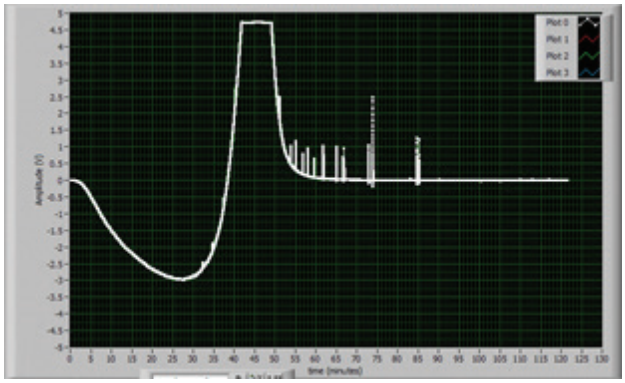
SENSORS FOR EXTREME TEMPERATURE AUTOMOTIVE TESTING

PCB PIEZOTRONICS
AN AMPHENOL COMPANY

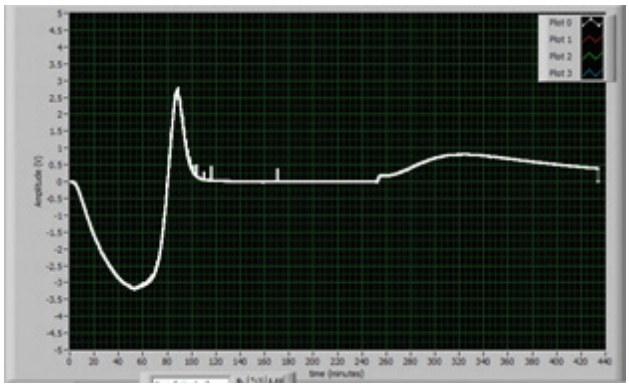
pcb.com/uht12

WHAT IS UHT-12™?

UHT-12™ is a new crystal designed for more accurate, lower noise measurements during large temperature variations. UHT-12™ technology reduces the effects of temperature variation. Pyroelectricity phenomenon may occur during large temperature fluctuations, generating "spikes" and disrupting behavior of the accelerometer and the test results. Accelerometers made with UHT-12™ technology have an improved data quality.



WITHOUT UHT-12™

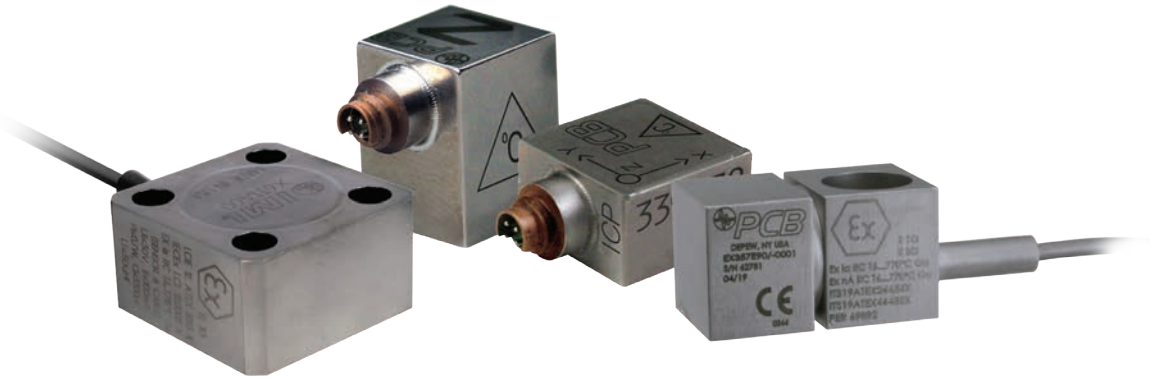


WITH UHT-12™

APPLICATIONS

Vibration testing of automotive exhaust, turbocharger and engine systems requires accelerometers that are designed to withstand very high temperatures. PCB's accelerometers for research and development are manufactured from tough low mass materials such as titanium and Inconel, are hermetically sealed and have no moving parts.

The UHT-12™ family of accelerometers include Model 320C52, 320C53, 339B31, 339B32, 357A64, 339A30, 339A31, 339A32, EX357E90, EX357E91, EX357E92, EX357E93, 357A63, EX356A73 and EX611A00. Other products such as Series 115, 176 and TLD339A37 pressure sensors are also available.

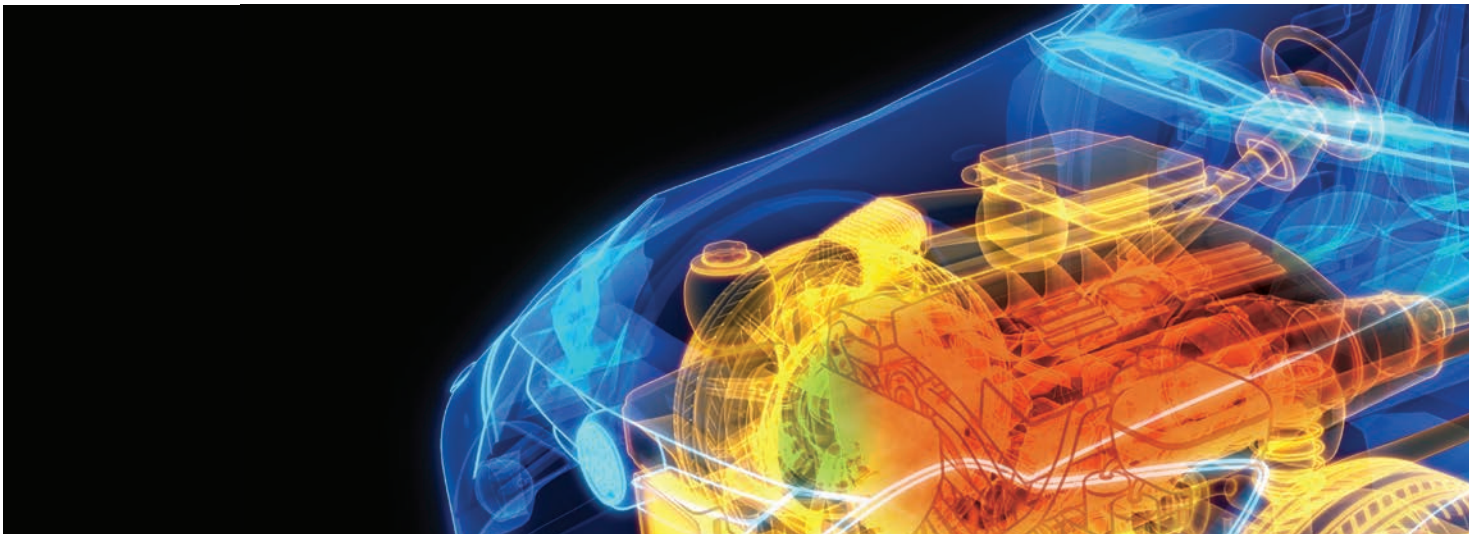


HIGHLIGHTS

- Absence of pyroelectric noise spikes up to 1200 °F (649 °C)
- Sensitivity that remains more consistent over a wide temperature change
- Shear mode crystals isolated from base strain & transverse measurement errors
- Proprietary crystal technology comes sealed in a hermetic package and has proven reliable performance in hundreds of automotive powertrain NVH installations for research and monitoring

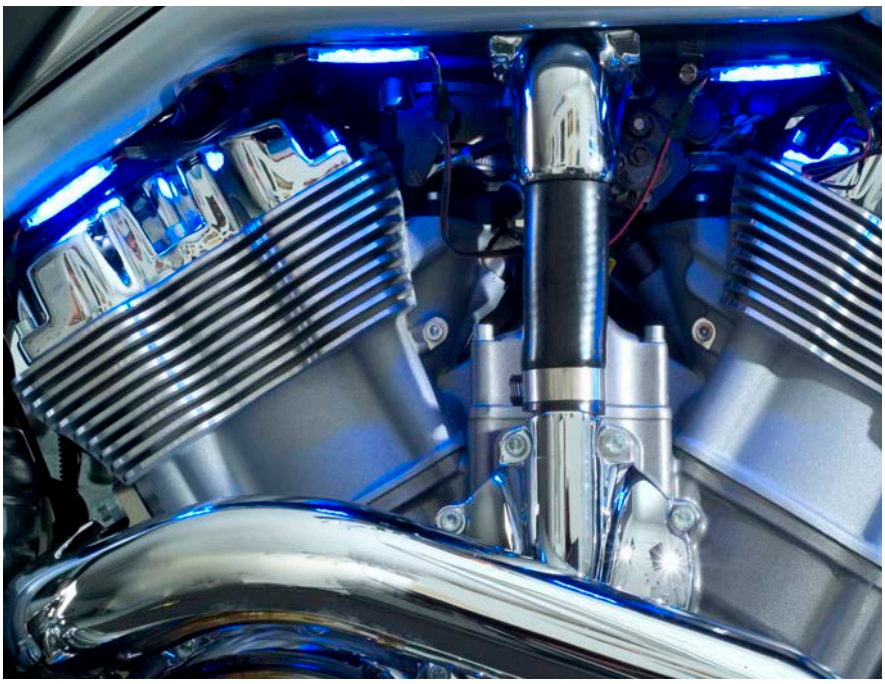
PCB® ACCELEROMETERS ARE AVAILABLE TO 1200 °F (650 °C)

- ICP® accelerometers available in single and triaxial versions to 356°F/180°C
- Charge output accelerometers for testing or continuous monitoring cover temperature ranges to 1200 °F (650 °C)

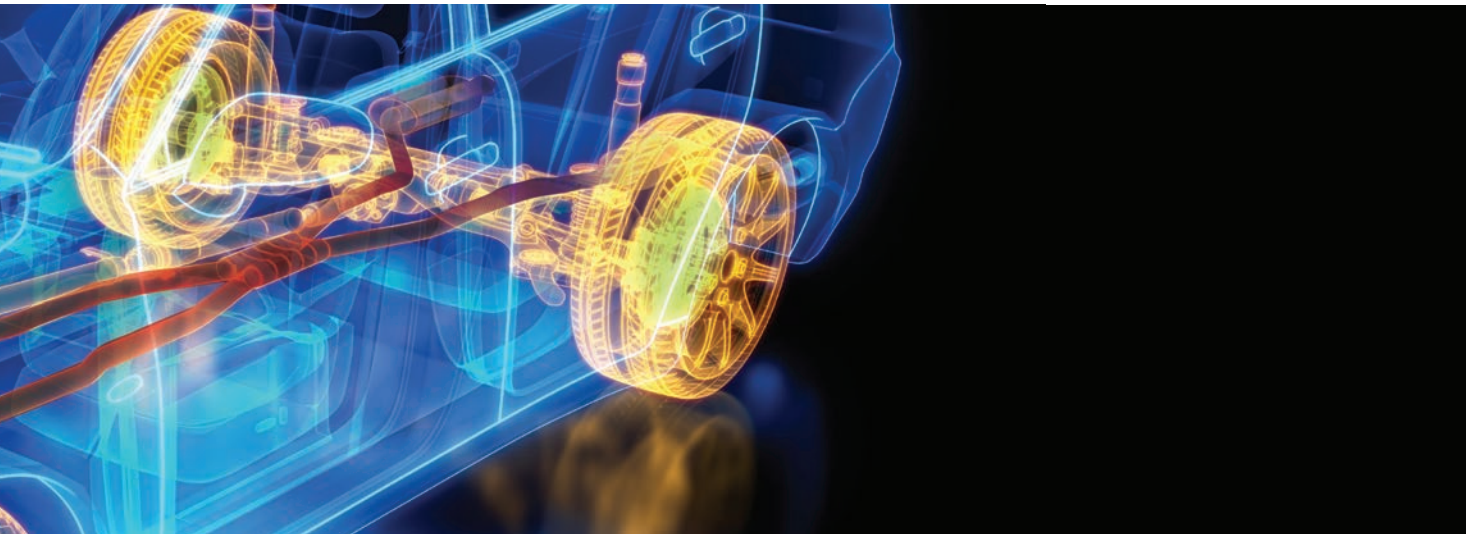


UHT-12™ CHARGE OUTPUT ACCELEROMETERS

Testing of turbocharger, exhaust systems and catalytic converters requires an ultra high temperature sensor. These sensors are designed specifically for demanding automotive testing environments and feature integral hard line cables.



- Compact and electrically isolated, Series EX357E9X
- Operate in temperatures up to 1200 °F (650 °C)
- Insensitive to extreme variation in temperature



1200°F
(650 °C)

EXTREME TEMPERATURE, DIFFERENTIAL CHARGE ACCELEROMETER

MODEL EX611A00

- Sensitivity: (±5%) 10.0 pC/g
- 2-pin MIL connector

1200°F
(649 °C)

CHARGE OUTPUT ACCELEROMETER, WITH UHT-12™SHEAR SENSING CRYSTAL

MODELS EX357E92 & EX357E93

- Sensitivity: (±10%) 2.3 pC/g
- 10-32 coaxial jack connector

900°F
(482 °C)

VERY HIGH TEMPERATURE, SINGLE-ENDED CHARGE TRIAXIAL ACCELEROMETER

SERIES EX356A73

- Sensitivity: (±5%) 3.2 pC/g
- Hazardous area approved

900°F
(482 °C)

VERY HIGH TEMPERATURE, SINGLE-ENDED CHARGE ACCELEROMETER

MODEL 357A63

- Sensitivity: (±10%) 0.53 pC/g
- 10-32 coaxial jack connector

UHT-12™ ICP® ACCELEROMETERS

LOW THERMAL COEFFICIENT ACCELEROMETERS FOR STABLE SENSITIVITY OVER A WIDE TEMPERATURE RANGE

PCB® single and triaxial ICP® accelerometers are designed with a low thermal coefficient, wide operating temperature range, and good broadband resolution, making them ideal for powertrain development and powertrain NVH applications and for any vibration measurement requiring tight control of amplitude sensitivity over a wide thermal gradient.

TRIAXIAL ICP® ACCELEROMETER

MODEL 339A30 & 339A30/NC

- Sensitivity: (±10%) 10 mV/g
- Measurement Range: ±500 g pk
- Broadband Resolution: 0.008 g rms
- Model 339A30/NC does not include mating cable

TRIAXIAL ICP® ACCELEROMETER

MODELS 339A31 & 339A31/NC

- Sensitivity: (±10%) 10 mV/g
- Measurement Range: ±500 g pk
- Broadband Resolution: 0.008 g rms
- Model 339A31/NC does not include mating cable

- Temperature coefficient as low as 0.005%/F (0.009%/C)
- Available in stud, adhesive and through hole configurations
- Measurement frequency to 10 kHz at +/- 5%
- Titanium housed & hermetically sealed
- ICP up to 356°F/180°C

325°F (163°C)

ICP® ACCELEROMETER

MODELS 320C52 & 320C53

- Sensitivity: (±10%) 10 mV/g / (±20%) 1 mV/g
- Measurement Range: ±500 g pk / ±5000 g pk
- Broadband Resolution: 0.004 g rms / 0.04 g rms

356°F (180°C)

UHT-12™ TRIAXIAL ICP® ACCELEROMETER

MODELS 339B31 & 339B31/NC

- Sensitivity: (± 10%) 10 mV/g
- Measurement Range: ±500 g pk
- Frequency Range: (±5%) 2-8000 Hz
- Model 339B31/NC does not include mating cable

325°F (163°C)

TRIAXIAL ICP® ACCELEROMETER

MODELS 339B32 & 339B32/NC

- Sensitivity: (±10%) 10 mV/g
- Measurement Range: ±500 g pk
- Broadband Resolution: 0.003 g rms
- Model 339B32/NC does not include mating cable

325°F (163°C)

QUARTZ SHEAR TRIAXIAL ICP® ACCELEROMETER

MODELS TLD339A34 & TLD339A36

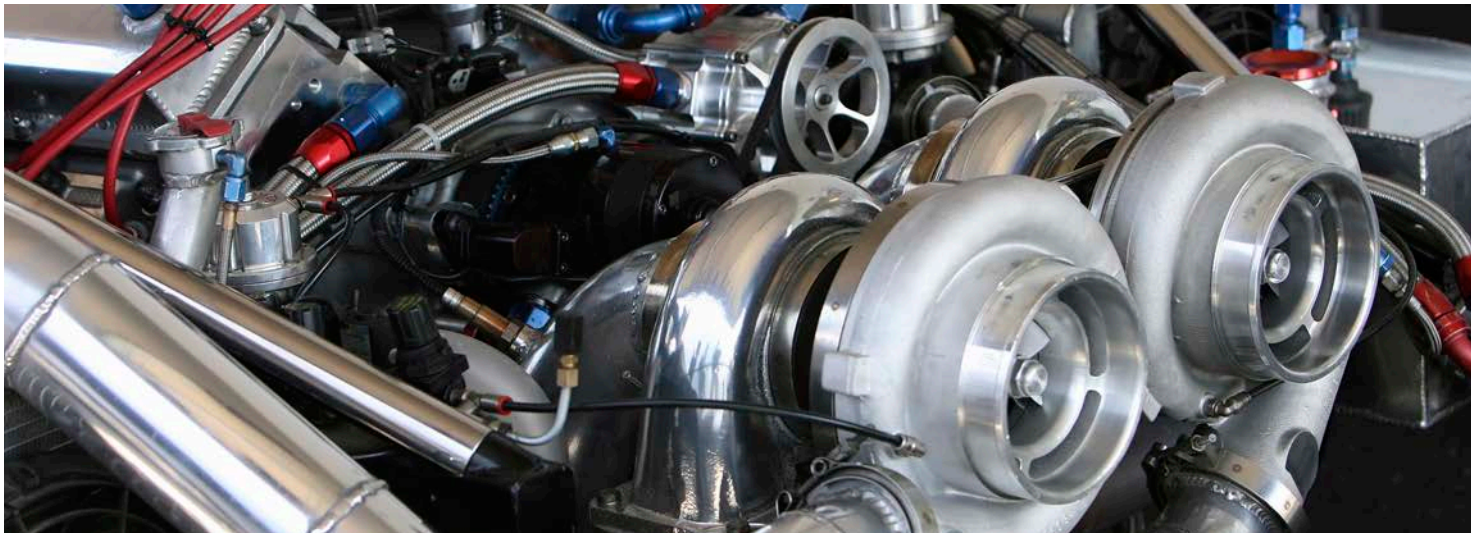
- Sensitivity: (±10%) 50 mV/g / 10 mV/g
- Measurement Range: ±100 g pk / ±500 g pk
- Electrical Connector: 1/4-28 4-Pin

356°F (180°C)

UHT-12™ SHEAR TRIAXIAL ICP® ACCELEROMETER

MODEL TLD339A37

- Sensitivity: (±10%) 100 mV/g (10.2 mV/(m/s²)
- Measurement Range: ±100g pk (±490.5 m/s² pk)
- Electrical Connector: 1/4-28 4-Pin



ACCESSORIES

CHARGE CONVERTERS

- Convert high impedance charge signals into low impedance voltage signals

IN-LINE CHARGE CONVERTERS			
Model	**422E38**	**422E35**	**422E36**
Sensitivity	0.1 mV/pC	1 mV/pC	10 mV/pC
Input range	25000 pC	2500 pC	250 pC
Low frequency (-5%)	5 Hz	5 Hz	5 Hz

ICP® SIGNAL CONDITIONERS

- Operate with ICP® sensor signal conditioners or readout devices with an ICP® sensor input
- Maintain fixed charge conversion regardless of input capacitance

MODEL 422M182

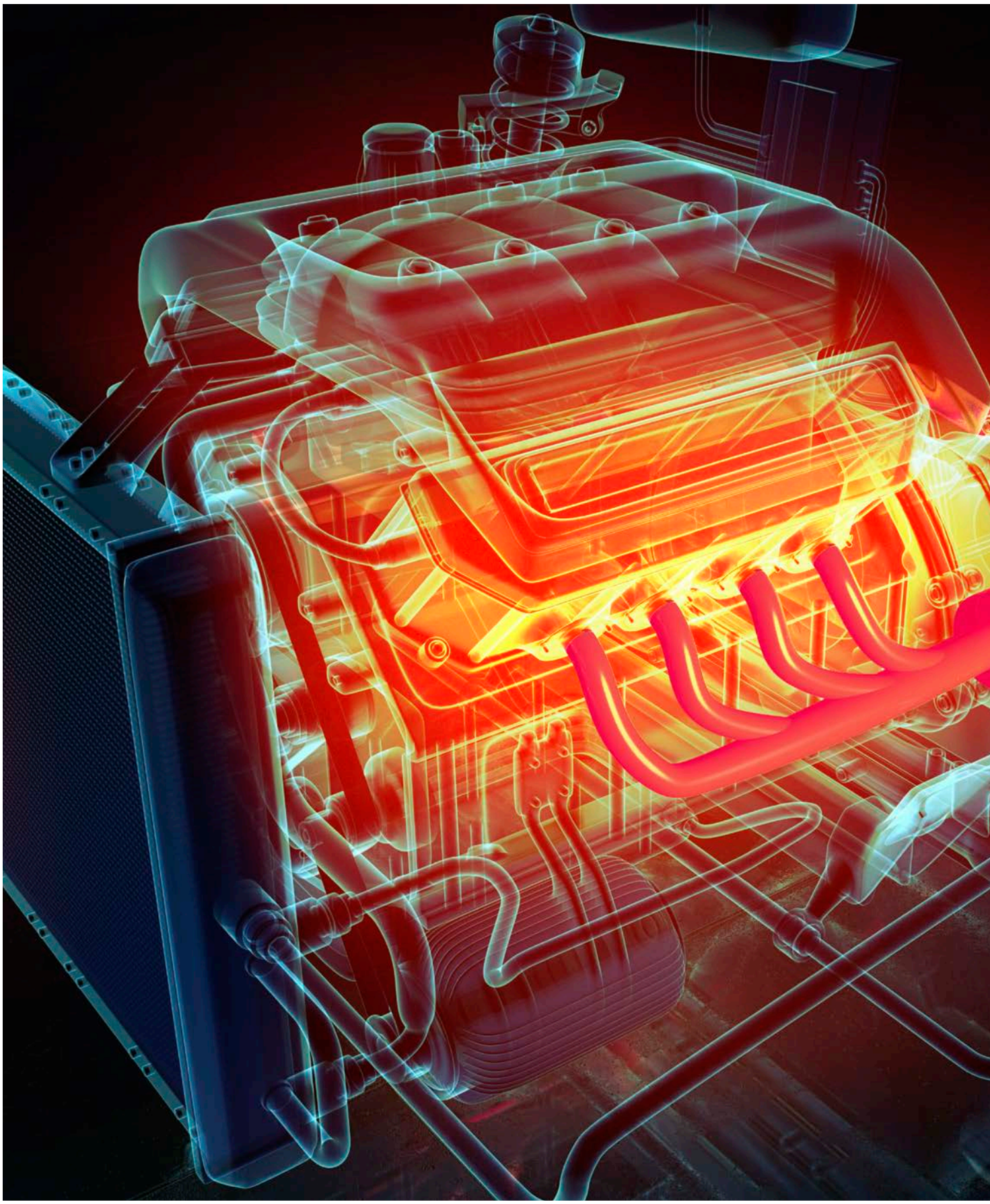
- ICP® powered
- In-line differential charge converter
- Sensitivity: (±5%) 4 mV/pC
- 2-pin Mil input to BNC output

MODEL 482C05

- 4-channel
- Line-powered
- ICP® sensor signal conditioner
- BNC input/output conditioner

MODEL 482C16

- 4-channel
- Line-powered
- ICP® sensor signal conditioner



COMPLETE HIGH TEMPERATURE ACCELEROMETER LISTING

Temp	Model	
≥ 325 to < 500 °F (162 °C < 260 °C)	357C10	
	357C10/NC	
	320C15	
	320C18	
	357A09	
	P357A09	
	TLD339A34	
	TLD339A36	
	TLD339A37*	
	339A31*	
	339B31*	
	339B32*	
	HT356B01	
	HTJ356B01	
	356A70	
	356A71	
	320C52	
	320C53	
	HT356A43	
≥ 500 to < 1200 °F (≥ 260 °C to < 650 °C)	HT356A44	
	357B03	
	357B06	
	357B21	
	357B04	
	357B11	
	EX356A73*	
	EX600B1X*	
	357A64	
	357A63	
	357C71	
	357C72	
	357C73	
	357A07/NC	
	357A100*	
	357B69	
	357B69/NC	
	357B53	
	357B61	
	357B61/NC	
≥ 1200 °F (≥ 650 °C)	EX357E90	
	EX357E91	
	EX357E92	
	EX357E93	
	EX611A20	

*UHT-12™ sensing technology

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