

NUMATICS®

NRG Series

Parallel Gripper



www.numatics.com

NRG Series

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NRG-Series Parallel Robotic Gripper

Gripper Summary of Operation, Synchronized Motion:

Two opposing pistons share a common bore. Each piston transfers force and motion (undiminished) independently to each slide. The motion of both pistons is guided through a single piece mechanism which provides synchronous self centering motion of each slide, repeatable within 0.002 inches. Gripping force and synchronization are totally independent of each other. This results in minimum wear and maximum performance life.

Gripper Summary of Operation, Compliant (non-synchronized) Motion:

The compliant gripper utilizes the same construction as described above, except the single piece mechanism providing synchronized slide motion is removed. The slides are now independent of each other, allowing the gripper to comply to the part's position. Once the part has been gripped, its exact position is held. Position drift does not occur. Compliant grippers offer an economical solution, potentially eliminating the use of a compliant wrist.

Gripper Features

A. One-piece body construction for maximum rigidity.

- Hardcoat PTFE impregnated inside and out.
- Compact, lightweight, high grip force to size ratio.

B. Slides are 100% engaged in body throughout the entire stroke length.

C. Synchronizing mechanism housed internally, protected from external contamination.

- Hardened tool steel.

D. Position sensor mounting track and magnetic pistons, standard on all models.

- Easy access, total adjustability, factory or field installed.
- Hall effect (NPN, PNP) and AC/DC reed switches.

Permanently lubricated seals are standard on all models, no lube required.

- FKM compound seals, optional.

Dowel location holes are standard on body and slides.

- Precision gripper and jaw (tooling) positioning.

Multiple control port locations are standard on all models.

- Bottom and side ported, easy access and added versatility.

NuMate™ direct mount mounting system, standard on all models.

- Mount directly to Numatics' SH-Series Linear Slides, no adapters
- Easy access and reduced cost.

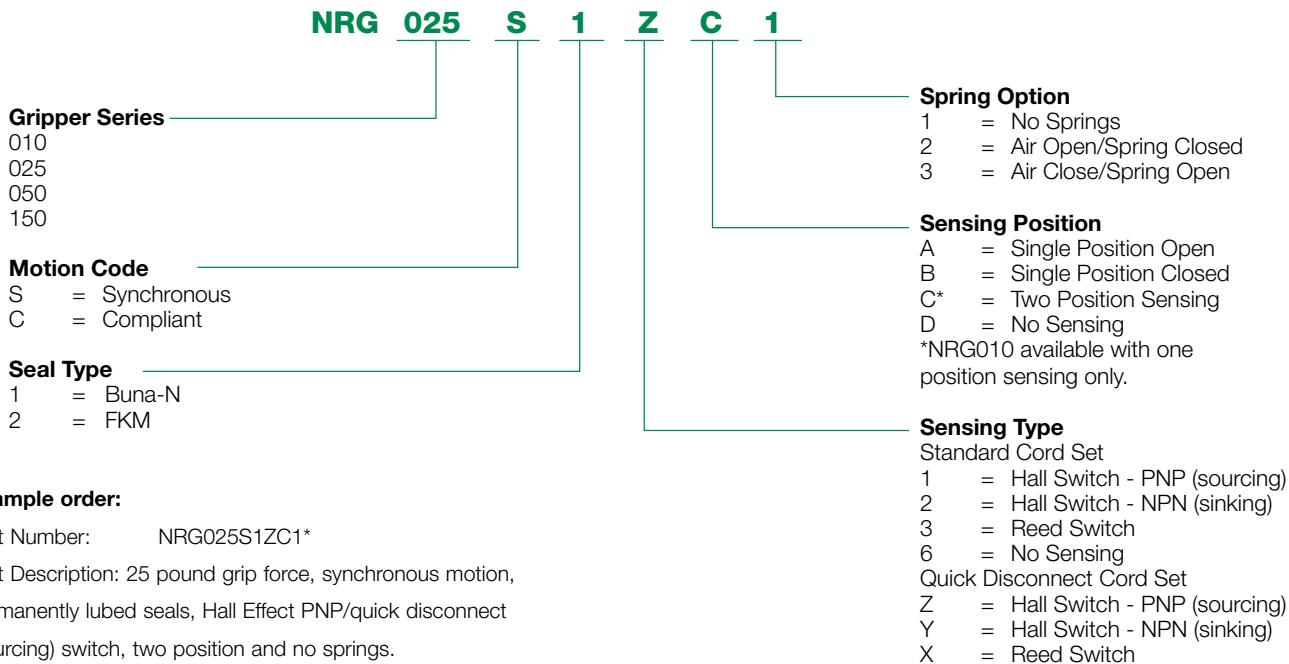


Optional Features:

Spring open/air to close.

Spring close/air to open.

How to Order



Example order:

Part Number: NRG025S1ZC1*
 Part Description: 25 pound grip force, synchronous motion, permanently lubed seals, Hall Effect PNP/quick disconnect (sourcing) switch, two position and no springs.

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

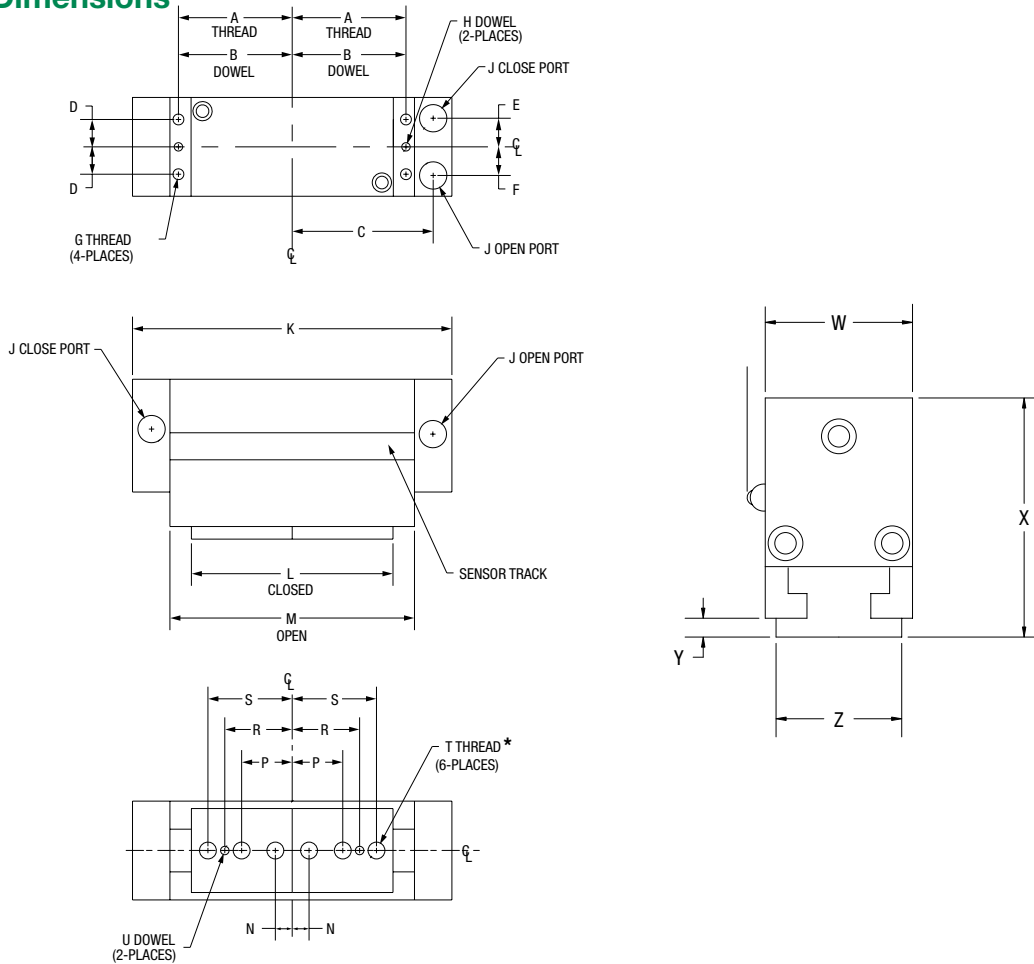
When ordering additional switches & Seal Kits:

Sensors	Standard Part No.	Sensing Kits Quick Disconnect Cord Set	Quick Disconnect Part No.
Hall Effect - PNP (Sourcing)	PNP-FL2-00-U	Hall Effect - PNP (Sourcing)	PNP-QDS-M8-U
Hall Effect - NPN (Sinking)	NPN-FL2-00-U	Hall Effect - NPN (Sinking)	NPN-QDS-M8-U
Reed Switch	REED-FL2-00	Reed Switch	REED-QDS-M8U
Switch Bracket	N99-1185	90° 5 meter cable	PXC90
		Straight 5 meter cable	PXCST

Series	Buna Seal Kit	FKM Seal Kit
NRG010	NRGSKB-010	NRGSKV-010
NRG025	NRGSKB-025	NRGSKV-025
NRG050	NRGSKB-050	NRGSKV-050
NRG150	NRGSKB-150	NRGSKV-150

Dimensions: Inches

NRG Series Dimensions

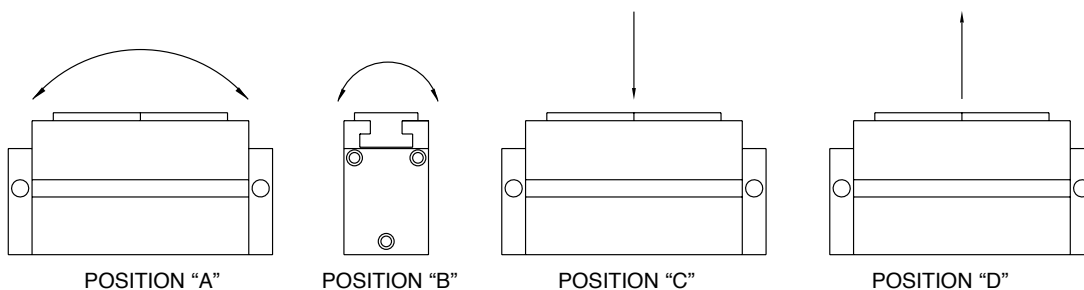


	NRG010	NRG025	NRG050	NRG150
A	0.87	1.18	1.68	1.90
B	0.875/0.876	1.187/1.188	1.687/1.688	1.906/1.907
C	1.17	1.67	2.09	2.84
D	0.31	0.31	0.40	0.56
E	0.28	0.37	0.42	0.50
F	0.28	0.37	0.42	0.62
G	#6-32	#6-32	#10-32	1/4-20
H	0.124/0.125	0.124/0.125	0.124/0.125	0.186/0.187
J	#10-32	#10-32	1/8 NPTF	1/8 NPTF
K	2.62	3.62	4.74	6.25
L	1.81	2.56	3.00	4.12
M	2.06	3.06	3.62	5.12
N	0.18	0.21	0.25	0.25
P	N/A	0.63	0.75	1.03
R	0.45	0.85	1.00	1.42
S	0.71	1.06	1.25	1.81
T	*#8-32 (4 PLACES ONLY)	#10-32	1/4-20	5/16-18
U	.092/.093	.124/.125	.124/.125	.186/.187
W	0.87	1.12	1.47	2.00
X	1.37	1.65	2.37	3.30
Y	0.12	0.15	0.18	0.18
Z	0.626/0.628	0.873/0.875	1.248/1.250	1.498/1.500

**NRG-Series Parallel Robotic Gripper
Technical Performance Data**

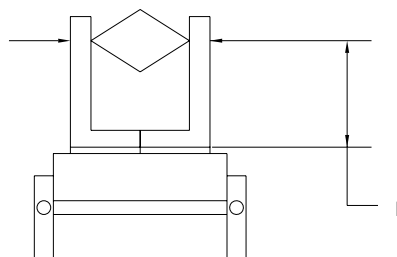
Technical Data	NRG010	NRG025	NRG050	NRG150
* Force - open lbs.	13.5	27.6	54.1	159
* Force - closed lbs.	13.5	27.6	54.1	159
Stroke in.	0.25	0.50	0.62	1.00
Weight lbs.	0.45	0.7	1.70	3.9
Displacement in ³	0.04	0.15	0.37	1.76
Max. pressure psi	250	250	250	250

* Force @ 100 psi from each jaw.



Recommended Maximum Load Ratings

	NRG010	NRG025	NRG050	NRG150
Position "A" ft - lb	4.0	11.0	15.0	30.0
Position "B" ft - lb	1.8	4.8	6.6	13.6
Position "C" lbf	20.0	39.5	79.3	116.8
Position "D" lbf	15.4	24.0	44.0	101.0



Grip Force VS. Finger Length

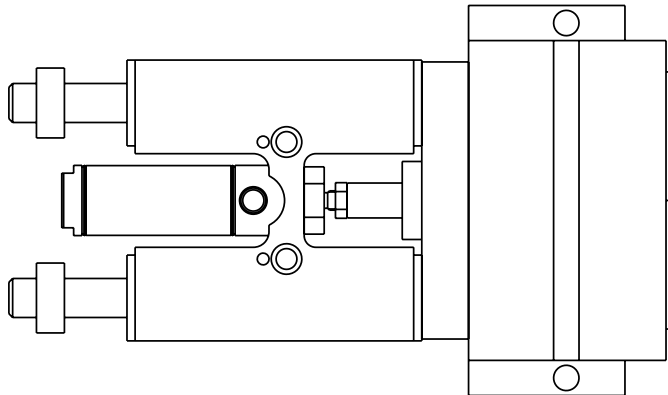
L (Finger Length)	NRG010	NRG025	NRG050	NRG150
1 inch	10.0	25.0	49.8	150.0
2 inches	9.3	21.8	44.9	138.0
3 inches	7.9	19.8	39.9	120.0
4 inches	7.3	17.8	35.9	109.7
5 inches	6.8	15.8	32.8	99.8
6 inches	6.4	13.0	30.8	90.0

NuMate™ Direct Mount, Mounting System

The NuMate™ mounting system provides a standard series of drilled, tapped and counterbored holes allowing each slide series to mount with each other and other slide series in various combinations without the use of adapters, transition plates or other costly methods. The NuMate™ mounting system also utilizes dowel hole locations for precision mounting.

The NuMate™ mounting system is the most versatile mounting method of its kind, providing customers with a cost effective method for building modular component automation. The NuMate™ mounting system is consistent across the Numatics Motion Control spectrum of products for automation.

Application	
Gripper	Slide
NRG010	SH056
NRG025	SH056
NRG050	SH075
NRG150	SH106



Grippers

NRG Series Gripper

Series	Bracket P/N
NRG010	N99-1185
NRG025	N99-1185
NRG050	N99-1185
NRG150	N99-1185

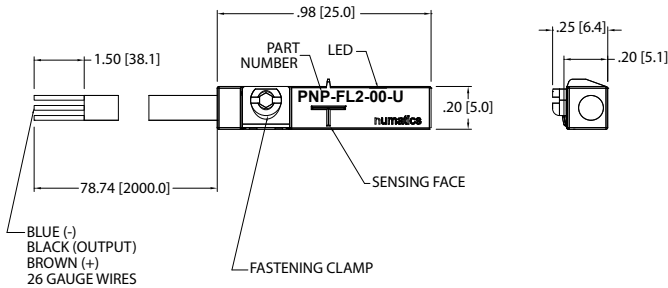


Sensor Description	Standard Cord Set	Quick Disconnect
Reed Switch	REED-FL2-00	REED-QDS-M8U
Hall PNP	PNP-FL2-00-U	PNP-QDS-M8-U
Hall NPN	NPN-FL2-00-U	NPN-QDS-M8-U

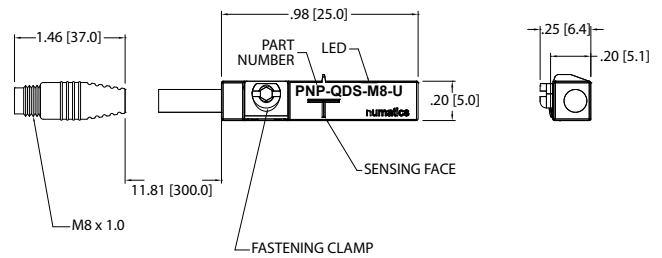
See page 8, 9, & 10 for sensor specifications

Sensing Part Numbers

PNP-FL2-00-U



PNP-QDS-M8-U

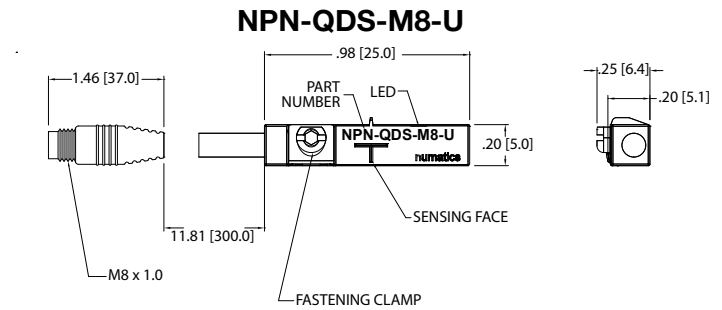
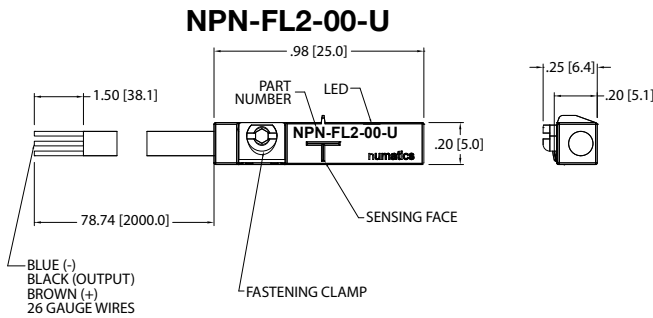




ELECTRICAL DESIGN	DC PNP
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 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	CE cUL US RoHS



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OUTPUT	Normally Open
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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	CE cUL US RoHS

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

Sensing Part Numbers



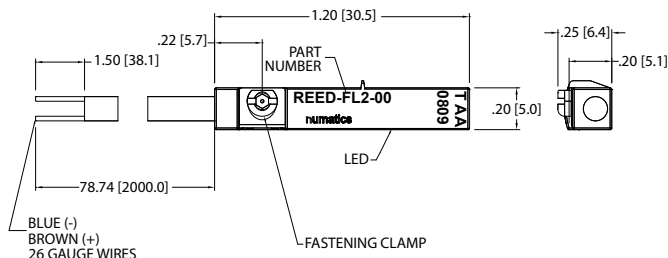
ELECTRICAL DESIGN	DC NPN
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 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)
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AGENCY APPROVALS	  RoHS

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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	  RoHS

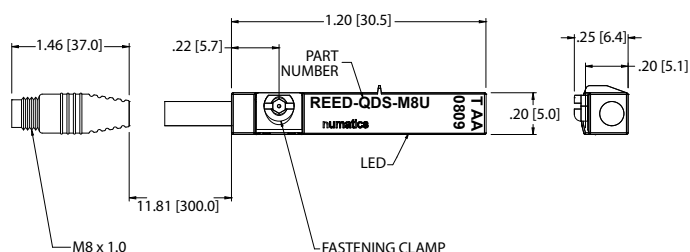
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Sensing Part Numbers

REED-FL2-00



REED-QDS-M8U

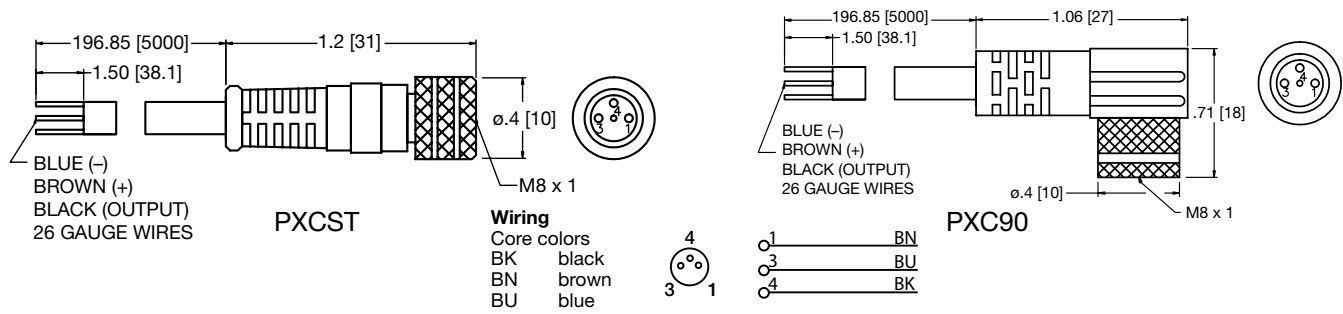


ELECTRICAL DESIGN	AC/DC REED
OUTPUT	Normally Open
OPERATING VOLTAGE	5-120 VAC/DC
CURRENT RATING	100 mA*
SHORT-CIRCUIT PROTECTION	No
OVERLOAD PROTECTION	No
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 5 V
REPEATABILITY	± .2mm
MAKETIME INCLUDING BOUNCE	< .6 ms
BREAKTIME	< .1 ms
SWITCHING POWER (MAX)	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

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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



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