

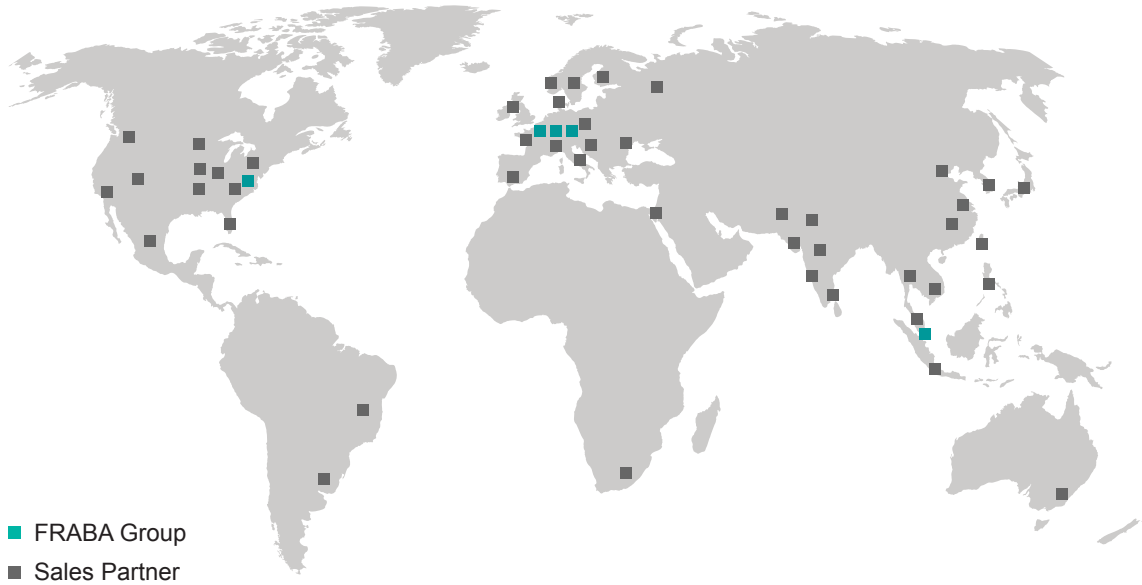
POSITION AND MOTION SENSORS



Linear Encoder Selection Guide



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Hamilton, NJ, USA

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PRODUCTS



IXARC Rotary Encoders

Motion control applications – ranging from factory automation to mobile machinery – require accurate, realtime information about the location of mechanical equipment. The IXARC line of absolute rotary encoders provide precise and reliable measurement of the angular positions of joints, drive shafts, pulleys, etc... Available electronic connections range from simple analog outputs to sophisticated fieldbus and Industrial Ethernet interfaces.

TILTIX Inclinometers

Accurate measurement of tilt or inclination is very important for motion control and safety systems. Inclinometers provide single or dual-axis angle measurement in an economical package. Relying on gravity for their measurement, these sensors have no exposed moving parts, resulting in easy mounting and high environmental protection.



LINARIX Linear Sensors

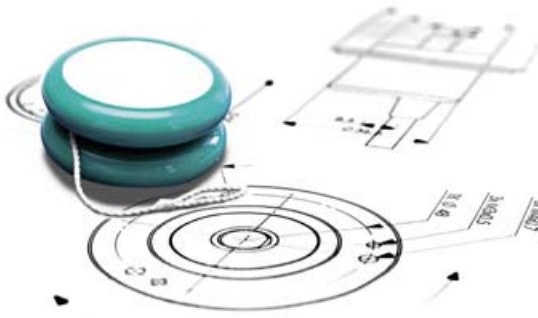
Many applications require linear motion to be monitored for system control or to ensure safety. With lengths ranging from 1 m to 10 m (3' to 33'), LINARIX draw wire sensors are available in many configurations to meet an application's requirements. Options include a wide variety of outputs (including analog, fieldbus and Ethernet variants), heavy duty housings and compact designs.

Accessories

POSITAL offers a wide variety of accessories that simplify sensor installation. Mating connectors of different styles and lengths ensure proper electrical connections. Using appropriate mounting accessories minimize wear and tear on encoders and help to ensure a long and reliable life cycle. Interface modules and displays are also available to provide users with immediate access to measurements.



TECHNOLOGY LINARIX LINEAR SENSORS



Repeatable Length Measurement

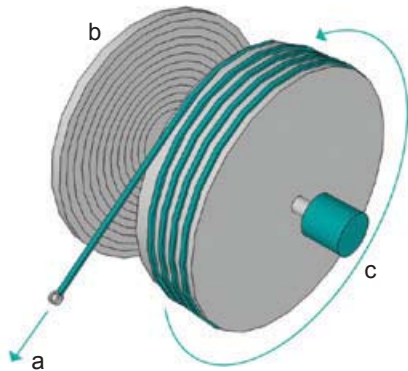
POSITAL's LINARIX draw wire sensors measure linear motion by displacing a retractable steel wire (a) wound around a cable drum (b) that actuates the rotary encoder (c) coupled to it. The encoder in return provides a proportional output. Measurements are highly accurate, reliable and the systems have very long lifetimes. The LINARIX line offers a wide range of measurement lengths ranging from 1 m to 10 m (3' to 33') and also provides position output in almost all available industrial interfaces both analog and digital.

Compared to conventional linear pots and linear measurement systems using multiple gears and encoders, the LINARIX line of sensors are more



durable and can directly replace them, additionally, avoiding the common problems of slippage, wear and tear damage. The draw wire sensors from POSITAL provide extremely precise measurements because of the inherent accuracy of the encoders and the rugged construction ensures reliable performance even under extreme conditions.

The POSITAL product offering has been categorized based on robustness and length giving the customer maximum selectability based on their respective application.



PRODUCT OVERVIEW LINARIX LINEAR SENSORS

Draw Wire Encoders with Machined Metal Housing



Measuring Range in m [in]	1.25 [49]	1.74 [69]	2.00 [79]	3.00 [118]
Communication Interface ¹⁾	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet
Accuracy in [±FSO%]	0.04	0.02	0.02	0.04
Wire Material	Nylon Coated Stainless Steel	Coated Polyamide Stainless Steel	Plastic Coated Stainless Steel	Nylon Coated Stainless Steel
Wire Diameter in mm	Ø 0.48	Ø 0.45	Ø 0.45	Ø 0.48
Draw Wire Housing Material	Machined Metal, Rectangular Housing	Machined Metal, Cylindrical Housing	Machined Metal, Rectangular Housing	Machined Metal, Rectangular Housing
Operating Temperature in °C [°F]	-40 to +94 [-40 to 201]	-20 to +80 [-4 to 176]	-10 to +80 [14 to 176]	-40 to +94 [-40 to 201]
Max. Extension Force in N	2.34	5.00	2	3.90
Min. Retraction Force in N	1.26	3.50	1.2	2.10
Linear Resolution ²⁾ in µm	24	36	24	49
Drum Circumference in mm [in]	Ø 100 [3.9]	Ø 149 [5.9]	Ø 100 [3.9]	Ø 200 [7.9]
Type Key	L...A-C..	L...P-C..	L...C-N..	L...B-C..

1) Other interfaces available on request

2) Based on an encoder with 12 Bit Resolution

Please refer to the product finder on our website for all possible combinations.

PRODUCT OVERVIEW LINARIX LINEAR SENSORS

Draw Wire Encoders with Machined Metal Housing or Die Cast Metal Housing



Measuring Range in m [in]	3.00 [118]	6.00 [236]	5.08 [200]	10.16 [400]
Communication Interface ¹⁾	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet
Accuracy in [±FSO%]	0.01	0.01	0.02	0.02
Wire Material	Plastic Coated Stainless Steel	Stainless Steel	Nylon Coated Stainless Steel	Nylon Coated Stainless Steel
Wire Diameter in mm	Ø 0.87	Ø 0.54	Ø 0.86	Ø 0.86
Draw wire Housing Material	Machined Metal, Rectangular Housing	Machined Metal, Rectangular Housing	Die Cast Metal	Die Cast Metal
Temperature in °C [°F]	-40 to +80 [-40 to 176]	-20 to +80 [-4 to 176]	-40 to +90 [-40 to 194]	-40 to +90 [-40 to 194]
Max. Extension Force in N	3	8	6.5	6.5
Min. Retraction Force in N	2.5	3.0	3.5	3.5
Linear Resolution ²⁾ in µm	49	40	78	78
Drum Circumference in mm [in]	Ø 200 [7.9]	Ø 200 [7.9]	Ø 320 [12.6]	Ø 320 [12.6]
Type Key	L...D-N..	L...E-N..	L...K-H.	L...L-H..

1) Other interfaces available on request

2) Based on an encoder with 12 Bit Resolution

Please refer to the product finder on our website for all possible combinations.

PRODUCT OVERVIEW LINARIX LINEAR SENSORS

Draw Wire Encoders with Extruded Metal Housing or Plastic Housing



Measuring Range in m [in]	3.00 [118]	5.00 [197]	10.00 [394]	1.25 [49]	2.10 [83]
Communication Interface ¹⁾	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet	Analog, SSI, CANopen, DeviceNet
Accuracy in [±FSO%]	0.02	0.02	0.01	0.05	0.05
Wire Material	Coated Polyamide Stainless Steel	Nylon Coated Stainless Steel	Nylon Coated Stainless Steel	Coated Polyamide Stainless Steel	Coated Polyamide Stainless Steel
Wire Diameter in mm	Ø 0.80	Ø 1.00	Ø 1.00	Ø 0.36	Ø 0.45
Draw wire Housing Material	Extruded Metal	Extruded Metal	Extruded Metal	Plastic	Plastic
Temperature in °C [°F]	-20 to +80 [-4 to 176]	-20 to +80 [-4 to 176]	-20 to +80 [-4 to 176]	-20 to +80 [-4 to 176]	-20 to +80 [-4 to 176]
Max. Extension Force in N	9.0	16.0	21.0	1.50	5.00
Min. Retraction Force in N	5.5	4.0	8.0	1.00	3.50
Linear Resolution ²⁾ in µm	63	77	77	31	52
Drum Circumference in mm [in]	Ø 260 [10.2]	Ø 315 [12.4]	Ø 315 [12.4]	Ø 125 [4.9]	Ø 215 [8.5]
Type Key	L...F-.H..	L...G-.H.	L...H-.H..	L...N-.C..	L...M-.C..

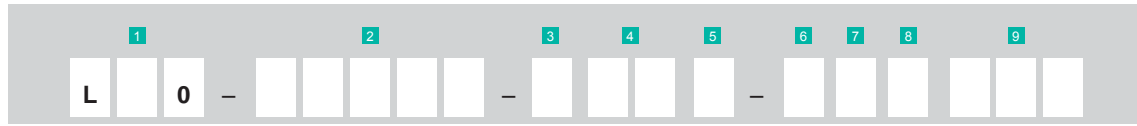
1) Other interfaces available on request

2) Based on an encoder with 12 Bit Resolution

Please refer to the product finder on our website for all possible combinations.

PRODUCT SELECTION GUIDE LINARIX LINEAR SENSORS

LINARIX Linear Sensors



1 Technology

- W** Draw Wire Only
- D** Optic (Diode)
- M** Magnetic

2 Communication Interface

- 00000** Draw Wire Only
- AV001** Voltage: 0 to 5 V
- AVP01** Voltage: 0 to 5 V w. Pushbuttons
- AV002** Voltage: 0 to 10 V
- AVP02** Voltage: 0 to 10 V w. Pushbuttons
- AC005** Current: 4 to 20 mA
- ACP05** Current: 4 to 20 mA w. Pushbuttons
- P100B** Parallel Binary with Preset
- P100G** Parallel Gray with Preset
- S101B** SSI Binary
- S101G** SSI Gray
- S5xxB** SSI Binary + Incremental A/B/Z (RS-422)
- S6xxB** SSI Binary + Incremental A/B/Z (Push-Pull)
- S5xxG** SSI Gray + Incremental A/B/Z (RS-422)
- S6xxG** SSI Gray + Incremental A/B/Z (Push-Pull)
- IN00I** Incremental
- DPC1B** Profibus DP
- CAA1B** CANopen
- CL00B** CANopen Lift
- D2B1B** DeviceNet
- IBA1B** Interbus
- EIB1B** PROFINET IO
- EEA0B** EtherNet/IP
- E2A1B** POWERLINK
- EM00B** Modbus/TCP

3 Measurement Range

- 1** 1 m
- 2** 2 m
- 3** 3 m
- 5** 5 m
- 6** 6 m
- A** 10 m

4 Encoder Resolution

- 00** Draw Wire Only
- D2** 12 bit
- D3** 13 bit
- D4** 16 bit

5 8 Draw Wire Enclosure

See next page for details

6 7 Connection Orientation and Protection Class

See next page for details

9 Connection Type

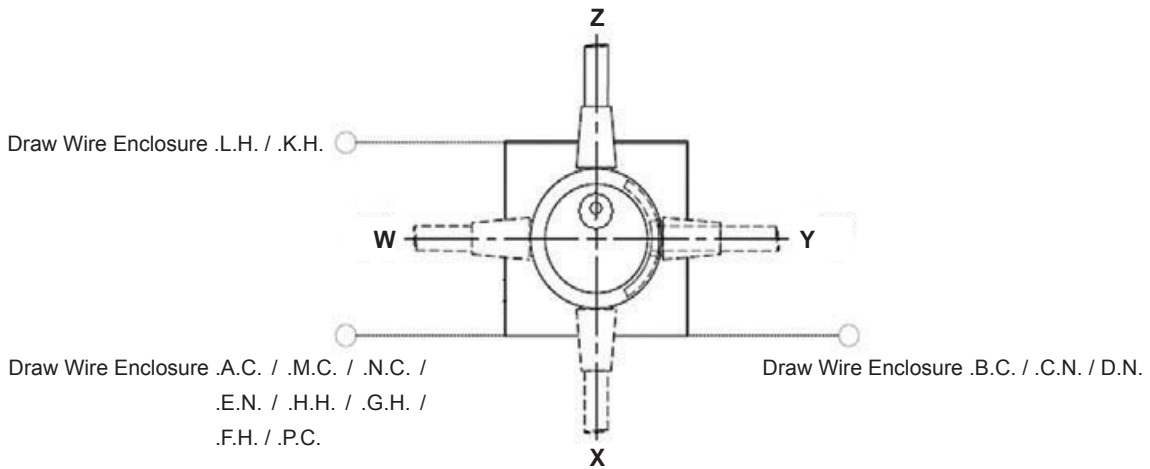
- 000** Draw Wire Only
- CRW** 1 m PVC Cable - Radial Exit
- ARW** 10 m PVC Cable - Radial Exit
- CAW** 1 m PVC Cable - Axial Exit
- AAW** 10 m PVC Cable - Axial Exit
- PRL** M23 12 pin - Radial Exit
- PRP** M23 16 pin - Radial Exit
- PRT** M26 26 pin - Radial Exit
- PRM** M12 5 pin - Radial Exit
- PRN** 2 x M12 5 pin - Radial Exit
- PRQ** M12 8 pin - Radial Exit
- PAL** M23 12 pin - Axial Exit
- PAP** M23 16 pin - Axial Exit
- PAM** M12 5 pin - Axial Exit
- PAQ** M12 8 pin - Axial Exit
- H3P** M12 Cable Glands x 3
- H1B** M12 Connector x 1
- H2B** M12 Connector x 2
- H1C** M23 Connector x 1

Please refer to the product finder on our website for all possible combinations.

PRODUCT SELECTION GUIDE LINARIX LINEAR SENSORS

Mechanical Options LINARIX Linear Sensors

Connection Orientation 6 7

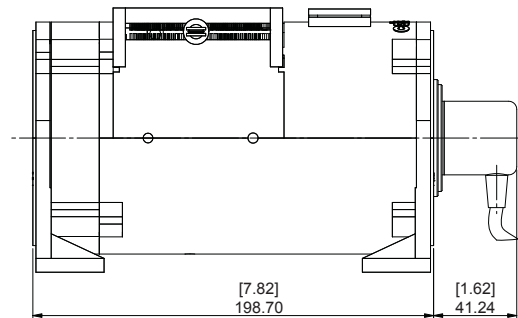
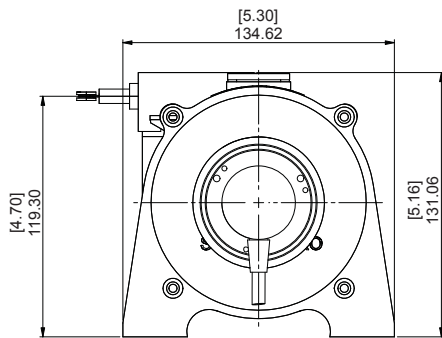


Connection Exit selected based on Draw Wire Enclosure 5. When Connection Type is “Draw Wire Only” then Connection Orientation 6 is 0.

Draw Wire Enclosure (L-----5-----8-----)

Die Cast Metal

LH (L-----L-----H-----) and KH (L-----K-----H-----)

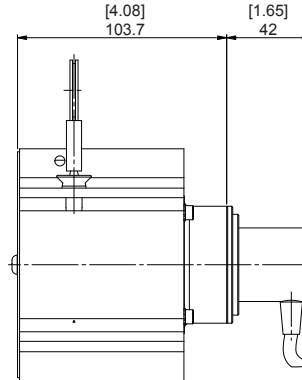
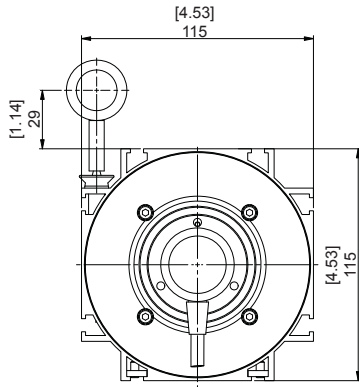


All measurement in mm

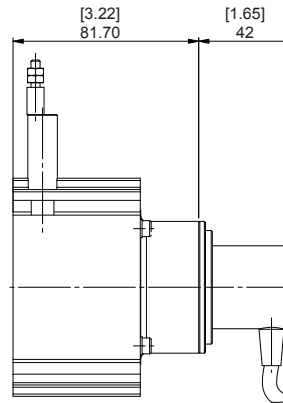
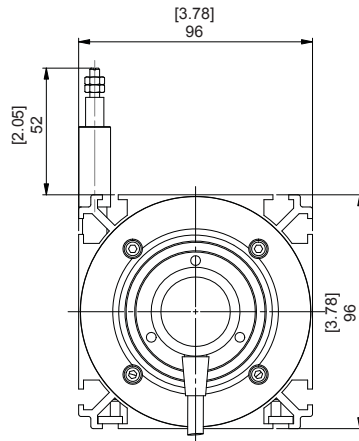
PRODUCT SELECTION GUIDE LINARIX LINEAR SENSORS

Extruded Metal

GH (L-----G--H--) and HH (L-----H--H--)

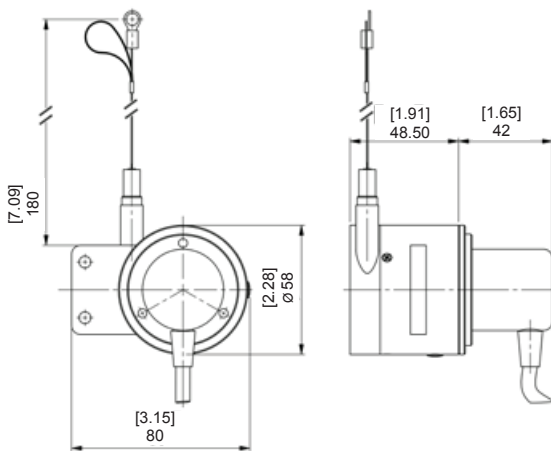


FH (L-----F--H--)



Machined Metal – Cylindrical Housing

PC (L-----P--C--)

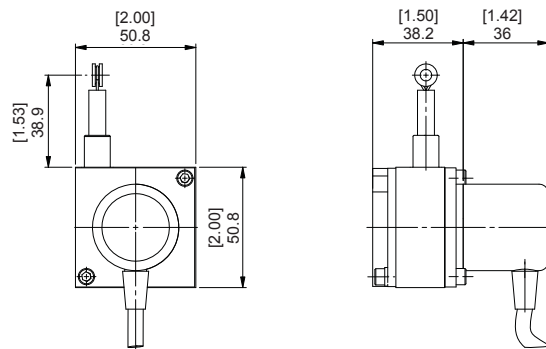


All measurement in mm

Machined Metal – Rectangular Housing

AC (L-----A--C--)

Measurement Length 1.25 m [24.2 in]

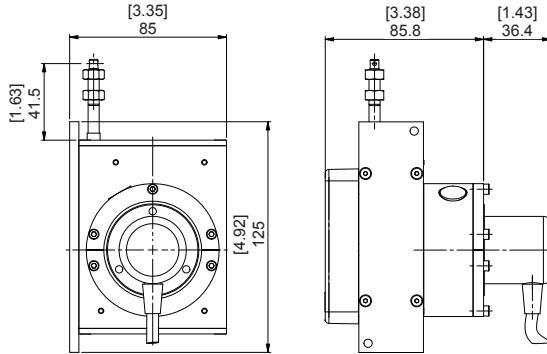


PRODUCT SELECTION GUIDE LINARIX LINEAR SENSORS

Machined Metal – Rectangular Housing

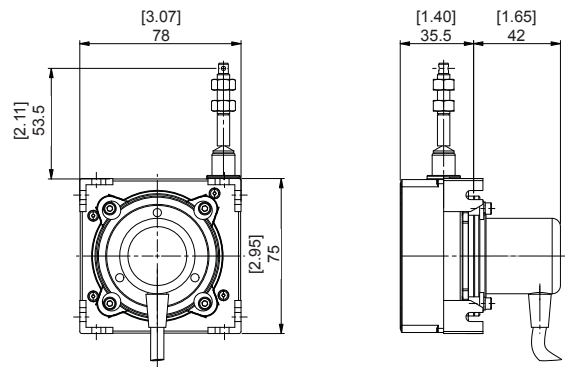
EN (L-----E--N--)

Measurement Length 6.00 m [236 in]



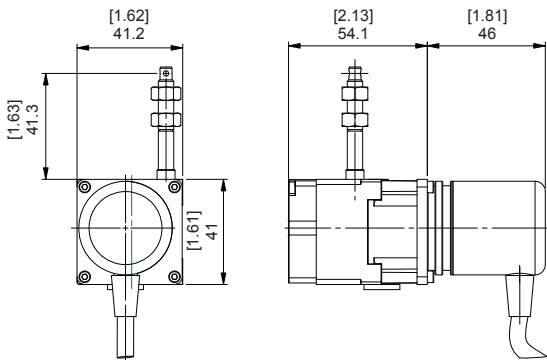
DN (L-----D--N--)

Measurement Length 3.00 m [118 in]



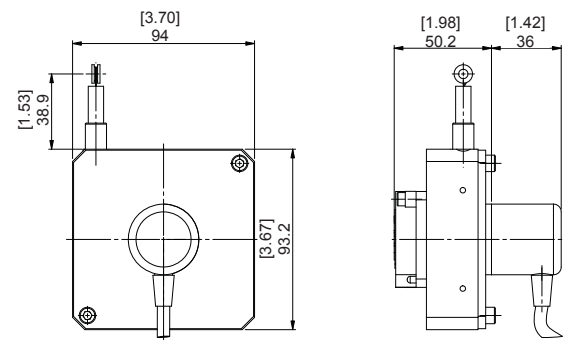
CN (L-----C--N--)

Measurement Length 2.00 m [78.7 in]



BC (L-----B--C--)

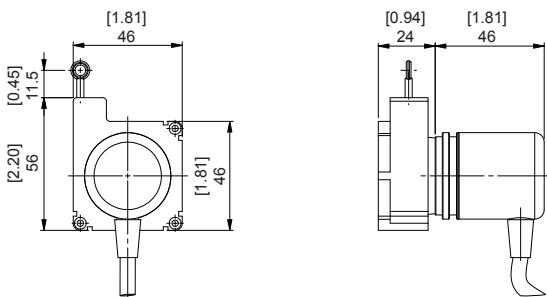
Measurement Length 3.00 m [118 in]



Plastic

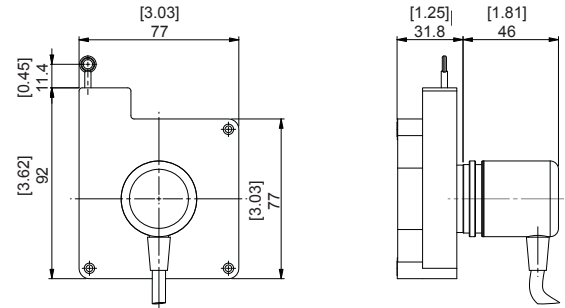
NC (L-----N--C--)

Measurement Length 1.25 m [24.2 in]



MC (L-----M--C--)

Measurement Length 2.10 m [82.7 in]



All measurement in mm

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