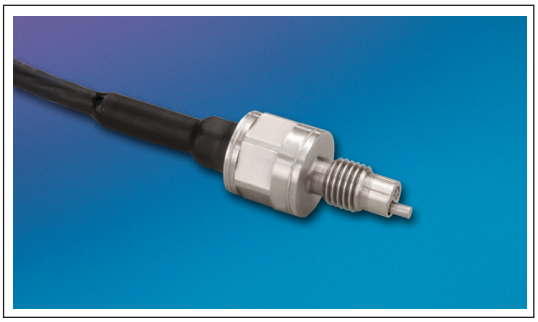
MINIATURE HIGH PRESSURE PRESSURE TRANSDUCER WITH INTEGRATED TEMPERATURE SENSOR

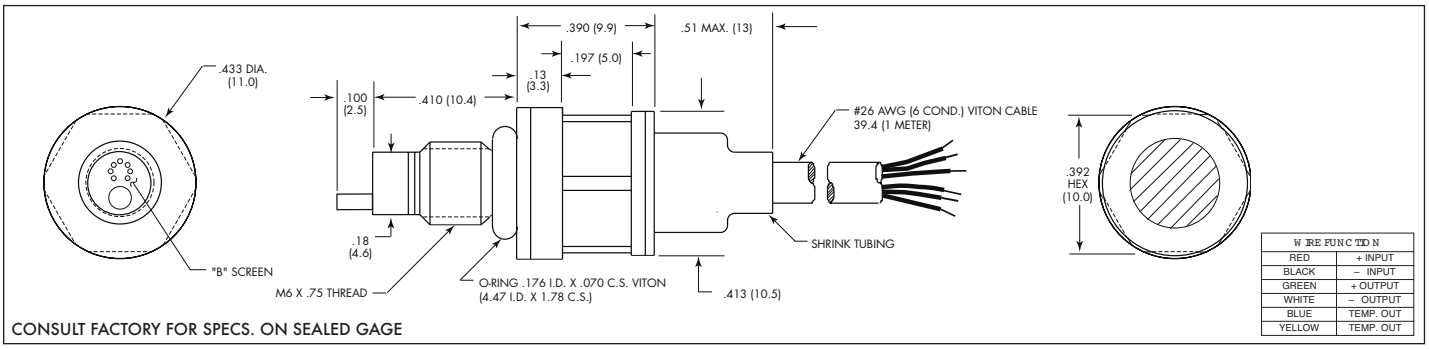


HKL/T-1-235M SERIES

- World's Smallest Pressure and Temperature Sensor at 6mm
- Combined Pressure and Temperature Capability
- Robust Construction
- Patented Leadless Technology **VIS**®
- Excellent Long Term Stability

The HKL/T-1-235M is a miniature threaded high pressure transducer/platinum RTD combination. The pressure transducer utilizes a patented silicon on silicon design. The platinum RTD protrudes beside the diaphragm to sense media temperature. The pressure and temperature devices are designed to operate independently. All wetted parts of the transducer are compatible with all common aircraft and automotive fluids.
Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL/T-1-235M transducer.



WIRE FUNCTION	
RED	+ INPUT
BLACK	– INPUT
GREEN	+ OUTPUT
WHITE	– OUTPUT
BLUE	TEMP. OUT
YELLOW	TEMP. OUT

INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	170 2500	250 BAR 3600 PSI
	Operational Mode	Absolute, Sealed Gage							
	Over Pressure	2 Times Rated Pressure							
	Burst Pressure	3 Times Rated Pressure							
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)							
	Rated Electrical Excitation	10 VDC							
	Maximum Electrical Excitation	12 VDC							
	RTD Excitation	0.3mA (1mA Max.)							
	Input Impedance	1000 Ohms (Min.)							
OUTPUT	Output Impedance	1000 Ohms (Nom.)							
	Full Scale Output (FSO)	100 mV (Nom.)							
	RTD	1000 Ohms Platinum, DIN EN 60751 Tables, Class A (65% Response Time 3 Seconds Max.)							
	Residual Unbalance	± 5 mV (Typ.)							
	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.)	240	300	380	550	7000	1000	1500	2000
	Acceleration Sensitivity % FS/g Perpendicular	$5.0x10^{-4}$	$3.0x10^{-4}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.0x10^{-5}$	$2.2x10^{-5}$	$1.4x10^{-5}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC							
ENVIRONMENTAL	Operating Temperature Range	-65°F to +400°F (-55°C to +204°C)							
	Compensated Temperature Range	-40°F to +392°F (-40°C to +200°C)							
	Thermal Zero Shift	± 1% FS/100°F (Typ.) (± 2% FS/100°F For 25 PSI Range)							
	Thermal Sensitivity Shift	± 1% /100°F (Typ.) (± 2% /100°F For 25 PSI Range)							
	Linear Vibration	10-2,000 Hz Sine, 100g. (Max.)							
	Mechanical Shock	20g half Sine Wave 11 msec. Duration							
PHYSICAL	Electrical Connection	6 Conductor 26 AWG Viton Cable Without Shielding 1 Meter Long							
	Weight	15 Grams (Max.) Excluding Cable							
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology							
	Mounting Torque	50 Inch-Pounds (Max.) 6Nm							

Note: Custom pressure ranges, accuracies, mechanical configurations and RTD resistance available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (O) Continuous development and refinement of our products may result in specification changes without notice.
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.

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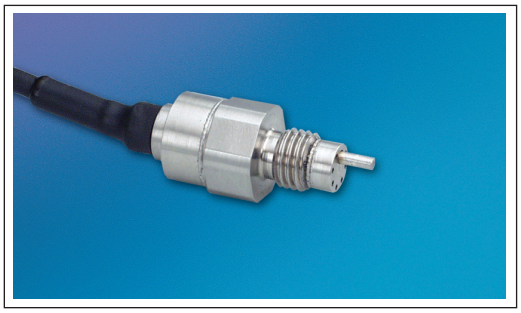
MINIATURE PRESSURE TRANSDUCER WITH INTEGRATED TEMPERATURE SENSOR

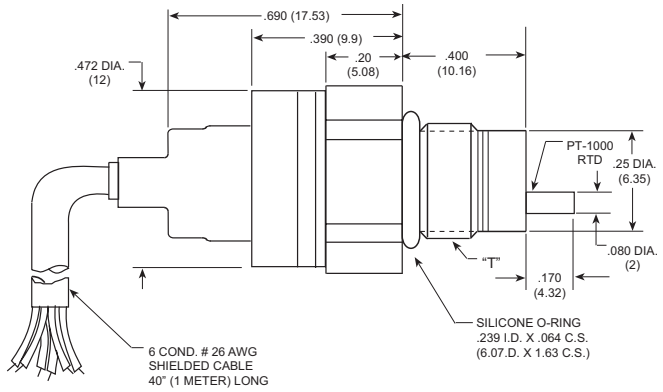
HKL/T-312 (M) SERIES

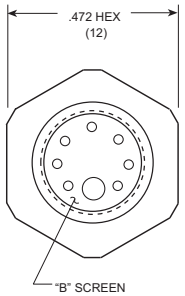
- Combined Pressure and Temperature Measurement Capability
- Robust Construction
- Patented Leadless Technology **VIS**®
- Designed For Industrial and Automotive Applications



The HKL/T-312 (M) is a miniature threaded pressure transducer/platinum RTD combination. The pressure transducer utilizes a patented silicon on silicon design. The platinum RTD protrudes beside the diaphragm to sense media temperature. The pressure and temperature devices are designed to operate independently. All wetted parts of the transducer are compatible with all common industrial and automotive fluids. Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL/T-312 transducer.





WIRING	
RED	+ INPUT
BLACK	– INPUT
GREEN	+ OUTPUT
WHITE	– OUTPUT
BLUE	TEMP. OUT
YELLOW	TEMP. OUT

P/N	"T"
312	5/16 - 24 UNF-2A
312M	M 8 x 1

INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	170 BAR 2500 PSI
	Operational Mode	Absolute, Sealed Gage						
	Over Pressure	3.5 50	7 100	14 200	35 500	52 750	105 1500	210 BAR 3000 PSI
	Burst Pressure	3 Times Rated Pressure						
	Pressure Media	Most Liquids and Gases - Please Consult Factory (All Media May Not Be Suitable With O-Ring Supplied)						
	Rated Electrical Excitation	10 VDC						
	Maximum Electrical Excitation	12 VDC						
	RTD Excitation	1mA (2mA Max.)						
	Input Impedance	1000 Ohms (Min.)						
OUTPUT	Output Impedance	1000 Ohms (Nom.)						
	Full Scale Output (FSO)	100 mV (Nom.)						
	RTD	1000 Ohms Platinum, DIN EN 60751 Tables, Class A (65% Response Time 3 Seconds Max.) In Liquid						
	Residual Unbalance	± 5 mV (Typ.)						
	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.)	240	300	380	550	700	1000	1400
	Acceleration Sensitivity % FS/g Perpendicular	$5.0x10^{-4}$	$3.0x10^{-4}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.0x10^{-5}$	$2.5x10^{-5}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC						
ENVIRONMENTAL	Operating Temperature Range	-65°F to +350°F (-55°C to +175°C)						
	Compensated Temperature Range	+80°F to +180°F (+25°C to +80°C) Any 100°F Within The Operating Range on Request						
	Thermal Zero Shift	± 1% FS/100°F (Typ.)						
	Thermal Sensitivity Shift	± 1% /100°F (Typ.)						
	Linear Vibration	10-2,000 Hz Sine, 100g (Max.)						
	Mechanical Shock	20g half Sine Wave 11 msec. Duration						
PHYSICAL	Electrical Connection	6 Conductor 26 AWG Shielded Cable 40" (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	50 Inch-Pounds (Max.) 6Nm						

Note: Custom pressure ranges, accuracies, mechanical configurations and RTD resistance available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (I) Continuous development and refinement of our products may result in specification changes without notice.
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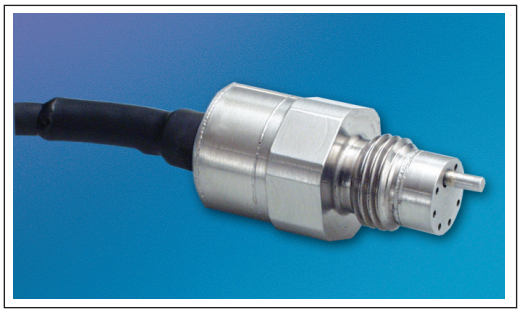
三協インタナショナル株式会社 03-3662-8100

MINIATURE PRESSURE TRANSDUCER WITH INTEGRATED TEMPERATURE SENSOR

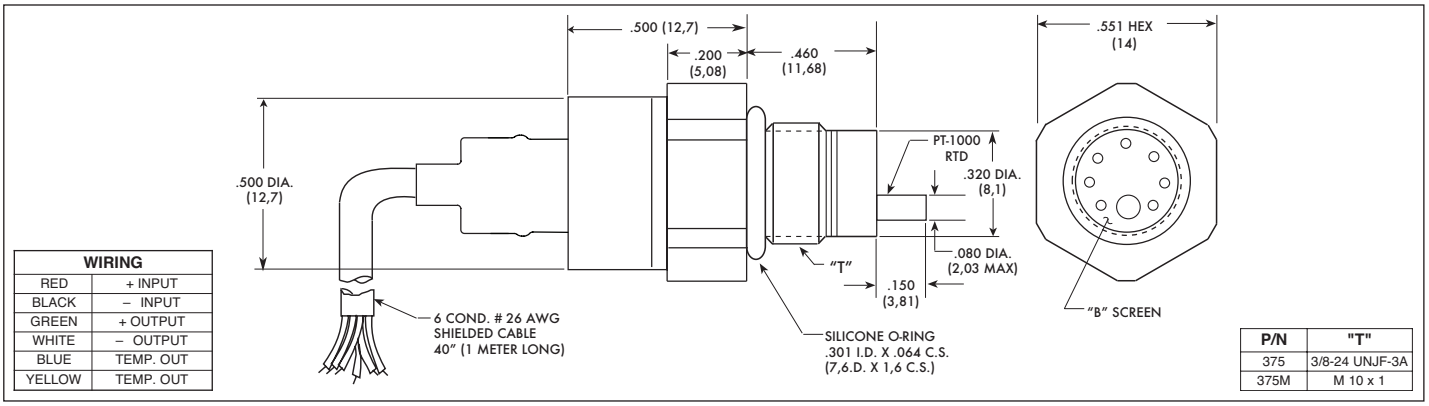
HKL/T-1-375 (M) SERIES

- Combined Pressure and Temperature Measurement Capability
- Robust Construction
- Patented Leadless Technology **VIS**®
- Designed For Industrial and Automotive Applications



The HKL/T-375 (M) is a miniature threaded pressure transducer/platinum RTD combination. The pressure transducer utilizes a patented silicon on silicon design. The platinum RTD protrudes beside the diaphragm to sense media temperature. The pressure and temperature devices are designed to operate independently. All wetted parts of the transducer are compatible with all common industrial and automotive fluids.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL/T-375 transducer.



WIRING	
RED	+ INPUT
BLACK	– INPUT
GREEN	+ OUTPUT
WHITE	– OUTPUT
BLUE	TEMP. OUT
YELLOW	TEMP. OUT

P/N	"T"
375	3/8-24 UNJF-3A
375M	M 10 x 1

INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	170 BAR 2500 PSI
	Operational Mode	Absolute, Sealed Gage						
	Over Pressure	3.5 50	7 100	14 200	35 500	52 750	105 1500	210 BAR 3000 PSI
	Burst Pressure	3 Times Rated Pressure						
	Pressure Media	Most Liquids and Gases - Please Consult Factory (All Media May Not Be Suitable With O-Ring Supplied)						
	Rated Electrical Excitation	10 VDC						
	Maximum Electrical Excitation	12 VDC						
	RTD Excitation	1mA (2mA Max.)						
	Input Impedance	1000 Ohms (Min.)						
OUTPUT	Output Impedance	1000 Ohms (Nom.)						
	Full Scale Output (FSO)	100 mV (Nom.)						
	RTD	1000 Ohms Platinum, DIN EN 60751 Tables, Class A (65% Response Time 3 Seconds Max.) In Liquid						
	Residual Unbalance	± 5 mV (Typ.)						
	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.)	240	300	380	550	700	1000	1400
	Acceleration Sensitivity % FS/g Perpendicular	$5.0x10^{-4}$	$3.0x10^{-4}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.0x10^{-5}$	$2.5x10^{-5}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC						
ENVIRONMENTAL	Operating Temperature Range	-65°F to +350°F (-55°C to +175°C)						
	Compensated Temperature Range	+80°F to +180°F (+25°C to +80°C) Any 100°F Within The Operating Range on Request						
	Thermal Zero Shift	± 1% FS/100°F (Typ.)						
	Thermal Sensitivity Shift	± 1% /100°F (Typ.)						
	Steady Acceleration	10,000 g. (Max.)						
	Linear Vibration	10-2,000 Hz Sine, 100g (Max.)						
PHYSICAL	Electrical Connection	6 Conductor 26 AWG Shielded Cable 40" (1 Meter) Long						
	Weight	12 Grams Excluding Cable						
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology						
	Mounting Torque	50 Inch-Pounds (Max.) 6Nm						

Note: Custom pressure ranges, accuracies, mechanical configurations and RTD resistance available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (L) Continuous development and refinement of our products may result in specification changes without notice.
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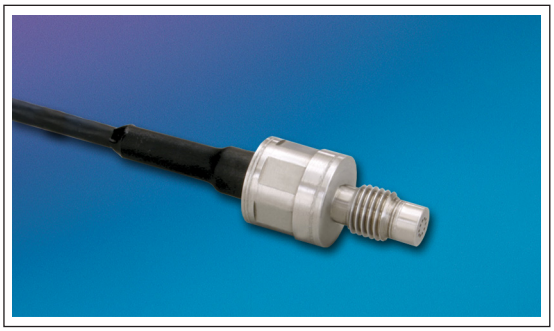
MINIATURE HIGH PRESSURE PRESSURE TRANSDUCER

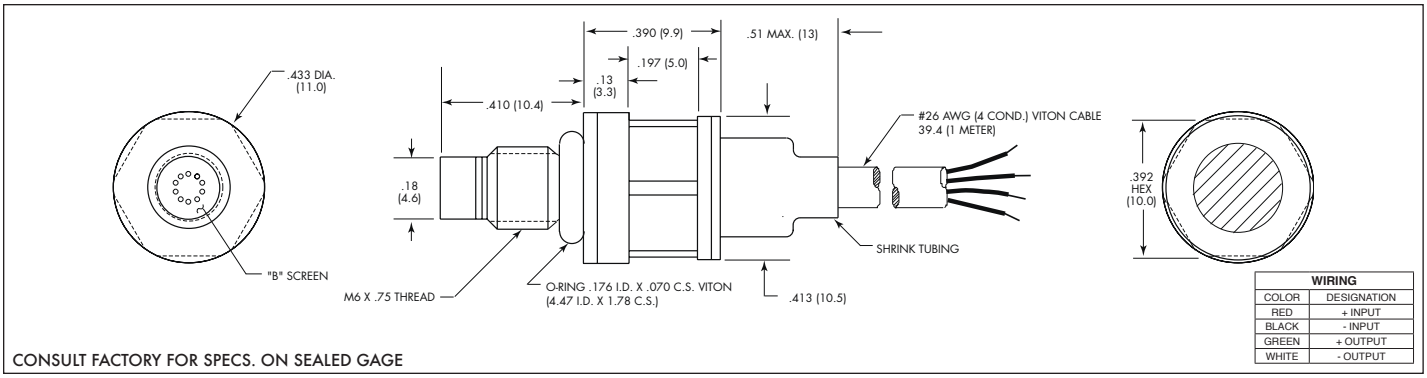
HKL-1-235M SERIES

- Patented Leadless Technology **VIS**®
- Robust Construction
- Excellent Long Term Stability



The HKL-1-235M is a miniature threaded high pressure transducer utilizing Kulite's Patented Leadless Technology. The hexagonal head and o-ring seal make it easy to mount and simple to apply.
This advanced construction 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, making them suitable for use even in shock pressure measurements.
Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditionera to maximize the measurement capability of the HKL-1-235M transducer.



CONSULT FACTORY FOR SPECS. ON SEALED GAGE

INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	170 2500	250 BAR 3600 PSI
	Operational Mode	Absolute, Sealed Gage							
	Over Pressure	2 Times Rated Pressure							
	Burst Pressure	3 Times Rated Pressure							
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)							
	Rated Electrical Excitation	10 VDC							
	Maximum Electrical Excitation	12 VDC							
	Input Impedance	1000 Ohms (Min.)							
OUTPUT	Output Impedance	1000 Ohms (Nom.)							
	Full Scale Output (FSO)	100 mV (Nom.)							
	Residual Unbalance	± 5 mV (Typ.)							
	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.)	240	300	380	550	7000	1000	1500	2000
	Acceleration Sensitivity % FS/g Perpendicular	$5.0x10^{-4}$	$3.0x10^{-4}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.0x10^{-5}$	$2.2x10^{-5}$	$1.4x10^{-5}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC							
ENVIRONMENTAL	Operating Temperature Range	-65°F to +350°F (-55°C to +175°C)							
	Compensated Temperature Range	80°F to +180°F (25°C to +80°C) Any 100°F Range Within The Operating Range on Request							
	Thermal Zero Shift	± 1% FS/100°F (Typ.) (± 2% FS/100°F For 25 PSI Range)							
	Thermal Sensitivity Shift	± 1% /100°F (Typ.) (± 2% /100°F For 25 PSI Range)							
	Linear Vibration	10-2,000 Hz Sine, 100g. (Max.)							
	Mechanical Shock	20g half Sine Wave 11 msec. Duration							
PHYSICAL	Electrical Connection	4 Conductor 26 AWG Viton Cable Without Shielding 1 Meter Long							
	Weight	15 Grams (Max.) Excluding Cable							
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology							
	Mounting Torque	50 Inch-Pounds (Max.) 6 Nm							

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (N) Continuous development and refinement of our products may result in specification changes without notice.
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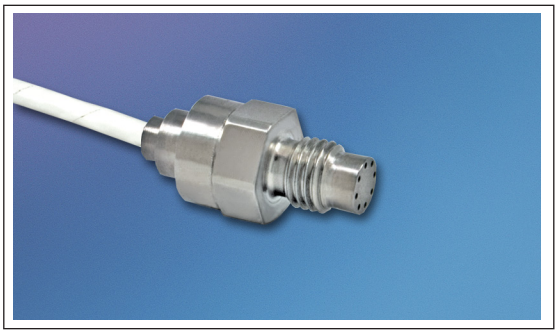
MINIATURE RUGGEDIZED PRESSURE TRANSDUCER

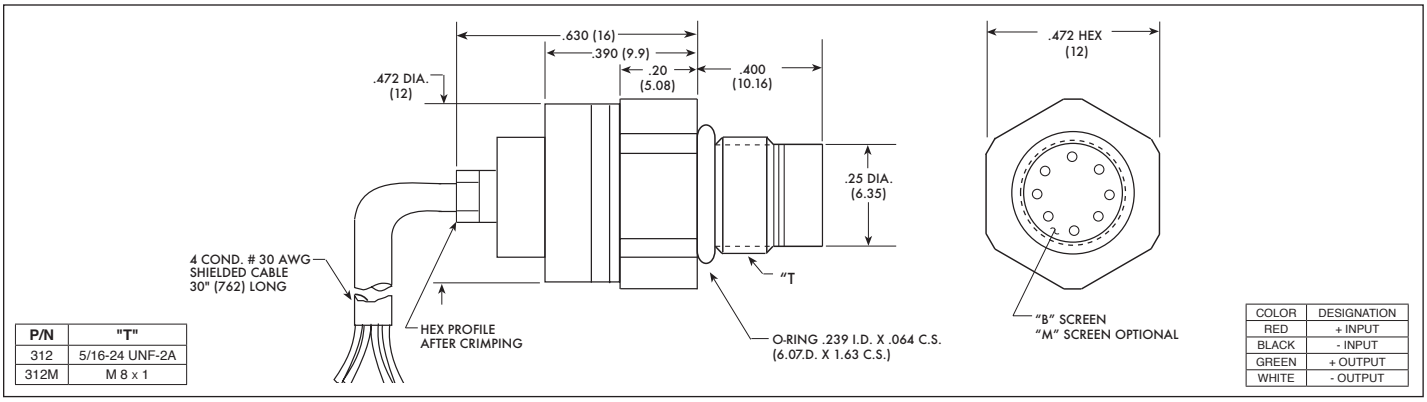
HKL-312 (M) SERIES

- Small Pressure Sensitive Area
- Patented Leadless Technology **VIS**®
- High Natural Frequency
- No Internal Lead Flexing
- Extra Low G Sensitivity



The ruggedness of this sensor has not compromised its performance. It was designed for ease of installation and will operate properly in any medium compatible with 15-5 SS or SiO_2. Its Patented Leadless Construction makes it possible for the sensing unit to be installed in such a way that will not compromise its high natural frequency.
Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL-312 transducer.



P/N	"T"
312	5/16-24 UNF-2A
312M	M 8 x 1

COLOR	DESIGNATION
RED	+ INPUT
BLACK	- INPUT
GREEN	+ OUTPUT
WHITE	- OUTPUT

INPUT	Pressure Range	0.7 10	1.0 15	1.7 25	3.5 50	7 100	17 250	35 500	70 1000	140 BAR 2000 PSI
	Operational Mode	Absolute, Gage, Differential		Absolute, Gage, Sealed Gage, Differential			Absolute, Sealed Gage			
	Over Pressure	2 Times Rated Pressure to 500 PSI (35 BAR), 1.5 Times Rated Pressure Above 500 PSI (35 BAR)								
	Burst Pressure	3 Times Rated Pressure to a Maximum of 3000 PSI (210 BAR)								
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases - Please Consult Factory)								
	Rated Electrical Excitation	10 VDC/AC								
	Maximum Electrical Excitation	12 VDC/AC								
	Input Impedance	1000 Ohms (Min.)								
OUTPUT	Output Impedance	1000 Ohms (Nom.)								
	Full Scale Output (FSO)	100 mV (Nom.)								
	Residual Unbalance	± 5 mV (Typ.)								
	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.)	175	200	240	300	380	550	700	1000	1400
	Acceleration Sensitivity % FS/g Perpendicular	$1.0x10^{-3}$	$6.5x10^{-4}$	$5.0x10^{-4}$	$3.0x10^{-4}$	$1.5x10^{-4}$	$1.0x10^{-4}$	$6.0x10^{-5}$	$4.5x10^{-5}$	$2.0x10^{-5}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC								
ENVIRONMENTAL	Operating Temperature Range	-20°F to +250°F (-29°C to +120°C)								
	Compensated Temperature Range	+80°F to +180°F (+25°C to +80°C) Any 100°F Range Within The Operating Range on Request								
	Thermal Zero Shift	± 1% FS/100°F (Typ.)								
	Thermal Sensitivity Shift	± 1% /100°F (Typ.)								
	Linear Vibration	10-2,000 Hz Sine, 100g. (Max.)								
	Mechanical Shock	20g half Sine Wave 11 msec. Duration								
PHYSICAL	Electrical Connection	4 Conductor 30 AWG Shielded Cable 30" Long (Optional Connector Available)								
	Weight	17 Grams (Max.) Excluding Cable								
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology								
	Mounting Torque	50 Inch-Pounds (Max.) 6Nm								

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (G)

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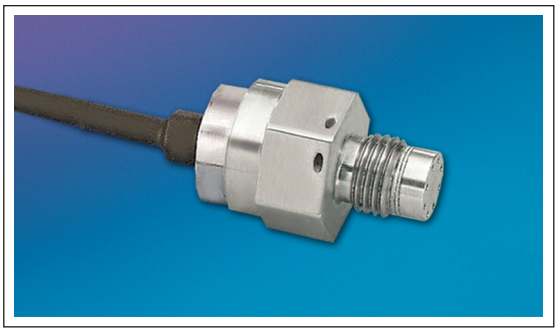
MINIATURE RUGGEDIZED PRESSURE TRANSDUCER

HKL-375 (M) SERIES

- Excellent Stability
- All Welded Construction
- Robust Construction
- High Natural Frequencies
- 3/8-24 UNJF or M10 X 1 Thread
- Patented Leadless Technology **VIS**®

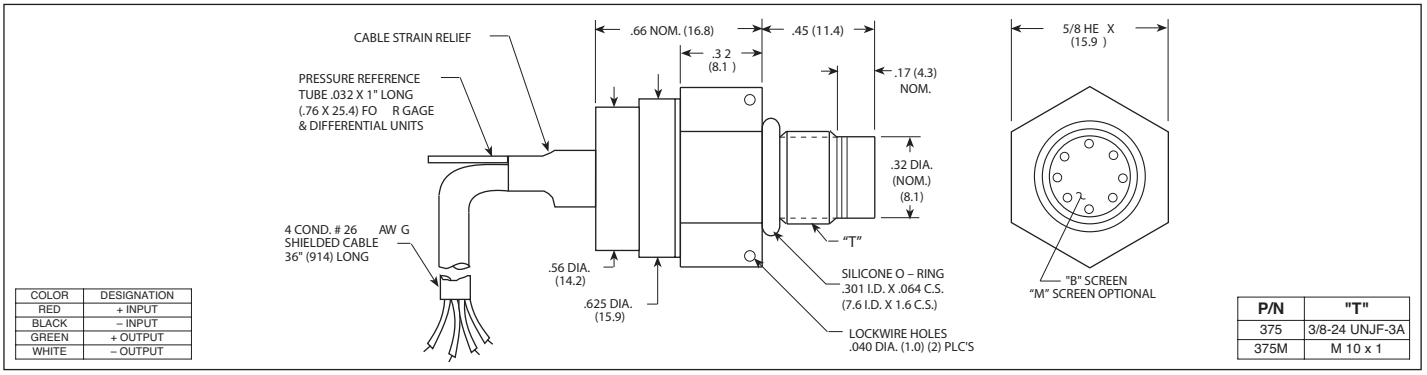


The HKL-375 is a miniature threaded pressure transducer. The hexagonal head and o-ring seal make it easy to mount and simple to apply.

The HKL-375 utilizes Kulite's Patented Leadless Technology. A solid state piezoresistive sensing element is protected by a metal screen. This sensing sub assembly is welded to a stainless steel body.

This advanced construction results in a highly stable, reliable and rugged instrument with all the advantages of significant miniaturization, excellent repeatability, low power consumption, etc. The miniaturization process also yields a marked increase in the natural frequencies of the transducers, making them suitable for use even in shock pressure measurements.
Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL-375 transducer.



COLOR	DESIGNATION
RED	+ INPUT
BLACK	– INPUT
GREEN	+ OUTPUT
WHITE	– OUTPUT

P/N	"T"
375	3/8-24 UNJF-3A
375M	M 10 x 1

INPUT	Pressure Range	0.7 1.0 10 15	1.7 3.5 7 BAR 25 50 100 PSI
	Operational Mode	Absolute, Gage, Differential	Absolute, Gage, Sealed Gage, Differential
	Over Pressure	2 Times Rated Pressure to 500 PSI (35 BAR), 1.5 Times Rated Pressure Above 500 PSI (35 BAR)	
	Burst Pressure	3 Times Rated Pressure	
	Pressure Media	Most Conductive Liquids and Gases - Please Consult Factory (All Media May Not Be Suitable With O-Ring Supplied)	
	Rated Electrical Excitation	10 VDC/AC	
	Maximum Electrical Excitation	12 VDC/AC	
	Input Impedance	1000 Ohms (Min.)	
OUTPUT	Output Impedance	1000 Ohms (Nom.)	
	Full Scale Output (FSO)	100 mV (Nom.)	
	Residual Unbalance	± 5 mV (Typ.)	
	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 175 KHz	
	Acceleration Sensitivity % FS/g Perpendicular	$1.0x10^{-3}$ $6.5x10^{-4}$	$5.0x10^{-4}$ $3.0x10^{-4}$ $1.5x10^{-4}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC	
ENVIRONMENTAL	Operating Temperature Range	-65°F to +250°F (-55°C to +120°C)	
	Compensated Temperature Range	+80°F to +180°F (+25°C to +80°C) Any 100°F Range Within The Operating Range on Request	
	Thermal Zero Shift	± 1% FS/100°F (Typ.)	
	Thermal Sensitivity Shift	± 1% /100°F (Typ.)	
	Linear Vibration	10-2,000 Hz Sine, 100g. (Max.)	
	Mechanical Shock	20g half Sine Wave 11 msec. Duration	
PHYSICAL	Electrical Connection	4 Conductor 26 AWG Shielded Cable 36" Long	
	Weight	17 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.) 9 Nm	

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (O)

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.

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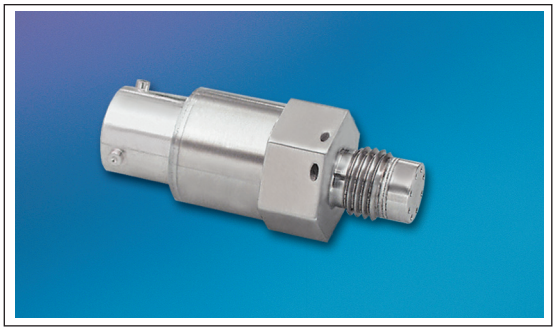
三協インタナショナル株式会社 03-3662-8100

MINIATURE RUGGEDIZED PRESSURE TRANSDUCER

HKL-375 (M) CO SERIES

- Excellent Stability
- All Welded Construction
- Robust Construction
- High Natural Frequencies
- 3/8-24 UNJF or M10 X 1 Thread
- Patented Leadless Technology **VIS**®

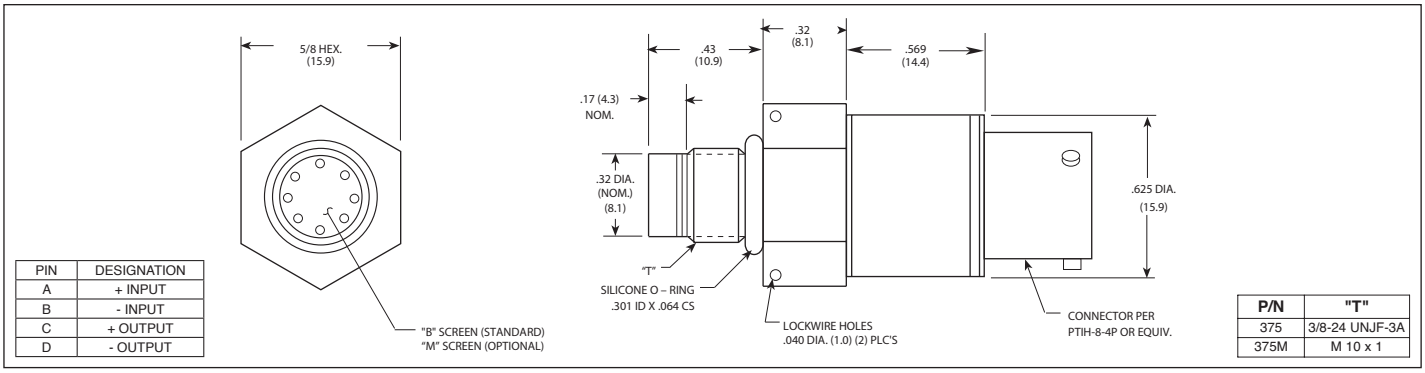


The HKL-375 is a miniature threaded pressure transducer. The hexagonal head and o-ring seal make it easy to mount and simple to apply.

The HKL-375 utilizes Kulite's Patented Leadless Technology. A solid state piezoresistive sensing element is protected by a metal screen. This sensing sub assembly is welded to a stainless steel body.

This advanced construction results in a highly stable, reliable and rugged instrument with all the advantages of significant miniaturization, excellent repeatability, low power consumption, etc. The miniaturization process also yields a marked increase in the natural frequencies of the transducers, making them suitable for use even in shock pressure measurements.
Part performance not guaranteed if used in water.

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKL-375 transducer.



PIN	DESIGNATION
A	+ INPUT
B	- INPUT
C	+ OUTPUT
D	- OUTPUT

P/N	"T"
375	3/8-24 UNJF-3A
375M	M 10 x 1

INPUT	Pressure Range	0.7 1.0 10 15	1.7 3.5 7 BAR 25 50 100 PSI
	Operational Mode	Absolute	Absolute, Sealed Gage
	Over Pressure	2 Times Rated Pressure	
	Burst Pressure	3 Times Rated Pressure	
	Pressure Media	Most Conductive Liquids and Gases - Please Consult Factory (All Media May Not Be Suitable With O-Ring Supplied)	
	Rated Electrical Excitation	10 VDC/AC	
	Maximum Electrical Excitation	12 VDC/AC	
	Input Impedance	1000 Ohms (Min.)	
OUTPUT	Output Impedance	1000 Ohms (Nom.)	
	Full Scale Output (FSO)	100 mV (Nom.)	
	Residual Unbalance	± 5 mV (Typ.)	
	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 175 KHz	
	Acceleration Sensitivity % FS/g Perpendicular	$1.0x10^{-3}$ $6.5x10^{-4}$	$5.0x10^{-4}$ $3.0x10^{-4}$ $1.5x10^{-4}$
	Insulation Resistance	100 Megohm Min. @ 50 VDC	
ENVIRONMENTAL	Operating Temperature Range	-65°F to +250°F (-55°C to +120°C)	
	Compensated Temperature Range	+80°F to +180°F (+25°C to +80°C) Any 100°F Range Within The Operating Range on Request	
	Thermal Zero Shift	± 1% FS/100°F (Typ.)	
	Thermal Sensitivity Shift	± 1% /100°F (Typ.)	
	Linear Vibration	10-2,000 Hz Sine, 100g. (Max.)	
	Humidity	100% Relative Humidity	
	Mechanical Shock	20g half Sine Wave 11 msec. Duration	
PHYSICAL	Electrical Connection	PTIH-8-4P Connector or Equivalent	
	Weight	17 Grams (Max.)	
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon Patented Leadless Technology	
	Mounting Torque	80 Inch-Pounds (Max.) 9 Nm	

Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters. All dimensions nominal. (E) Continuous development and refinement of our products may result in specification changes without notice.
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.

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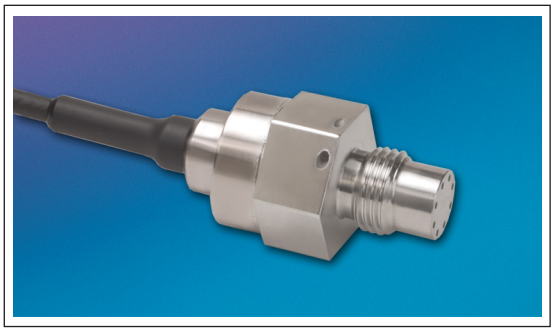
三協インタナショナル株式会社 03-3662-8100

MINIATURE HIGH PRESSURE PRESSURE TRANSDUCER

HKM/HKL-233(X)-375 (M) SERIES

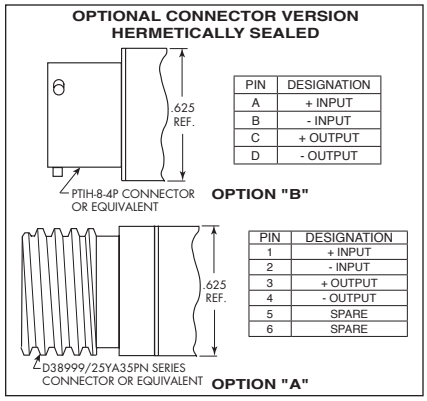
- Excellent Stability
- All Welded Construction
- Hermetic Sealed Package
- Robust Construction
- High Natural Frequencies
- Aerospace Quality Components
- *"X" Identifies Electrical Connection Option*
- Patented Leadless Technology **VIS**® (HKL Series)
- Thermorad Jacket Compatible With Most Aircraft Fluids
- Intrinsically Safe Applications Available (i.e. IS-HKM-233(X)-375)

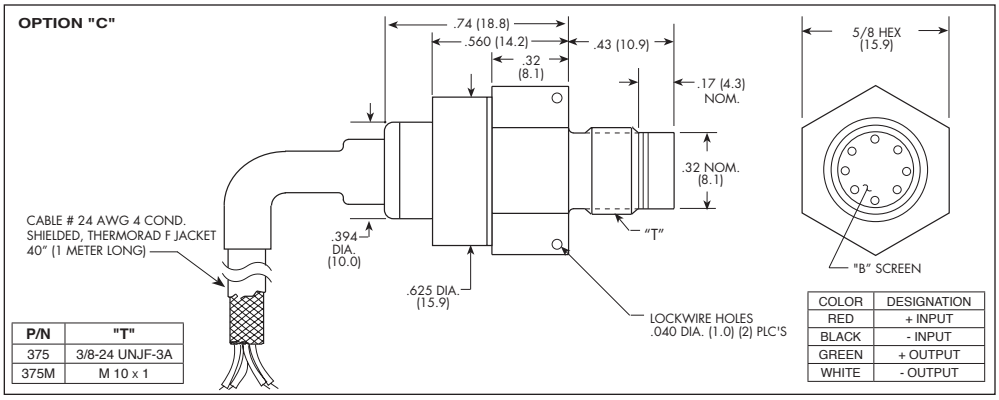


The HKM/HKL-233(X)-375 is a miniature threaded pressure transducer. The hexagonal head and o-ring seal make it easy to mount and simple to apply.
The HKM-233(X)-375 utilizes a flush metal diaphragm as a force collector. A solid state piezoresistive sensing element is located immediately behind this metal diaphragm which is protected by a metal screen. Force transfer is accomplished via an intervening film of non-compressible silicone oil. This sensing sub assembly is welded to a stainless steel body.
The HKL-233(X)-375 utilizes Kulite's Patented Leadless Technology. A solid state piezoresistive sensing element is protected by a metal screen. This sensing sub assembly is welded to a stainless steel body. This advanced construction 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, making them suitable for use even in shock pressure measurements.

Part performance not guaranteed if used in water (HKL only).

Kulite recommends the KSC Series of signal conditioners to maximize the measurement capability of the HKM/HKL-233-375 transducers.





		HKL				HKM				
INPUT	Pressure Range	1.7 25	3.5 50	7 100	17 BAR 250 PSI	35 500	70 1000	140 2000	210 3000	350 BAR 5000 PSI
	Operational Mode	Absolute	Absolute, Sealed Gage							
	Over Pressure	2 Times Rated Pressure to a Max. of 25000 PSI (1724 BAR)								
	Burst Pressure	3 Times Rated Pressure to a Max. of 25000 PSI (1724 BAR)								
	Pressure Media	All Nonconductive, Noncorrosive Liquids or Gases (Most Conductive Liquids and Gases-Consult Factory)				Any Liquid or Gas Compatible with 15-5 PH and 316 Stainless Steel				
	Rated Electrical Excitation	10 VDC								
	Maximum Electrical Excitation	12 VDC								
	Input Impedance	1000 Ohms (Min.)								
OUTPUT	Output Impedance	1000 Ohms (Nom.)								
	Full Scale Output	100 mV								
	Residual Unbalance	0 mV								
	Resolution	Infinitesimal								
	Insulation Resistance	100 Megohm Min. @ 50 VDC								
ENVIRONMENTAL	Operating Temperature Range	-65°F to +350°F (-55°C to +175°C)								
	Compensated Temperature Range	-65°F to +300°F (-55°C to +150°C)								
	Total Error Band	± 2% FSO +32°F to 180°F (0°C to +85°C) Increasing to ± 3% At All Other Temperatures Within The Compensated Range								
	Linear Vibration	20g Peak, Sine up to 2000 Hz								
	Altitude	-150 ft. to +70,000 ft. Will Not Damage Sensor								
	Humidity	100% Relative Humidity								
	Mechanical Shock	20g half Sine Wave 11 msec. Duration								
PHYSICAL	Electrical Connection	*OPTION A:* D38999/25YA35PN Connector or Equivalent, *OPTION B:* PTIH-8-4P Connector or Equivalent, *OPTION C:* 4 Conductor 24 AWG Shielded, Thermorad F Jacketed Cable, 40" (1 Meter)								
	Weight	17 Grams (Max.) Excluding Cable								
	Pressure Sensing Principle	Fully Active Four Arm Wheatstone Bridge Dielectrically Isolated Silicon on Silicon (Patented Leadless Technology HKL Series)								
	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. (V) Continuous development and refinement of our products may result in specification changes without notice.

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