



4-20 mA TRANSMITTERS

IMI Sensors offers a wide range of loop-powered vibration transmitters with a current output. These transmitters are ideal for process monitoring applications where a continuous 24/7 signal from critical rotating assets is needed for recording and trending by a programmable logic controller (PLC), distributed control system (DSC) or supervisory control and data acquisition (SCADA) system. The current output can interface directly with these existing systems so that data can be easily monitored and analyzed.

Most plants already have PLC, DCS or SCADA systems in place monitoring pressure, flow and temperature. IMI's loop-powered 4-20 mA vibration transmitters are plug-and-play, using a current loop for power instead of needing a separate, dedicated power source. The 12 to 30 VDC power source on the loop will provide power to the transmitter while the process controller will convert the transmitter's current output to DC voltage for interpretation. The ability to easily incorporate the transmitters into existing systems that can create current loops provides the ability to monitor critical equipment without the expense of additional costly data acquisition systems

MEASUREMENT RANGE

Transmitters are available in acceleration, velocity or displacement measurement ranges. The appropriate measurement range is determined by the frequency. Below are some broad guidelines as to when to use which measurement range.

MEASUREMENT RANGE	
Frequency	Appropriate Measurement Range
0 to 100 Hz	Displacement
100 to 1000 Hz	Velocity
Greater than 1000 Hz	Acceleration

OPTIONAL VERSIONS

All of the models listed in this brochure (except Model 653A01) are available with several optional features. To select any of the below-listed features, add the appropriate prefix to the core model number. All prefixes can be combined except EXHT, RVTO and RVVOTO. When selecting a prefixed model, refer to model-specific outline drawings as some prefixed models' dimensions differ slightly from their unprefixed model equivalents.

OPTIONAL VERSIONS		
Optional Feature	Prefix	Description
Hazardous Area Approval	EX	Transmitter is certified for use in potentially explosive environments via ATEX, CSA and IECEx. Terminal block transmitters with hazardous area approval include an approved conduit elbow.
High Temperature Range	HT	Transmitter's operating temperature range is increased from +185 °F (+85 °C) to +257 °F (+125 °C).
Metric Mount	M	Accelerometer includes an M6x1 mounting stud or bolt instead of a ¼-28 mounting stud or bolt.
Raw Vibration Output (Acceleration)	RV	Transmitter provides a 100 mV/g analog acceleration output in addition to the current vibration output. To transmit the second signal, transmitter has one additional pin (connector version), cable conductor (integral cable version) or terminal (terminal block version).
Raw Vibration Output (Velocity)	RVVO	Transmitter provides a 100 mV/ips analog velocity output in addition to the current vibration output. To transmit the second signal, transmitter has one additional pin (connector version), cable conductor (integral cable version) or terminal (terminal block version).
Temperature Output	TO	Transmitter includes a built-in temperature sensor and provides a 4-20 mA temperature output in addition to the current vibration output. To transmit the second signal, transmitter has two additional pins (connector version), cable conductors (integral cable version) or terminals (terminal block version). Connector-version transmitters with temperature output have a bayonet-style connector instead of a threaded connector.

TRANSMITTER WITH DISPLACEMENT OUTPUT



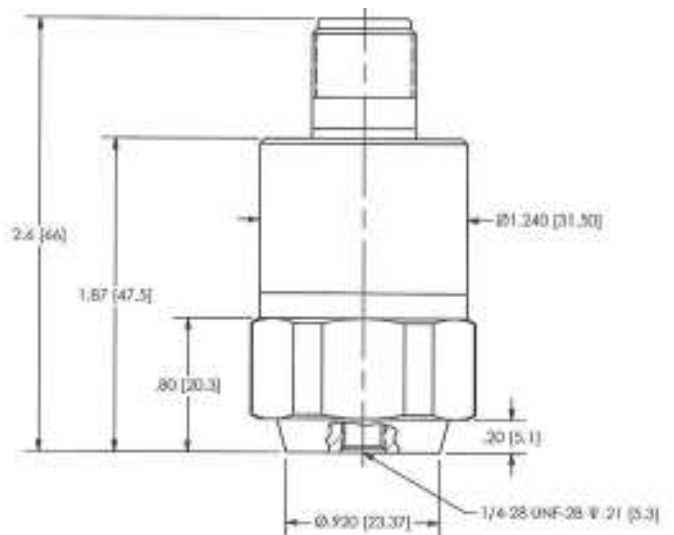
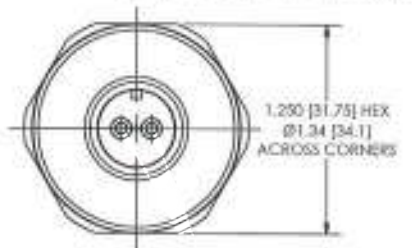
TRANSMITTER WITH MIL CONNECTOR

MODELS 653A01

- Superior signal resolution on slow speed machinery
- Measures absolute peak to peak displacement
- Accurate down to 1.5 Hz

MODEL 653A01

SPECIFICATIONS	
Model Number	653A01
Performance	
Measurement Range	2 to 40 mil pk - pk 0.05 to 1.02 mm pk - pk
Output	4-20 mA
Frequency Range (±3dB)	1.5 to 300 Hz
Non-Linearity	±2%
Environmental	
Overload Limit	2500 g pk
Temperature Range	-40 to +185 °F -40 to +85 °C
Enclosure Rating	IP68
Electrical	
Excitation Voltage	12 to 30 VDC
Load Resistance	50 (Vs-12) ohms
Settling Time	60 sec
Electrical Isolation (Case)	>10 ⁸ ohm
Physical	
Sensing Element	Ceramic
Sensing Geometry	Flexural
Housing Material	Stainless Steel
Sealing	Welded Hermetic
Mounting Thread	1/4-28 Female
Mounting Torque	3 to 5 ft-lb 4 to 7 Nm
Electrical Connector	2-pin MIL
Weight	5.36 oz 152 g
Accessories	
Model 081A41: Mounting stud, 1/4-28 x 0.56"	



TRANSMITTER WITH PEAK VELOCITY OUTPUT



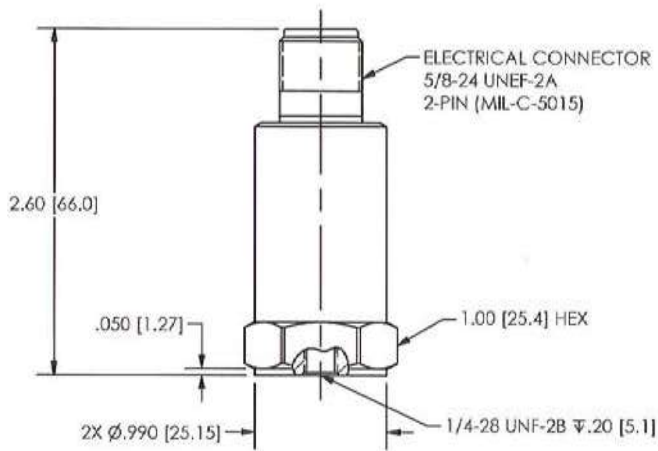
TRANSMITTER WITH MIL CONNECTOR

MODELS 640B00, 640B01, 640B02

- Small footprint for installation in tight spaces
- Ideal for monitoring slower rotating machinery including fans and paper machine rolls

640-SERIES

SPECIFICATIONS			
Model Number	640B00	640B01	640B02
Performance			
Measurement Range	0 to 0.5 ips pk 0 to 12.7 mm/s pk	0 to 1.0 ips pk 0 to 25.4 mm/s pk	0 to 2.0 ips pk 0 to 50.8 mm/s pk
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz		
Broadband Resolution	0.005 ips pk 0.13 mm/s pk		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁹ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Female		
Mounting Torque	3 to 5 ft-lb 4 to 7 Nm		
Electrical Connector	2-pin MIL		
Weight	4.71 oz 131 g		
Accessories			
Model 081A40: Mounting stud, 1/4-28 x 0.438"			



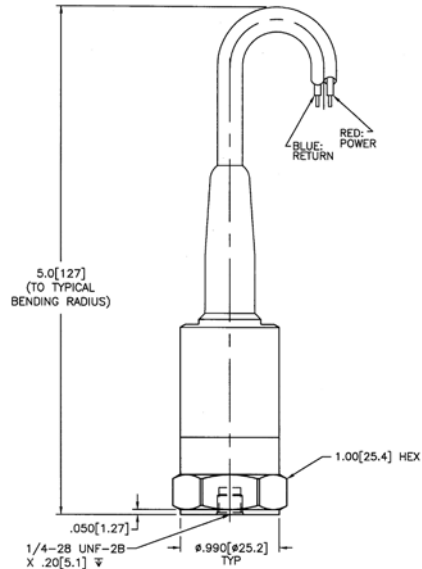
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 640B10, 640B11, 640B12

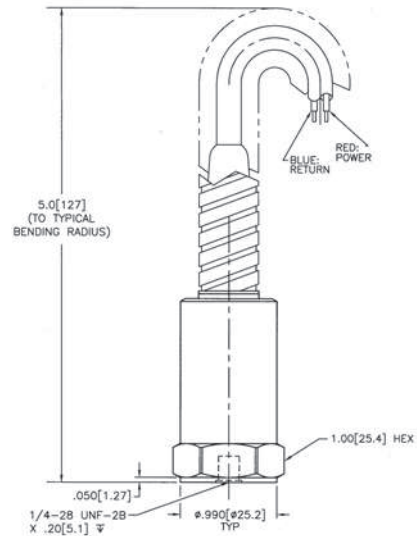
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

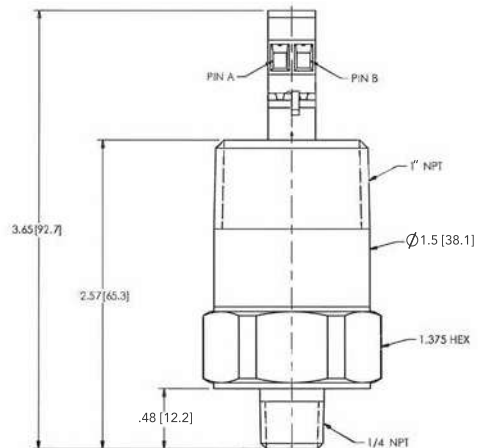
MODELS 640B60, 640B61, 640B62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH TERMINAL BLOCK CONNECTOR

MODELS 640B70, 640B71, 640B72



TRANSMITTER WITH RMS VELOCITY OUTPUT



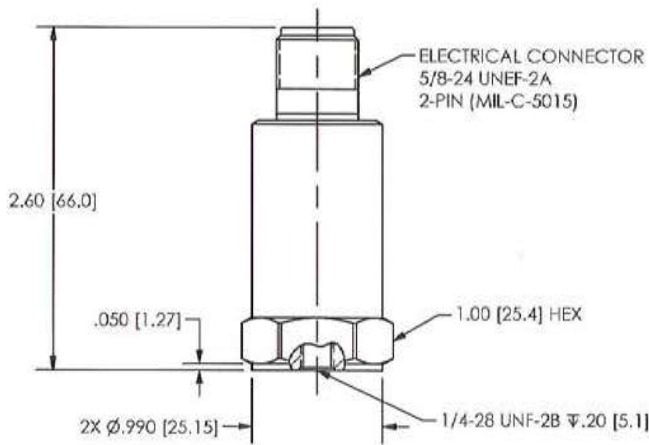
TRANSMITTER WITH MIL CONNECTOR

MODELS 641B00, 641B01, 641B02

- Small footprint for installation in tight spaces
- Ideal for monitoring slower rotating machinery including fans and paper machine rolls

641-SERIES

SPECIFICATIONS			
Model Number	641B00	641B01	641B02
Performance			
Measurement Range	0 to 0.5 ips RMS 0 to 12.7 mm/s RMS	0 to 1.0 ips RMS 0 to 25.4 mm/s RMS	0 to 2.0 ips RMS 0 to 50.8 mm/s RMS
Output	4-20 mA		
Frequency Range (±3dB)	10 to 1000 Hz		
Broadband Resolution	0.005 ips RMS 0.13 mm/s RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁸ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Female		
Mounting Torque	3 to 5 ft-lb 4 to 7 Nm		
Electrical Connector	2-pin MIL		
Weight	4.7 oz 131 g		
Accessories			
Model 081A40: Mounting stud, 1/4-28 x 0.438"			



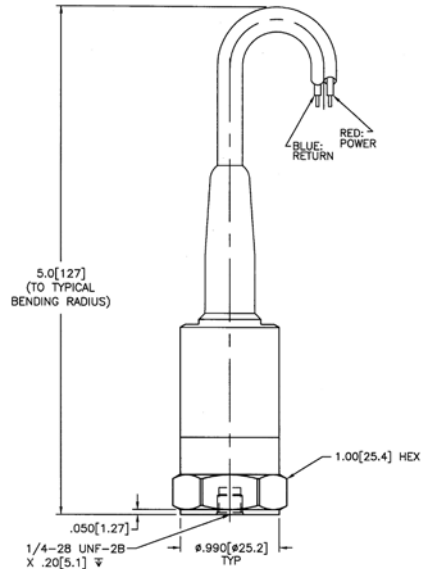
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 641B10, 641B11, 641B12

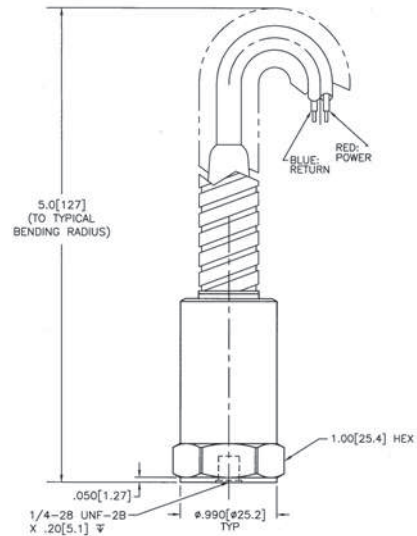
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

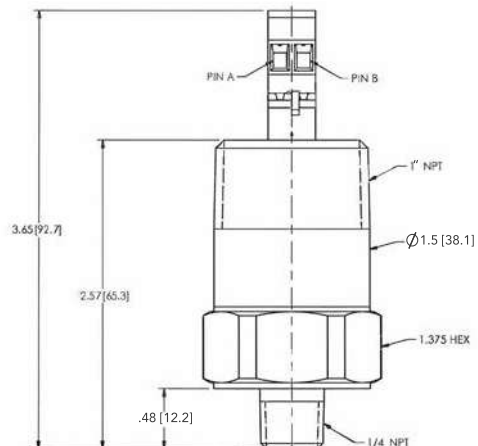
MODELS 641B60, 641B61, 641B62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH TERMINAL BLOCK CONNECTOR

MODELS 641B70, 641B71, 641B72



TRANSMITTER WITH PEAK VELOCITY OUTPUT



TRANSMITTER WITH MIL CONNECTOR

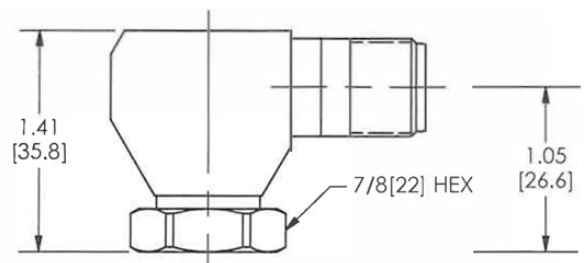
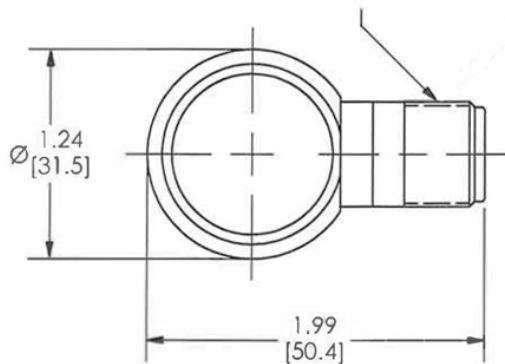
MODELS 642A00, 642A01, 642A02

- Swivel mounting mechanism eliminates spinning sensors during installation
- Low profile design eliminates concerns about cable bend radius

642-SERIES

SPECIFICATIONS			
Model Number	642A00	642A01	642A02
Performance			
Measurement Range	0 to 0.5 ips pk 0 to 12.7 mm/s pk	0 to 1.0 ips pk 0 to 25.4 mm/s pk	0 to 2.0 ips pk 0 to 50.8 mm/s pk
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz		
Broadband Resolution	0.005 ips pk 0.13 mm/s pk		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁹ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Male		
Mounting Torque (Stud)	3 to 4 ft-lb 4.1 to 5.4 Nm		
Mounting Torque (Hex Nut)	2 to 3 ft-lb 2.7 to 4.1 Nm		
Electrical Connector	2-pin MIL		
Weight	3.8 oz 108 g		
Accessories			
Model 080A162: Mounting stud, 3/4-16 to 1/4-28			

ELECTRICAL CONNECTOR
5/8-24 UNEF-2A
2 PIN (MIL-C-5015)



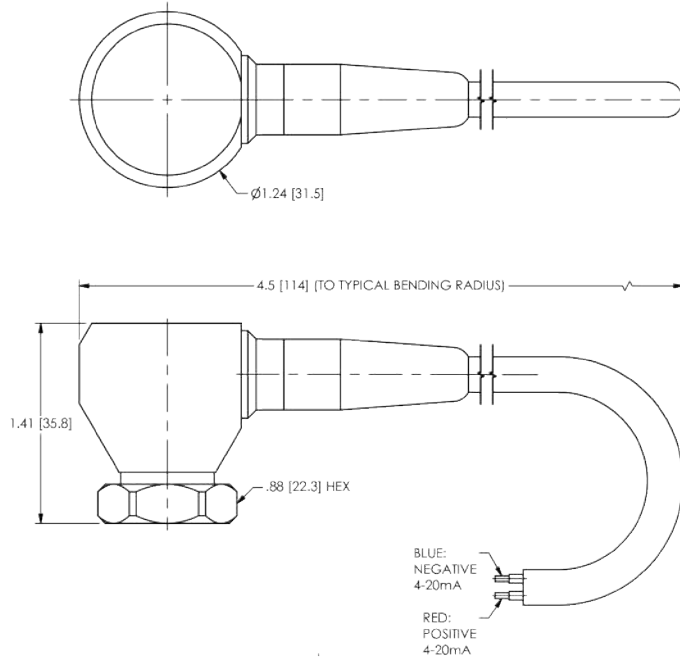
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 642A10, 642A11, 642A12

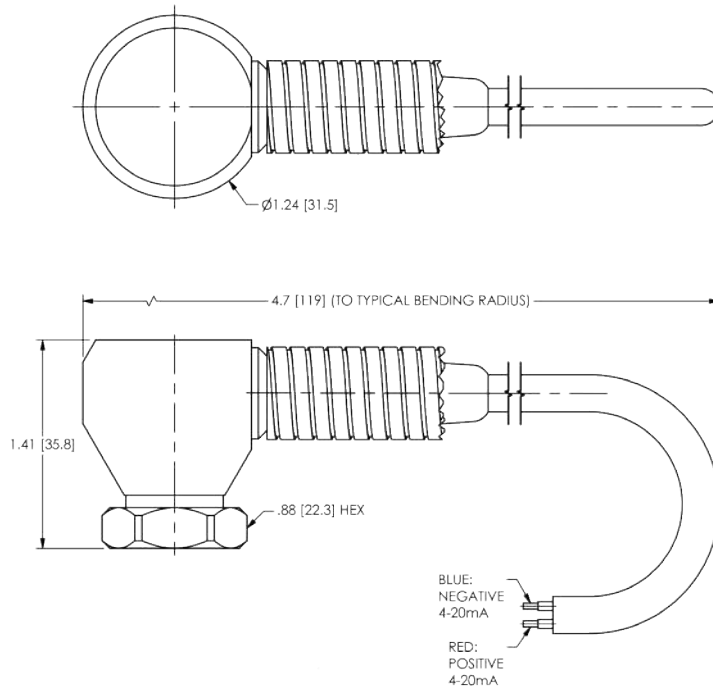
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

MODELS 642A60, 642A61, 642A62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH RMS VELOCITY OUTPUT

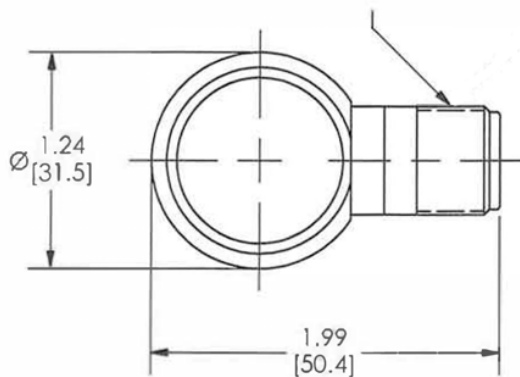


TRANSMITTER WITH MIL CONNECTOR

MODELS 643A00, 643A01, 643A02

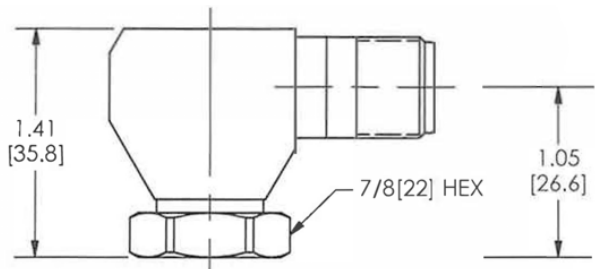
- Swivel mounting mechanism eliminates spinning sensors during installation
- Low profile design eliminates concerns about cable bend radius

ELECTRICAL CONNECTOR
5/8-24 UNEF-2A
2 PIN (MIL-C-5015)



643-SERIES

SPECIFICATIONS			
Model Number	643A00	643A01	643A02
Performance			
Measurement Range	0 to 0.5 ips RMS 0 to 12.7 mm/s RMS	0 to 1.0 ips RMS 0 to 25.4 mm/s RMS	0 to 2.0 ips RMS 0 to 50.8 mm/s RMS
Output	4-20 mA		
Frequency Range (±3dB)	10 to 1000 Hz		
Broadband Resolution	0.005 ips RMS 0.13 mm/s RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁸ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Male		
Mounting Torque (Stud)	3 to 4 ft-lb 4.1 to 5.4 Nm		
Mounting Torque (Hex Nut)	2 to 3 ft-lb 2.7 to 4.1 Nm		
Electrical Connector	2-pin MIL		
Weight	3.8 oz 108 g		
Accessories			
Model 080A162: Mounting stud, 3/4-16 to 1/4-28			



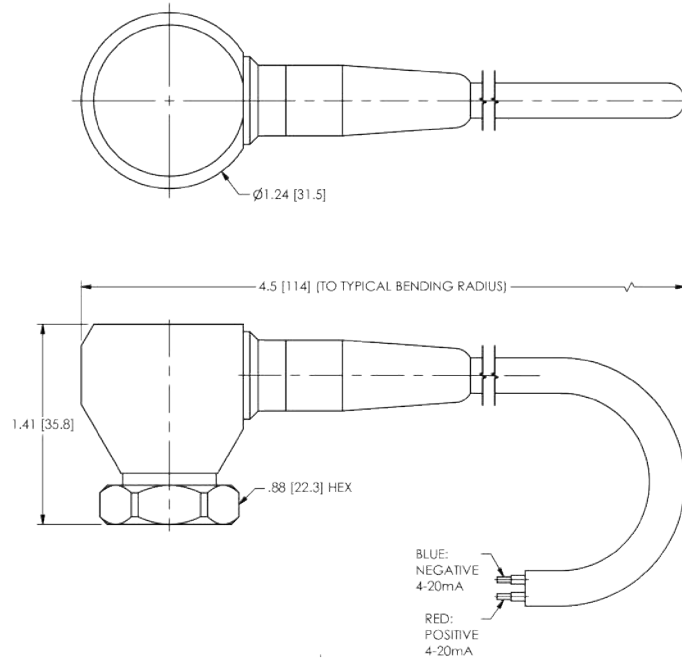
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 643A10, 643A11, 643A12

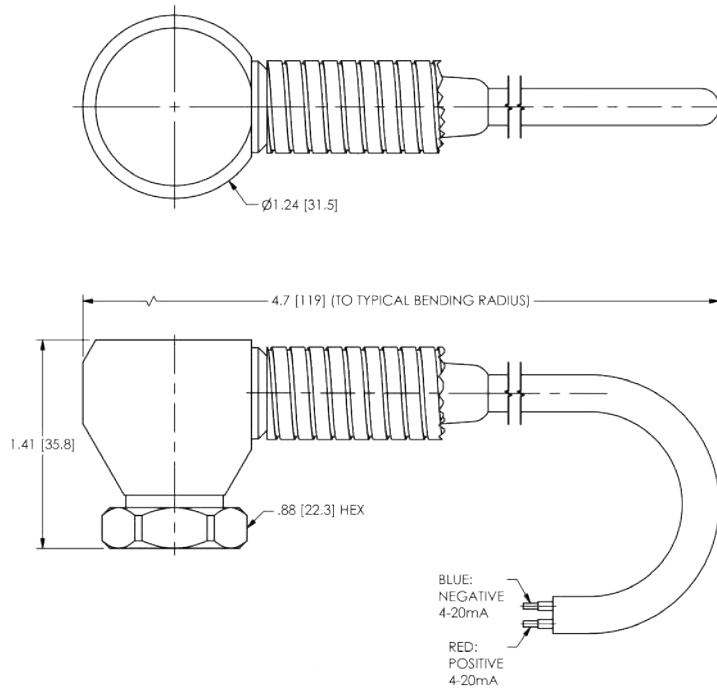
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

MODELS 643A60, 643A61, 643A62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH 0-5G ACCELERATION OUTPUT



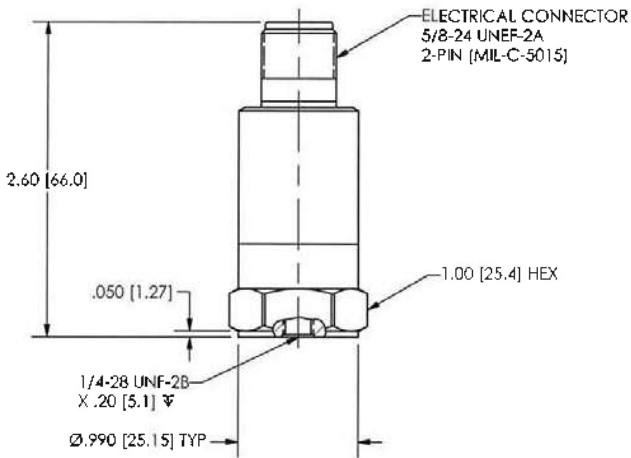
TRANSMITTER WITH MIL CONNECTOR

MODELS 645B00, 645B01, 645B02

- Small footprint for installation in tight spaces
- Ideal for monitoring faster rotating machinery including motors, pumps and gearboxes

645-SERIES

SPECIFICATIONS			
Model Number	645B00	645B01	645B02
Performance			
Measurement Range	0 to 5 g RMS 0 to 49 m/s ² RMS	0 to 5 g RMS 0 to 49 m/s ² RMS	0 to 5 g RMS 0 to 49 m/s ² RMS
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz	3 to 5000 Hz	3 to 10000 Hz
Broadband Resolution	0.025 g RMS 0.24 m/s ² RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁹ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Female		
Mounting Torque	3 to 5 ft-lb 4 to 7 Nm		
Electrical Connector	2-pin MIL		
Weight	4.7 oz 131 g		
Accessories			
Model 081A40: Mounting stud, 1/4-28 x 0.438"			



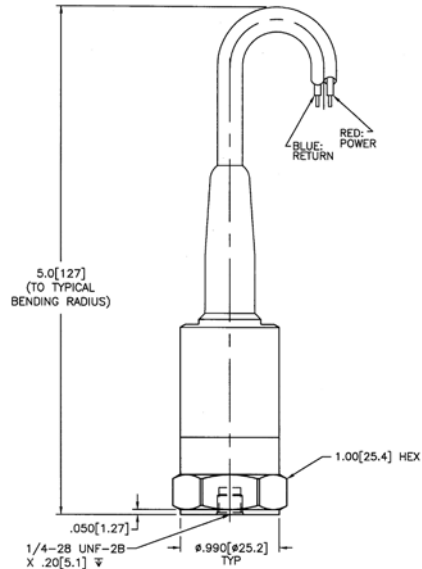
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 645B10, 645B11, 645B12

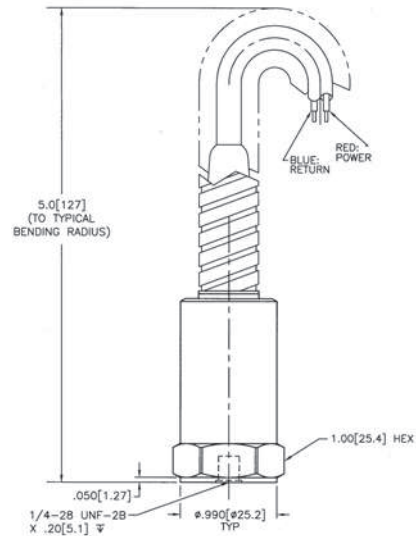
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

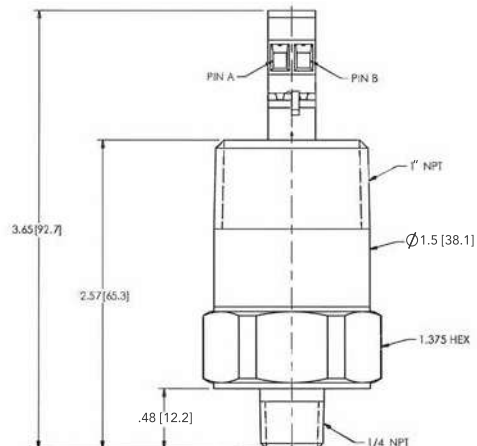
MODELS 645B60, 645B61, 645B62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH TERMINAL BLOCK CONNECTOR

MODELS 645B70, 645B71, 645B72



TRANSMITTER WITH 0-10G ACCELERATION OUTPUT



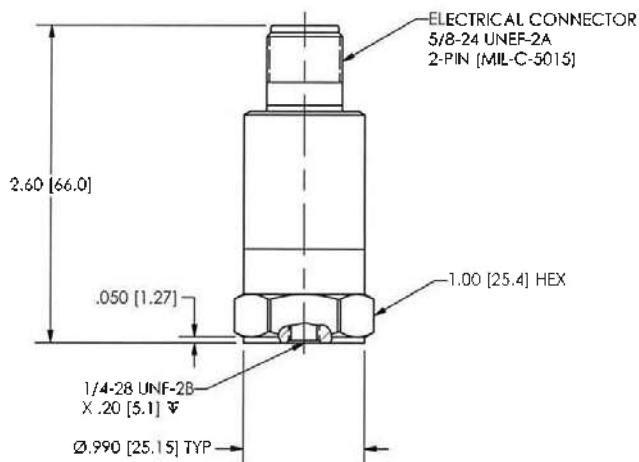
TRANSMITTER WITH MIL CONNECTOR

MODELS 646B00, 646B01, 646B02

- Small footprint for installation in tight spaces
- Ideal for monitoring faster rotating machinery including motors, pumps and gearboxes

646-SERIES

SPECIFICATIONS			
Model Number	646B00	646B01	646B02
Performance			
Measurement Range	0 to 10 g RMS 0 to 98.1 m/s ² RMS	0 to 10 g RMS 0 to 98.1 m/s ² RMS	0 to 10 g RMS 0 to 98.1 m/s ² RMS
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz	3 to 5000 Hz	3 to 10000 Hz
Broadband Resolution	0.05 g RMS 0.49 m/s ² RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁸ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Female		
Mounting Torque	3 to 5 ft-lb 4 to 7 Nm		
Electrical Connector	2-pin MIL		
Weight	4.7 oz 131 g		
Accessories			
Model 081A40: Mounting stud, 1/4-28 x 0.438"			



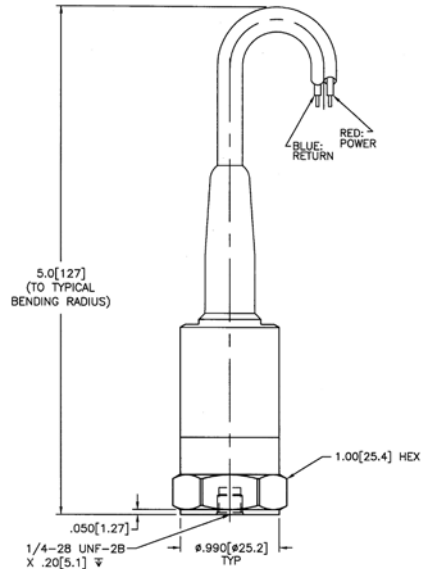
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 646B10, 646B11, 646B12

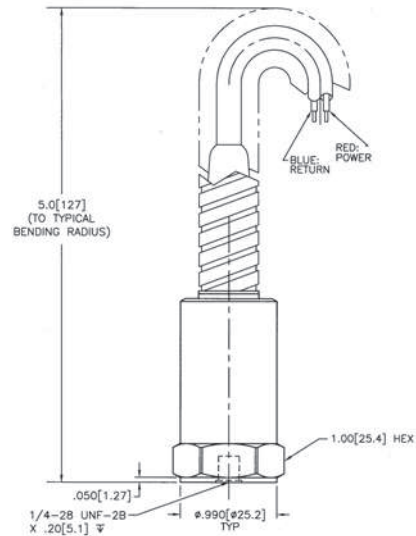
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

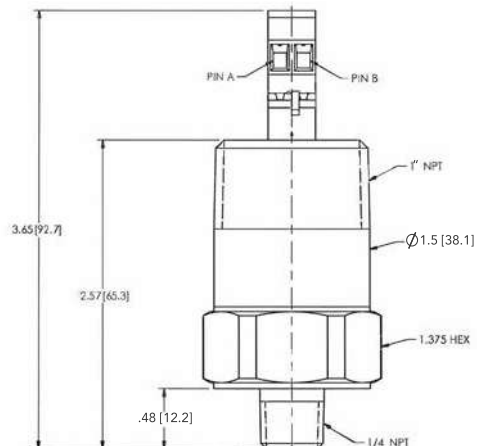
MODELS 646B60, 646B61, 646B62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH TERMINAL BLOCK CONNECTOR

MODELS 646B70, 646B71, 646B72



TRANSMITTER WITH 0-5G ACCELERATION OUTPUT



TRANSMITTER WITH MIL CONNECTOR

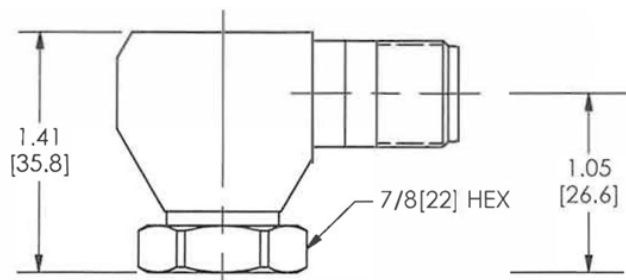
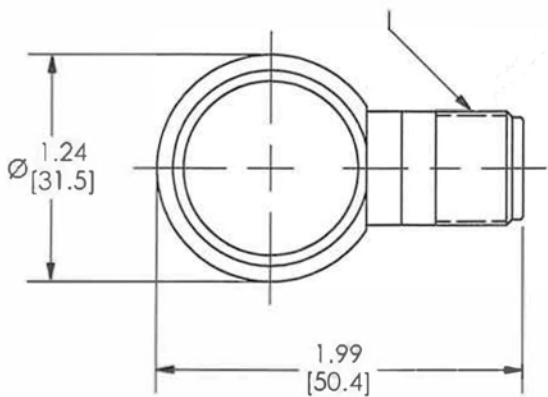
MODELS 647A00, 647A01, 647A02

- Swivel mounting mechanism eliminates spinning sensors during installation
- Low profile design eliminates concerns about cable bend radius

647-SERIES

SPECIFICATIONS			
Model Number	647A00	647A01	647A02
Performance			
Measurement Range	0 to 5 g RMS 0 to 49 m/s ² RMS	0 to 5 g RMS 0 to 49 m/s ² RMS	0 to 5 g RMS 0 to 49 m/s ² RMS
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz	3 to 5000 Hz	3 to 10000 Hz
Broadband Resolution	0.025 g RMS 0.24 m/s ² RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁹ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Male		
Mounting Torque	3 to 4 ft-lb 4.1 to 5.4 Nm		
Mounting Torque (Hex Nut)	2 to 3 ft-lb 2.7 to 4.1 Nm		
Electrical Connector	2-pin MIL		
Weight	3.8 oz 108 g		
Accessories			
Model 080A162: Mounting stud, 3/4-16 to 1/4-28			

ELECTRICAL CONNECTOR
5/8-24 UNEF-2A
2 PIN (MIL-C-5015)



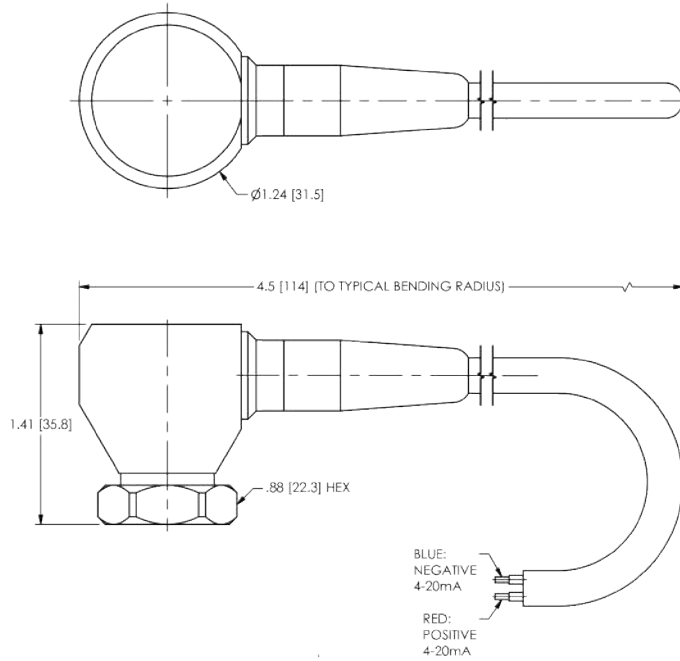
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 647A10, 647A11, 647A12

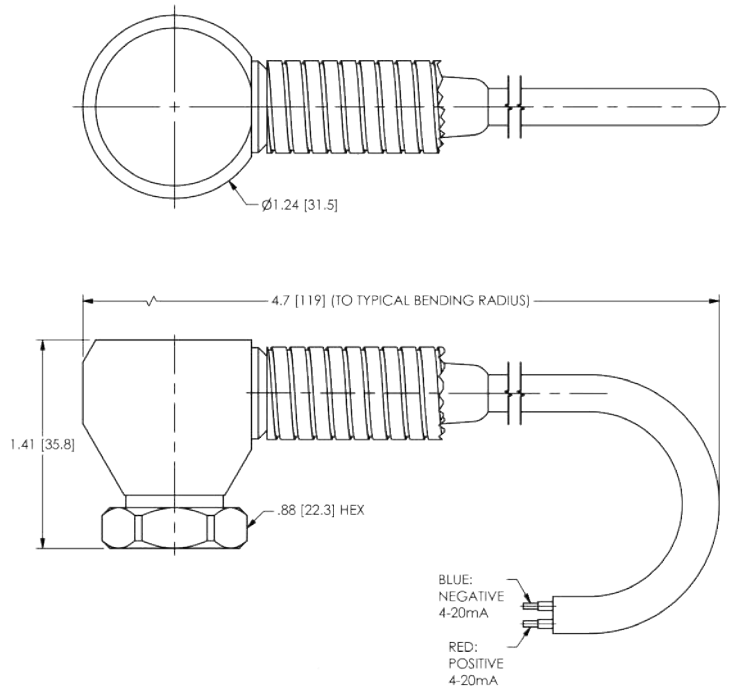
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

MODELS 647A60, 647A61, 647A62

- Configurable cable length, armor length and terminating connector



TRANSMITTER WITH 0-10 ACCELERATION OUTPUT



TRANSMITTER WITH MIL CONNECTOR

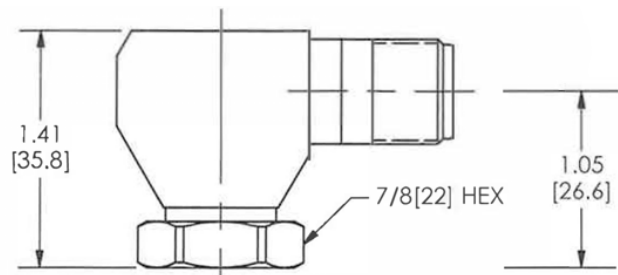
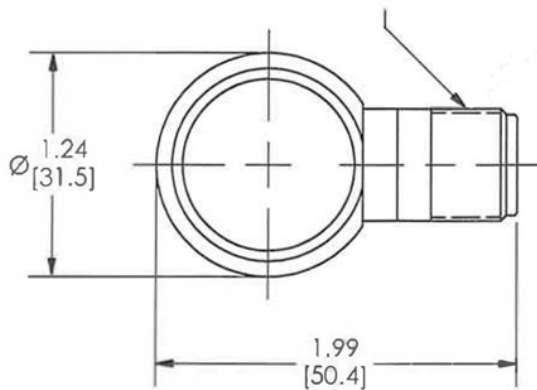
MODELS 648A00, 648A01, 648A02

- Swivel mounting mechanism eliminates spinning sensors during installation
- Low profile design eliminates concerns about cable bend radius

648-SERIES

SPECIFICATIONS			
Model Number	648A00	648A01	648A02
Performance			
Measurement Range	0 to 10 g RMS 0 to 98.1 m/s ² RMS	0 to 10 g RMS 0 to 98.1 m/s ² RMS	0 to 10 g RMS 0 to 98.1 m/s ² RMS
Output	4-20 mA		
Frequency Range (±3dB)	3 to 1000 Hz	3 to 5000 Hz	3 to 10000 Hz
Broadband Resolution	0.05 g RMS 0.49 m/s ² RMS		
Non-Linearity	±1%		
Environmental			
Temperature Range	-40 to +185 °F -40 to +85 °C		
Enclosure Rating	IP68		
Electrical			
Excitation Voltage	12 to 30 VDC		
Load Resistance	50 (Vs-12) ohms		
Settling Time	<15 sec		
Electrical Isolation (Case)	>10 ⁹ ohm		
Physical			
Sensing Element	Ceramic		
Sensing Geometry	Shear		
Housing Material	Stainless Steel		
Sealing	Welded Hermetic		
Mounting Thread	1/4-28 Male		
Mounting Torque	3 to 4 ft-lb 4.1 to 5.4 Nm		
Mounting Torque (Hex Nut)	2 to 3 ft-lb 2.7 to 4.1 Nm		
Electrical Connector	2-pin MIL		
Weight	3.8 oz 108 g		
Accessories			
Model 080A162: Mounting stud, 3/4-16 to 1/4-28			

ELECTRICAL CONNECTOR
5/8-24 UNEF-2A
2 PIN (MIL-C-5015)



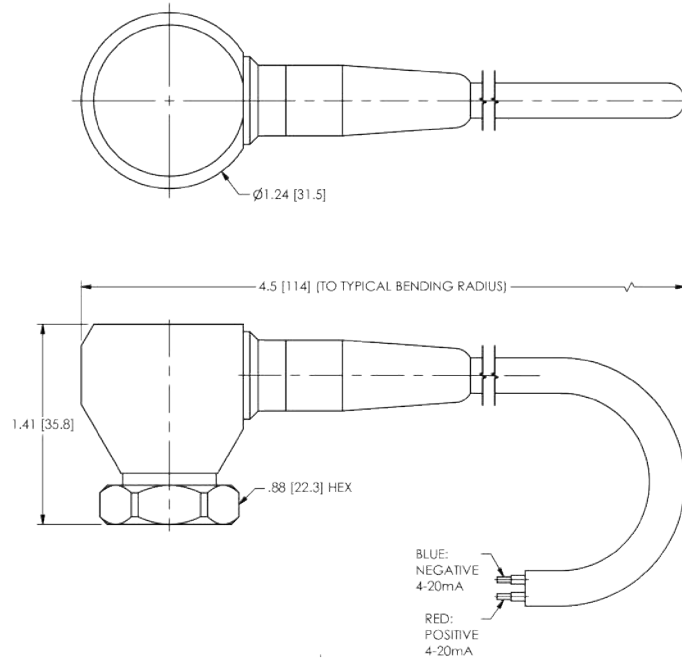
ADDITIONAL BASE MODEL CONFIGURATIONS



TRANSMITTER WITH INTEGRAL POLYURETHANE CABLE

MODELS 648A10, 648A11, 648A12

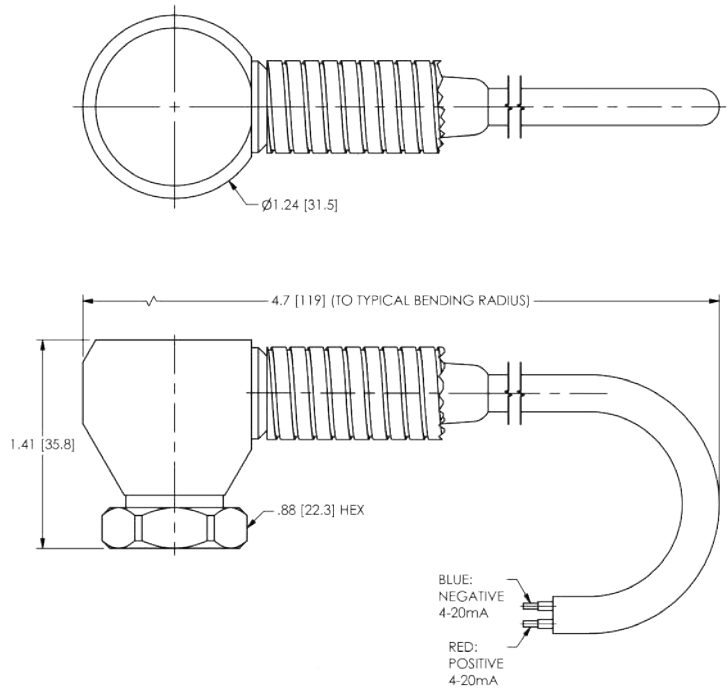
- Configurable cable length and terminating connector



TRANSMITTER WITH INTEGRAL ARMORED POLYURETHANE CABLE

MODELS 648A60, 648A61, 648A62

- Configurable cable length, armor length and terminating connector





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