7.2 Watts Max. | .5 Volts | NEMA 6 | -25° to +75° C |
| SH6-022 | M8 Connector | DC NPN | Normally Open | 6-24 VDC | 0.3 Amps Max. | 7.2 Watts Max. | .5 Volts | NEMA 6 | -25° to +75° C |





World Class Supplier of Pneumatic Components



World Headquarters

USA Numatics, Incorporated

46280 Dylan Drive
Novi, Michigan 48377

P: 248-596-3200
F: 248-596-3201

Canada Numatics, Ltd

P: 519-758-2700
F: 519-758-5540

México - Ascomatica SA de CV

P: 52 55 58 09 56 40 (DF y Area metropolitana)
P: 01 800 000 ASCO (2726) (Interior de la República)
F: 52 55 58 09 56 60

Brazil Ascoval Ind.e Comercio Ltda

P: (55) 11-4208-1700
F: (55) 11-4195-3970