



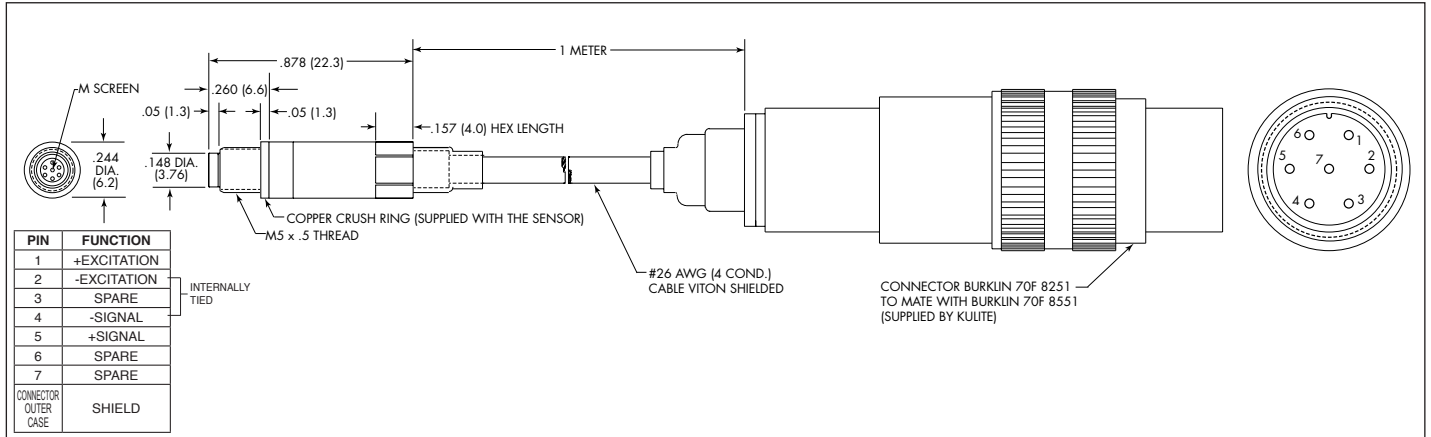
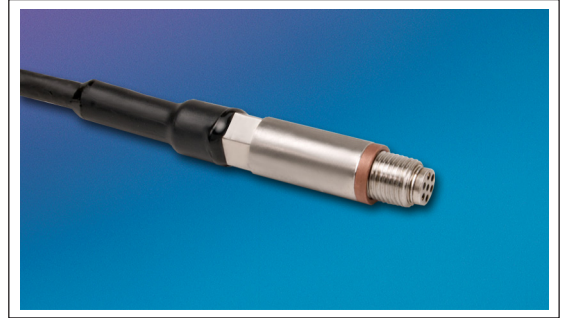
MINIATURE AUTOMOTIVE 5VDC OUTPUT PRESSURE TRANSDUCER INLET PRESSURE TRANSDUCER

ETL-184(X)-190M SERIES

- High Bandwidth With Integrated Amplifier
- Excellent Long Term Stability Coupled With High Accuracy
- Patented Leadless Technology **VIS**[®]
- Robust Construction
- RoHS Compliant

The ETL-184 Series results in a highly stable, reliable, and rugged instrument with all the advantages of microcircuitry: significant miniaturization, excellent repeatability, low power consumption, etc. The miniaturization process also yields a marked increase in the natural frequencies of the transducers. It is small, versatile, and requires no additional signal conditioning.

Part performance not guaranteed if used in water.



	ETL-184A-190M	ETL-184B-190M	ETL-184C-190M	
INPUT	Pressure Range	2 BAR (Other Ranges Available Upon Request)		
	Operational Mode	Absolute		
	Over Pressure	2 Times Rated Pressure		
	Burst Pressure	3 Times Rated Pressure		
	Pressure Media	Air, Water, Oil, Fuel		
	Rated Electrical Excitation	12 ± 4 VDC	24 ± 4 VDC	24 ± 4 VDC
	Maximum Current	10 mA		
OUTPUT	Output Impedance	< 100 Ohms		
	Full Scale Output (FSO)	4.5 VDC ± 75 mV	5 VDC ± 75 mV	9.5 VDC ± 150 mV
	Residual Unbalance	± 500 mV ± 75 mV		
	Combined Non-Linearity and Hysteresis Error	< 0.2% FS		
	Resolution	Infinitesimal		
	Frequency Response	> 50 kHz		
	Insulation Resistance	> 100 Meg Ohm @ 50 V		
ENVIRONMENTAL	Operating Temperature Range	+68°F to 350°F (+20°C to +175°C)	+257°F (+125°C) Max. For The Amplifier	
	Diagnosis Temperature Range	+68°F to 320°F (+20°C to +160°C)		
	Compensated Temperature Range	+68°F to 167°F (+20°C to +75°C)		
	Total Error Band (Including Non-Linearity, Hysteresis, Thermal Effects, Long Term Stability, Mounting Influence)	± 1% FS For Compensated Temperature Range Ref. To +100°F ± 3% For Diagnosis Temperature Range Ref. To +100°F		
PHYSICAL	Electrical Connection	Burklin 70F 8251 Connector (Mating Connector Supplied)		
	Weight	< 15 Grams (Without Cable and Amplifier Module)		
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology		
	Torque Sensitivity	< 0.2% FS		
	Mounting Torque	4 Nm (Max.)		

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (D) Continuous development and refinement of our products may result in specification changes without notice. Copyright © 2014 Kulite Semiconductor Products, Inc. All Rights Reserved. Kulite miniature pressure transducers are intended for use in test and research and development programs and are not necessarily designed to be used in production applications. For products designed to be used in production programs, please consult the factory.



5 VDC OUTPUT PRESSURE TRANSDUCER

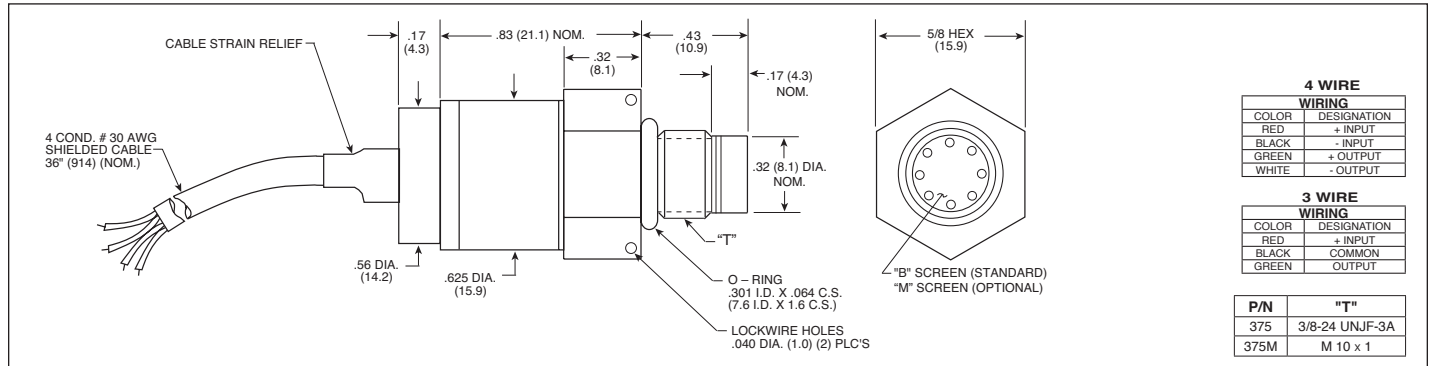
ETL-375 (M) SERIES

- 5 VDC Output
- Hybrid Microelectronic Regulator-Amplifier
- Patented Leadless Technology **VIS**[®]
- All Welded Construction
- Secondary Containment On Absolute And Sealed Gage Units
- Aerospace Quality Components
- 3/8-24 UNJF or M10 X 1 Thread
- 4 Wire (ETL-375) 3 Wire (ETL-300-375)



ETL-375 Series transducers are miniature, threaded instruments. The sensing sub-assembly is protected from mechanical damage by a solid screen which has been shown to have minimal influence on the frequency response of the sensor. The ETL Series uses Kulite's Patented Leadless Technology.

Incorporation of a Kulite proprietary electronics module within the main body of this product allows for operation from an unregulated power supply ranging from 12 ± 4VDC or 28 ± 4VDC with reverse polarity protection available upon request. Part performance not guaranteed if used in water.



INPUT	Pressure Range	1.7 25	3.5 50	7 BAR 100 PSI
	Operational Mode	Absolute, Gage, Sealed Gage		
	Over Pressure	2 Times Rated Pressure to 1000 PSI (70 BAR) 1.5 Times Rated Pressure Above 1000 PSI to a Max. of 6000 PSI (420 BAR)		
	Burst Pressure	3 Times Rated Pressure to a Max. of 10000 PSI (700 BAR)		
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)		
	Maximum Electrical Current	25 mA		
OUTPUT	Rated Electrical Excitation	8 - 16 VDC		13 - 32 VDC
	Full Scale Reading	5 VDC ± 150 mV		5 VDC ± 150 mV or 10 VDC ± 300 mV
	Output Impedance	200 Ohms (Max.)		
	Bandwidth (-3dB)	DC to 5 KHz		
	Residual Unbalance	0 to 100 mV (ETL-375)		200 mV ± 50 mV (ETL-300-375)
	Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (Typ.), ± 0.5% FSO (Max.)		
	Resolution	Infinitesimal		
	Natural Frequency of Sensor Without Screen (KHz) (Typ.)	Greater Than 400 KHz		
	Acceleration Sensitivity % FS/g Perpendicular	1.9x10 ⁻³	1.0x10 ⁻³	5.2x10 ⁻⁴
	Insulation Resistance	100 Megohm Min. @ 50 VDC		
ENVIRONMENTAL	Operating Temperature Range	-65°F to +250°F (-55°C to +120°C)		
	Compensated Temperature Range	0°F to +212°F (-18°C to +100°C) Other Ranges Quoted on Request		
	Thermal Zero Shift	± 1% FS/100° F (Typ.)		
	Thermal Sensitivity Shift	± 1% /100° F (Typ.)		
	Linear Vibration	20g Peak, Sine 10 to 2000 Hz		
PHYSICAL	Mechanical Shock	20g Half Sine Wave 11 msec. Duration		
	Electrical Connection	4 Conductor 30 AWG Shielded Cable 36" Long		
	Weight	24.5 Grams (Max.) Excluding Cable		
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology		
Mounting Torque	80 Inch-Pounds (Max.)			

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (Q) Continuous development and refinement of our products may result in specification changes without notice. Copyright © 2014 Kulite Semiconductor Products, Inc. All Rights Reserved. Kulite miniature pressure transducers are intended for use in test and research and development programs and are not necessarily designed to be used in production applications. For products designed to be used in production programs, please consult the factory.



5 VDC OUTPUT PRESSURE TRANSDUCER

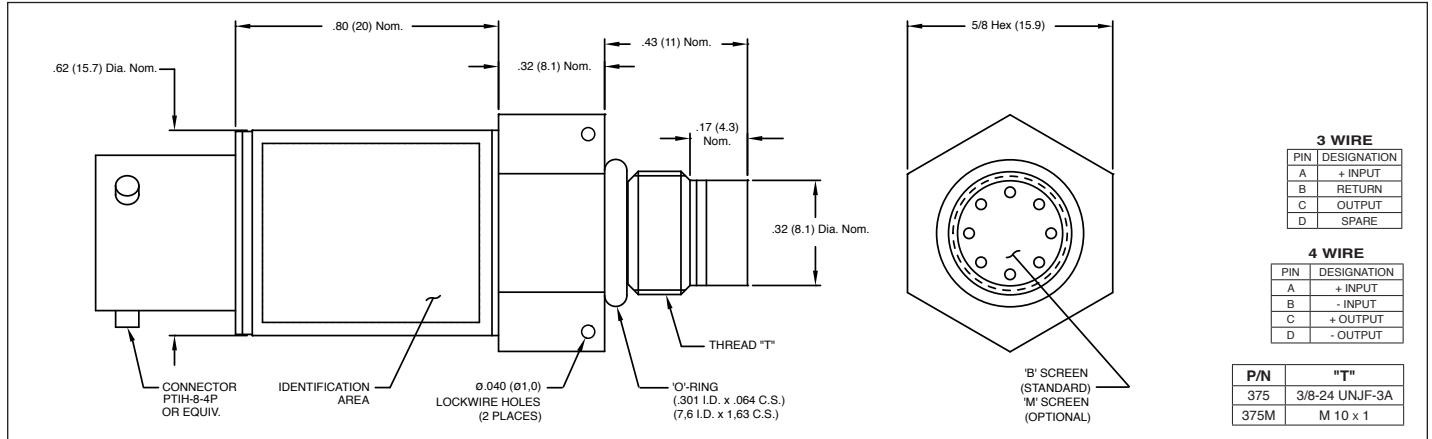
ETL-375 (M) CO SERIES

- 5 VDC Output
- Hybrid Microelectronic Regulator-Amplifier
- Patented Leadless Technology **VIS**[®]
- All Welded Construction
- Secondary Containment On Absolute And Sealed Gage Units
- Aerospace Quality Components
- 3/8-24 UNJF or M10 X 1 Thread
- 4 Wire (ETL-375) 3 Wire (ETL-300-375)



ETL-375(M) CO Series transducers are miniature, threaded instruments. The sensing sub-assembly is protected from mechanical damage by a solid screen which has been shown to have minimal influence on the frequency response of the sensor. The ETL Series uses Kulite's Patented Leadless Technology.

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INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	170 2500	350 BAR 5000 PSI	
	Operational Mode	Absolute, Sealed Gage								
	Over Pressure	2 Times Rated Pressure to 1000 PSI (70 BAR) 1.5 Times Rated Pressure Above 1000 PSI to a Max. of 6000 PSI (420 BAR)								
	Burst Pressure	3 Times Rated Pressure to a Max. of 10000 PSI (700 BAR)								
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)								
	Maximum Electrical Current	25 mA								
	Rated Electrical Excitation	8 - 16 VDC					13 - 32 VDC			
OUTPUT	Full Scale Reading	5 VDC ± 150 mV				5 VDC ± 150 mV or 10 VDC ± 300 mV				
	Output Impedance	200 Ohms (Max.)								
	Bandwidth (-3dB)	DC to 5 KHz								
	Residual Unbalance	0 to 100 mV (ETL-375)				200 mV ± 50 mV (ETL-300-375)				
	Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (Typ.), ± 0.5% FSO (Max.)								
	Resolution	Infinitesimal								
	Natural Frequency of Sensor Without Screen (KHz) (Typ.)	Greater Than 400 KHz								
	Acceleration Sensitivity % FS/g Perpendicular	1.9x10 ⁻³	1.0x10 ⁻³	5.2x10 ⁻⁴	2.2x10 ⁻⁴	1.1x10 ⁻⁴	6.2x10 ⁻⁵	2.6x10 ⁻⁵	1.5x10 ⁻⁵	
	Insulation Resistance	100 Megohm Min. @ 50 VDC								
	ENVIRONMENTAL	Operating Temperature Range	-65°F to +250°F (-55°C to +120°C)							
Compensated Temperature Range		0°F to +212°F (-18°C to +100°C) Other Ranges Quoted on Request								
Thermal Zero Shift		± 1% FS/100° F (Typ.)								
Thermal Sensitivity Shift		± 1% /100° F (Typ.)								
Linear Vibration		100g Peak, Sine up to 5000 Hz								
Mechanical Shock	100g half Sine Wave 11 msec. Duration									
PHYSICAL	Electrical Connection	PTH-8-4P or Equivalent (Mating Connector Available Upon Request)								
	Weight	24.5 Grams (Nom.)								
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology								
Mounting Torque	80 Inch-Pounds (Max.)									

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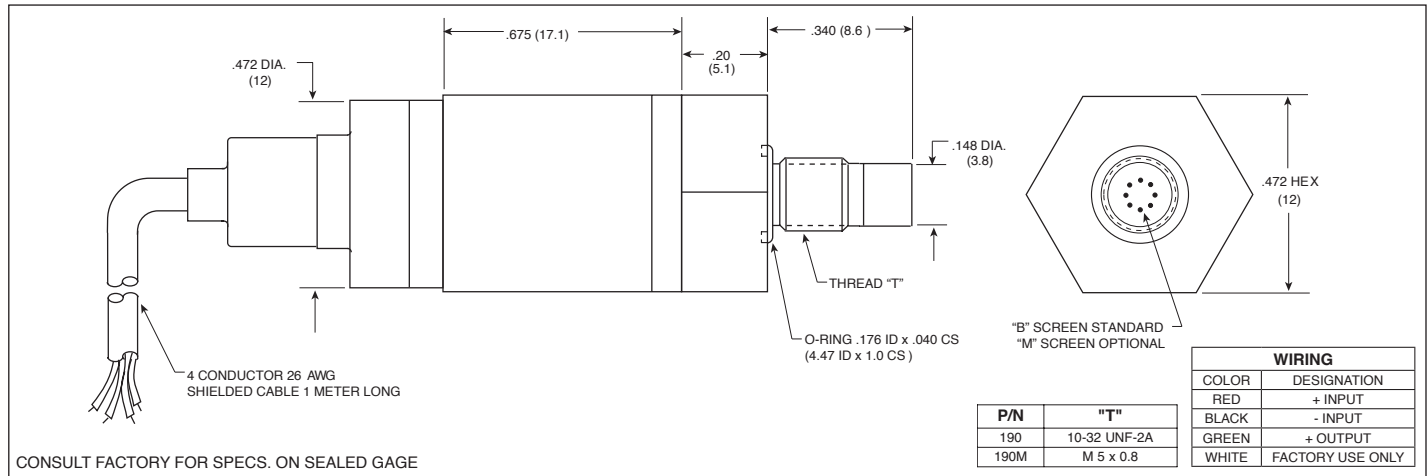
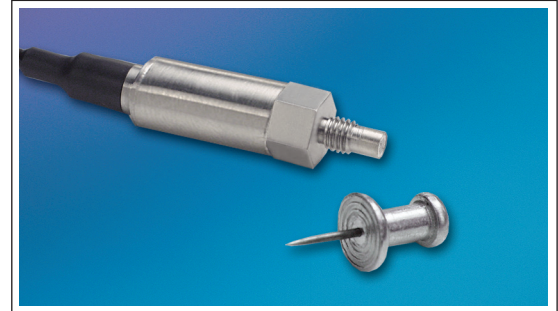
MINIATURE 5 VOLT DIGITALLY CORRECTED PRESSURE TRANSDUCER

ETL-76M-190 (M) SERIES

- Robust Construction
- Ultra Miniature Amplified Version
- Digitally Corrected
- High Accuracy
- Patented Leadless Technology **VIS**[®]

The ETL-76 Series is one of the smallest amplified transducers currently available. It incorporates the latest pressure sensing technology – Kulite's dielectrically isolated, silicon on silicon, patented leadless sensing element, which enables this device to be used in harsh environments. The ETL-76M digitally corrected transducer offers high accuracy with a total error band of $\pm 0.25\%$ FSO, inclusive of all errors over a wide temperature range of -40°F to $+250^{\circ}\text{F}$.

Part performance not guaranteed if used in water.



	0.35	1.0	1.7	3.5	7	17	35	70	140	210 BAR
INPUT	5	15	25	50	100	250	500	1000	2000	3000 PSI
Pressure Range										
Operational Mode	Absolute, Sealed Gage									
Over Pressure	2 Times Rated Pressure to 1000 PSI (70 BAR) 1.5 Times Rated Pressure Above 1000 PSI to a Max. of 6000 PSI (420 BAR)									
Burst Pressure	3 Times Rated Pressure to a Maximum of 6000 PSI (420 BAR)									
Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)									
Maximum Electrical Current	25 mA (Max.)									
Rated Electrical Excitation	8 - 32 VDC									
OUTPUT										
Full Scale Output (FSO)	5 VDC									
Residual Unbalance	0.5V									
Output Impedance	50 Ohms (Typ.)									
Total Error Band	$\pm 0.25\%$ Typ. (End Point Settings, Combined Non-Linearity, Hysteresis, Repeatability and All Thermal Effects Included)									
Bandwidth (-3dB)	DC to 2500 Hz									
Resolution	Infinitesimal									
Acceleration Sensitivity % FS/g Perpendicular	1.5×10^{-3}	1.0×10^{-3}	5.0×10^{-4}	3.0×10^{-4}	1.5×10^{-4}	1.0×10^{-4}	6.0×10^{-5}	4.0×10^{-5}	2.5×10^{-5}	1.9×10^{-5}
Insulation Resistance	100 Megohm Min. @ 50 VDC									
ENVIRONMENTAL										
Operating Temperature Range	-40°F to $+280^{\circ}\text{F}$ (-40°C to $+140^{\circ}\text{C}$) (Max.)									
Compensated Temperature Range	-40°F to $+250^{\circ}\text{F}$ (-40°C to $+120^{\circ}\text{C}$)									
Linear Vibration	20g Peak, Sine 10 to 2000 Hz									
Mechanical Shock	20g half Sine Wave 11 msec. Duration									
PHYSICAL										
Electrical Connection	4 Conductor 26 AWG Shielded Viton Cable 1 Meter Long									
Weight	10 Grams Excluding Cable									
Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology									
Mounting Torque	15 Inch-Pounds (Max.)									

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5 VDC OUTPUT DIGITALLY CORRECTED PRESSURE TRANSDUCER

ETL-DC-375 (M) SERIES

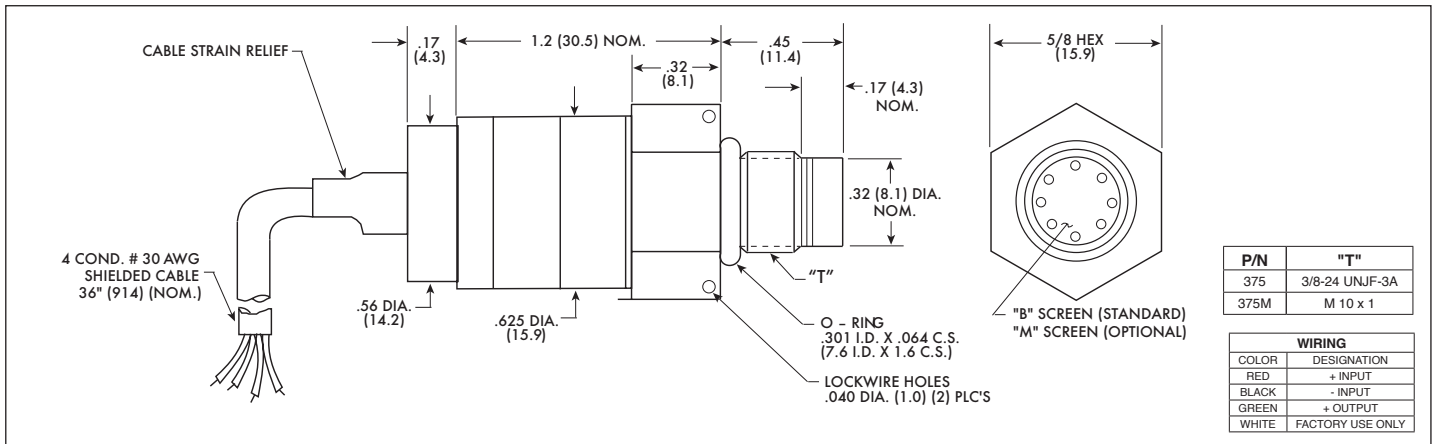
- 5 VDC Digitally Corrected Output
- Hybrid Microelectronic Regulator-Amplifier
- Patented Leadless Technology **VIS**[®]
- All Welded Construction
- Secondary Containment On Absolute And Sealed Gage Units
- Aerospace Quality Components
- Analog Output



ETL-DC-375 Series transducers are miniature, threaded instruments. The sensing sub-assembly is protected from mechanical damage by a solid screen which has been shown to have minimal influence on the frequency response of the sensor. The ETL Series uses Kulite's Patented Leadless Technology.

Incorporation of a Kulite proprietary electronics module within the main body of this product allows for operation from an unregulated power supply ranging from 8 - 32 VDC with reverse polarity protection available upon request. The result is a stable, digitally corrected 0 to 5 VDC output signal.

Part performance not guaranteed if used in water.



INPUT	Pressure Range	1.7 25	3.5 50	7 100
	Operational Mode	Absolute, Sealed Gage		
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)		
	Maximum Electrical Current	25 mA		
	Rated Electrical Excitation	8 - 32 VDC		
OUTPUT	Full Scale Output (FSO)	5 VDC		
	Residual Unbalance	0 VDC		
	Output Impedance	50 Ohms (Typ.)		
	Total Error Band	± 0.5% (Typ.) (End Point Settings, Combined Non-Linearity, Hysteresis, Repeatability and All Thermal Effects Included)		
	Bandwidth (-3dB)	DC to 2500 Hz		
	Resolution	Infinitesimal		
ENVIRONMENTAL	Insulation Resistance	100 Megohm Min. @ 50 VDC		
	Operating Temperature Range	-40°F to +280°F (-40°C to +140°C) (Max.)		
	Compensated Temperature Range	-40°F to +250°F (-40°C to +120°C)		
	Linear Vibration	20g Peak, Sine 10 to 2000 Hz		
PHYSICAL	Mechanical Shock	20g Half Sine Wave 11 msec. Duration		
	Electrical Connection	4 Conductor 30 AWG Shielded Cable 36" Long		
	Weight	24.5 Grams (Max.) Excluding Cable		
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology		
Mounting Torque	80 Inch-Pounds (Max.) (9Nm) Max.			

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5 VDC OUTPUT DIGITALLY CORRECTED PRESSURE TRANSDUCER

ETL-DC-375 (M) CO SERIES

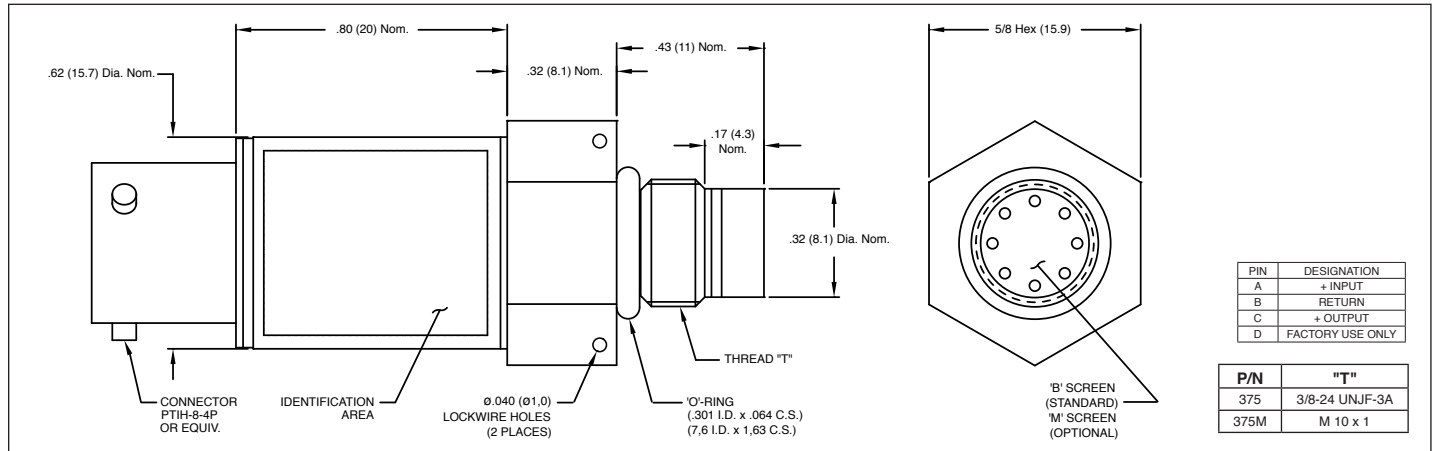
- 5 VDC Digitally Corrected Output
- Hybrid Microelectronic Regulator-Amplifier
- Patented Leadless Technology VIS®
- All Welded Construction
- Secondary Containment On Absolute And Sealed Gage Units
- Aerospace Quality Components
- Analog Output



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	Operational Mode	Absolute, Sealed Gage								
	Over Pressure	2 Times Rated Pressure to 1000 PSI (70 BAR) 1.5 Times Rated Pressure Above 1000 PSI to a Max. of 6000 PSI (420 BAR)								
	Burst Pressure	3 Times Rated Pressure to a Max. of 10000 PSI (700 BAR)								
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)								
	Maximum Electrical Current	25 mA								
	Rated Electrical Excitation	8 - 32 VDC								
OUTPUT	Full Scale Output (FSO)	5 VDC								
	Residual Unbalance	0 VDC								
	Output Impedance	50 Ohms (Typ.)								
	Total Error Band	± 0.5% (Typ.) <i>(End Point Settings, Combined Non-Linearity, Hysteresis, Repeatability and All Thermal Effects Included)</i>								
	Bandwidth (-3dB)	DC to 2500 Hz								
	Resolution	Infinitesimal								
	Insulation Resistance	100 Megohm Min. @ 50 VDC								
ENVIRONMENTAL	Operating Temperature Range	-40°F to +280°F (-40°C to +140°C) (Max.)								
	Compensated Temperature Range	-40°F to +250°F (-40°C to +120°C)								
	Linear Vibration	100g Peak, Sine up to 5000 Hz								
	Mechanical Shock	100g half Sine Wave 11 msec. Duration								
PHYSICAL	Electrical Connection	PTIH-8-4P or Equivalent (Mating Connector Available Upon Request)								
	Weight	24.5 Grams (Nom.)								
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology								
	Mounting Torque	80 Inch-Pounds (Max.) (9Nm) Max.								

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