



# CONSTRUCTION & AGRICULTURAL VEHICLE TESTING & DEVELOPMENT

# THE TOUGHEST SENSORS FOR TOUGHEST ENVIRONMENTS

PCB® offers a wide selection of products with reliable accuracy for testing in the extreme environments experienced by off highway vehicles. From one extreme to the other, we can provide sensors for your toughest equipment in the most challenging conditions no matter if they are baking in the desert sun, freezing in the arctic winter, or mired in mud at a construction site.

## ELECTRICALLY ISOLATED ACCELEROMETERS

As equipment, drivetrains, and electric powertrains become increasingly advanced, more and more electronic systems are added to the vehicles to increase safety and performance. The additional electronics can potentially cause interference while testing the equipment. PCB® has developed special electrically isolated accelerometers to avoid electrical noise in your measurements.



### GROUND ISOLATED HIGH TEMP MINIATURE TRIAXIAL ACCELEROMETERS

MODEL HTJ356B01

- Sensitivity: 5 mV/g
- Measurement Range:  $\pm 1k$  g pk
- Frequency Range: ( $\pm 5\%$ ) 2 to 8k Hz
- Weight: 0.04 oz (1.0 gm)



### GROUND ISOLATED MINIATURE TRIAXIAL ACCELEROMETERS

MODEL J356A03/NC

- Sensitivity: 10 mV/g
- Measurement Range:  $\pm 500$  g pk
- Frequency Range: ( $\pm 5\%$ ) 2 to 8k Hz
- Weight: 0.04 oz (1.0 gm)



### GROUND ISOLATED MINIATURE TRIAXIAL ACCELEROMETERS

MODEL 354B04, 354B05

- Sensitivity: 10 / 100 mV/g
- Measurement Range:  $\pm 500$  /  $\pm 50$  g pk
- Frequency Range: ( $\pm 5\%$ ) 0.6 to 10k Hz
- Weight: 0.51 oz (14.5 gm)



### ICP® MINIATURE TRIAXIAL ACCELEROMETER

MODEL 356A19

- Sensitivity: 10 mV/g
- Measurement Range:  $\pm 500$  g pk
- Frequency Range: ( $\pm 5\%$ ) 1 to 13k Hz
- Weight: 0.14 oz (4.0 gm)



### ICP® TRIAXIAL ACCELEROMETER

MODEL 356A15

- Sensitivity: 100 mV/g
- Measurement Range:  $\pm 50$  g pk
- Frequency Range: ( $\pm 5\%$ ) 2 to 5k Hz



### GROUND ISOLATED TRIAXIAL ACCELEROMETER WITH TEDS

MODELS J356A43, J356A44, J356A45

- Sensitivities: 10 / 50 / 100 mV/g
- Measurement Range:  $\pm 500$  /  $\pm 100$  /  $\pm 50$  g pk
- Frequency Range: ( $\pm 5\%$ ) 0.7 to 7k Hz



## ACOUSTICS

ICP® microphones are used to measure sound pressure levels inside cabs, measure pass-by noise levels, confirm equipment conforms and meet the multitude of different safety and engineering standards present in the industry today.



### 1/2" PREPOLARIZED FREE-FIELD MICROPHONE

MODEL 378B02

Sensitivity: 50 mV/Pa

Frequency Range: 3.75 Hz – 20 kHz  
(±2 dB)

Dynamic Range: 137 dB re 20 µPa

TEDS Compliant



### 1/2" WATER AND DUST RESISTANT ICP® MICROPHONE SYSTEM

MODEL 130A24

Sensitivity: 10 mV/Pa

Frequency Range: 20 Hz - 16k Hz  
(±3 dB)

Dynamic Range: 150 dB re 20 µPa

TEDS Compliant, IP55 Rated for harsh environments



### 1/4" FREE-FIELD ICP® ARRAY MICROPHONE SYSTEM

SERIES 130F

Sensitivity: 45 mV/Pa

Frequency Range:  
10 Hz - 20k Hz (±4 dB)

Dynamic Range: 122 dB re 20 µPa

TEDS Compliant



### ICP® PROBE MICROPHONE

MODEL 377B26

Sensitivity: 2.15 mV/Pa

Frequency Range: 2 Hz – 20 kHz  
(±4 dB)

Dynamic Range: 165 dB re 20 µPa

Temperature Range:  
-40 to +1472 °F (-40 to +800 °C)



### ICP® ELECTRET SURFACE MICROPHONE

MODEL 130B40

Sensitivity: 8.5 mV/Pa

Frequency Range: 20 Hz – 10k Hz  
(±3 dB)

Dynamic Range: 142 dB re 20 µPa

TEDS Compliant



## VC MEMS ACCELEROMETERS

PCB® series 3711F, 3713F, 3741F, and 3743G variable capacitance MEMS (VC MEMS) accelerometers are used to measure low frequency motion down to zero hertz. These accelerometers are used in applications with low frequency and amplitude requirements, as well as road load data acquisition (RLDA), drivability, ride and handling, and vehicle performance testing. Each series includes a full scale measurement range from  $\pm 2g$  to  $\pm 200g$  and features low spectral noise with high resolution. VC MEMS accelerometers feature capacitive silicon MEMS sensing elements for uniform, repeatable performance and high frequency overload protection.



### SINGLE-ENDED VC MEMS ACCELEROMETERS

SERIES 3711F & 3713F

Sensitivity: 6.75 to 675 mV/g

Measurement Range:  
 $\pm 2g$  pk to  $\pm 200g$

Frequency Range: ( $\pm 5\%$ ) 0 to 1.5k Hz

Case isolated, hermetically sealed titanium housing

Available with integral cable or multi-pin, threaded electrical connector



### DIFFERENTIAL OUTPUT, SINGLE AXIS VC MEMS ACCELEROMETERS

SERIES 3741F

Sensitivity: 13.5 to 1350 mV/g

Measurement Range:  
 $\pm 2$  to  $\pm 200g$  pk

Frequency Range: ( $\pm 5\%$ ) 0 to 1.5k Hz

Ground isolated, hard-anodized aluminum housing

Integral, 4-conductor shielded cable



### DIFFERENTIAL OUTPUT, TRIAXIAL VC MEMS ACCELEROMETERS

SERIES 3743G

Sensitivity: 13.5 to 1350 mV/g

Measurement Range:  
 $\pm 2$  to  $\pm 200g$  pk

Frequency Range: from 0 to 250 Hz to 0 to 1.5k Hz ( $\pm 5\%$ )

Case isolated, hermetically sealed titanium housing

M8x1 8-pin connector (3743G11) / IP67 connection (3743G12)

# HIGH TEMPERATURE ACCELEROMETERS

PCB's high temperature accelerometers utilize proprietary piezoelectric crystals for optimal performance and the best accuracy in high temperature environments. The UHT-12™ crystal has better resolution and thermal performance than any accelerometer on the market today. It features a sensitivity that remains more consistent over a wide temperature change and the absence of pyroelectric noise spikes up to 1200 °F (649 °C).



## CHARGE OUTPUT UHT-12™ ACCELEROMETER

MODEL EX357E92

Sensitivity: 2.3 pC/g  
 Measurement Range: ±1k g pk  
 Frequency Range: (±5%) 3k Hz  
 Temperature Range: -67 to 1400 °F (-55 to 760 °C)



## UHT-12™ LOW THERMAL COEFFICIENT ICP® TRIAXIAL ACCELEROMETER

MODEL 339A30

Sensitivity: 10 mV/g  
 Measurement Range: ±500 g pk  
 Frequency Range: (±5%) 2 to 8k Hz  
 Temperature Range: -65 to 325 °F (-54 to 163 °C)



## UHT-12™ LOW THERMAL COEFFICIENT ICP® TRIAXIAL ACCELEROMETER

MODEL 339B32

Sensitivity: 10 mV/g  
 Measurement Range: ±500 g pk  
 Frequency Range: (±5%) 2 to 10k Hz  
 Temperature Range: -65 to 325 °F (-54 to 163 °C)



## UHT-12™ LOW THERMAL COEFFICIENT ICP® TRIAXIAL ACCELEROMETER

MODEL 339C31

Sensitivity: 10 mV/g  
 Measurement Range: ±500 g pk  
 Frequency Range: (±5%) 2 to 8k Hz  
 Temperature Range: -65 to 250 °F (-54 to 121 °C)



## MINIATURE CHARGE OUTPUT UHT-12™ ACCELEROMETER

MODEL 357A63

Sensitivity: 0.53 pC/g  
 Measurement Range: ±5k g pk  
 Frequency Range: (±10%) 10k Hz  
 Temperature Range: -65 to 900 °F (-54 to 482 °C)  
 Weight: 0.31 oz (8.7 gm)



## MINIATURE CHARGE OUTPUT UHT-12™ ACCELEROMETER

MODEL 356A67

Sensitivity: 10 mV/g  
 Measurement Range: ±500 g pk  
 Frequency Range (±10%): 0.5 - 2.5k Hz  
 Temperature Range: -65 to 250 °F (-54 to 121 °C)  
 Weight: 0.37 oz (10.5 gm)



**LOW THERMAL  
COEFFICIENT ICP® TRIAXIAL  
ACCELEROMETER WITH TEDS**  
MODEL TLD339A34

Sensitivity: 50 mV/g  
Measurement Range: ±100 g pk  
Frequency Range: (±5%) 2 to 5k Hz  
Temperature Range: -65 to 325 °F  
(-54 to 163 °C)



**LOW THERMAL  
COEFFICIENT ICP® TRIAXIAL  
ACCELEROMETER WITH TEDS**  
MODEL TLD339A36

Sensitivity: 10 mV/g  
Measurement Range: ±500 g pk  
Frequency Range: (±5%) 2 to 5k Hz  
Temperature Range: -65 to 325 °F  
(-54 to 163 °C)



**UHT-12™ LOW THERMAL  
COEFFICIENT ICP® TRIAXIAL  
ACCELEROMETER WITH TEDS**  
MODEL TLD339A37

Sensitivity: 100 mV/g  
Measurement Range: ±50 g pk  
Frequency Range: (±5%) 0.3 to 4k Hz  
Temperature Range: -65 to 356 °F  
(-54 to 180 °C)



**HIGH TEMPERATURE ICP®  
TRIAxIAL ACCELEROMETER**  
MODEL HT356A33

Sensitivity: 10 mV/g  
Measurement Range: ±500 g pk  
Frequency Range: (±5%) 2 to 10k Hz  
Temperature Range: -65 to 250 °F  
(-54 to 121 °C)



**HIGH TEMPERATURE ICP®  
TRIAxIAL ACCELEROMETER  
WITH TEDS**  
MODEL HT356A43

Sensitivity: 10 mV/g  
Measurement Range: ±500 g pk  
Frequency Range: (±5%) 1.6 to 7k Hz  
Temperature Range: -65 to 250 °F  
(-54 to 121 °C)



**HIGH TEMPERATURE ICP®  
TRIAxIAL ACCELEROMETER  
WITH TEDS**  
MODEL HT356A44

Sensitivity: 50 mV/g  
Measurement Range: ±100 g pk  
Frequency Range: (±5%) 12 to 7k Hz  
Temperature Range: -65 to 325 °F  
(-54 to 163 °C)



**HIGH TEMPERATURE ICP®  
TRIAxIAL ACCELEROMETER**  
MODEL HT356A02

Sensitivity: 10 mV/g  
Measurement Range: ±500 g pk  
Frequency Range: (±5%) 5k Hz  
Temperature Range: -65 to +250 °F  
(-54 to +121 °C)



**TRIAxIAL LIGHTWEIGHT  
MINIATURE ICP®  
ACCELEROMETER**  
MODEL HT356B01

Sensitivity: 5 mV/g  
Measurement Range: ±1000 g pk  
Frequency Range: (±5%) 8k Hz  
Temperature Range: -65 to +356 °F  
(-54 to +180 °C)  
Weight: 0.04 oz (1.0 gm)

# FORCE, LOAD & TORQUE

PCB® load cells feature advanced structural design, making them extremely durable, perfect for vehicle life cycle testing and structural testing. The TORKDISC® torque sensor system is designed for vehicle applications requiring in-line rotary torque measurements such as drive line measurements, while our force sensors are excellent for automotive fatigue testing applications.



## ROD END LOAD CELL

MODEL 1381-04A

- Sensitivity: 2 mV/V
- Measurement Range: 20 k lb
- Resonant Frequency: 15 kHz
- Overload Limit: 30 klbf



## S-TYPE LOAD CELL

MODEL 1631-01C

- Sensitivity: 2 mV/V
- Measurement Range: 500 lb
- Resonant Frequency: 2.2 kHz
- Overload Limit: 750 lb



## TORKDISC® TELEMETRY SYSTEM

MODEL 5302D-02A

- Measurement Range: 5k in-lb
- Frequency Range (-3 dB): 0 to 8.5K H
- Maximum Speed: 15,000 RPM
- 16 Bit Telemetry



## ICP® FORCE SENSOR

MODEL 208C03

- Sensitivity: 10 mV/lb
- Measurement Range: 500 lb
- Frequency Response: (-5%) 0.0003 Hz
- Overload Limit: 10k in-lb



## ROTARY TORQUE SENSOR

MODEL 3125-01A

- Sensitivity: 2 mV/V
- Measurement Range: 5k in-lb
- Maximum Speed: 7,900 RPM
- Overload Limit: 10k in-lb



## REACTION TORQUE SENSOR

MODEL 2302-02A

- Sensitivity: 2 mV/V
- Measurement Range: 20k lbf-in
- Resonant Frequency: 2.2k Hz
- Overload Limit: 20 klbf



## GENERAL PURPOSE LOW PROFILE LOAD CELL

SERIES 1200

- Sensitivity: 2 to 4 mV/V
- Measurement Range: 500 to 50k lbf
- Resonant Frequency: 2.35 kHz to 15 kHz
- Overload Limit: 750 lbf to 75 klbf



## PEDAL FORCE TRANSDUCER

MODEL 1515-110-03A

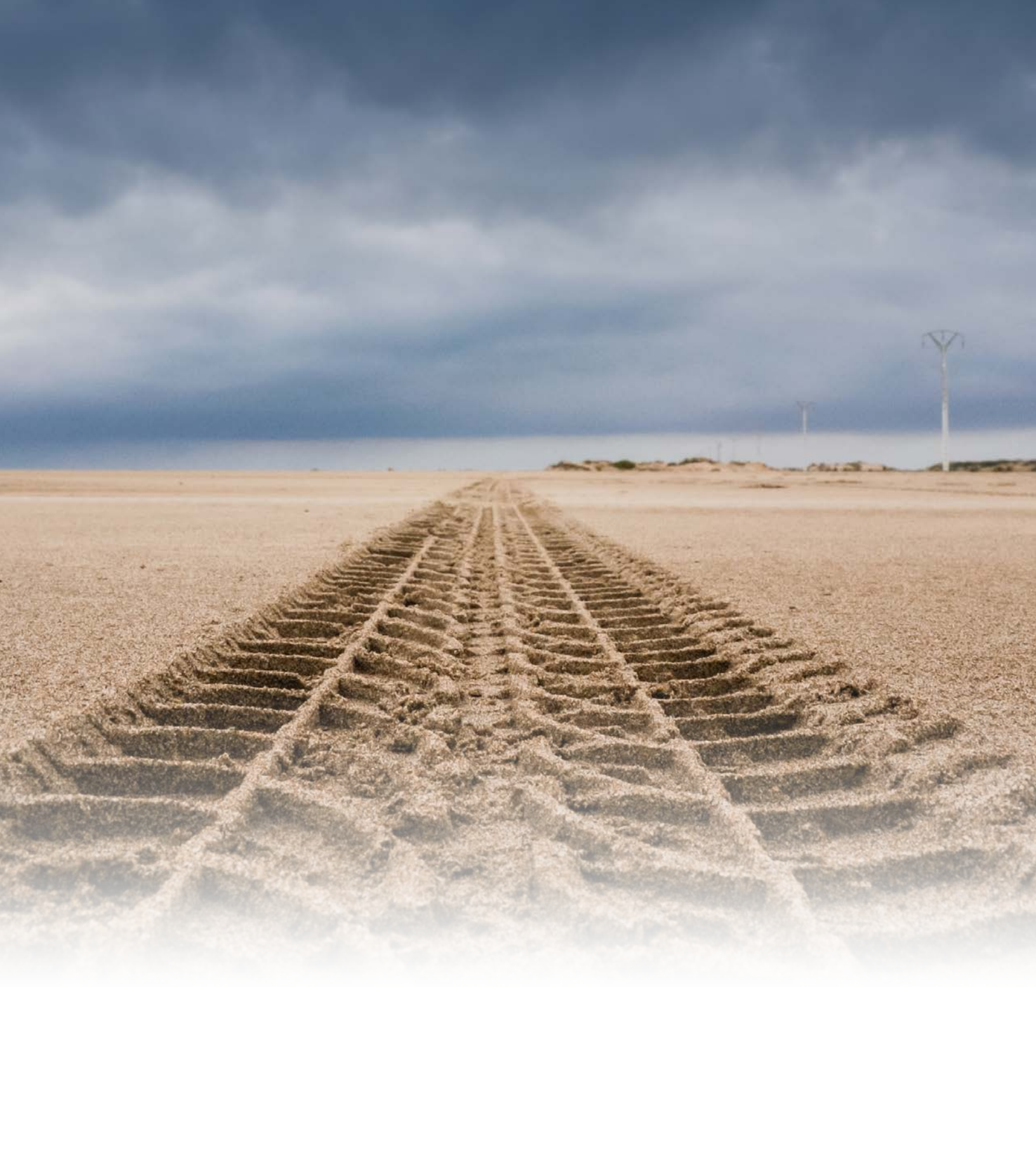
- Sensitivity: 2 mV/V
- Measurement Range: 300 lb
- Overload Limit: 600 lbf



## STRAIN SENSOR

MODEL 740B02

- Sensitivity: 50 mV/με
- Measurement Range: 100 pk με
- Frequency Range: 0.5 to 100k Hz



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