NUCLEAR POWER INSTRUMENTATION

IMI SENSORS
A PCB DIVISION

pcb.com/imi-sensors | 1 800 959 4464
PCB®’s charge accelerometers utilize piezo ceramic sensing elements to directly output an electrostatic charge signal that is proportional to applied acceleration. Charge accelerometers do not contain built-in signal conditioning electronics. As a result, external signal conditioning is required to interface their generated measurement signals to readout or recording instruments. The sensor’s charge output signals can be conditioned with an in-line, fixed charge amplifier.

Since there are no electronics built into charge accelerometers, they can operate and survive exposure to very high temperatures (up to +1200 °F/+649 °C for some models). In addition, charge accelerometers are used for thermal cycling requirements or to take advantage of existing charge amplifier signal conditioning equipment. It is important to note that measurement resolution and low frequency response for charge acceleration sensing systems are dependent upon the noise floor and discharge time constant characteristics of the signal conditioning and readout devices used.

- Survive integrated gamma flux to $10^8$ rads
- Survives integrated neutron flux to $10^{10}$ N/cm²
HIGH TEMPERATURE CHARGE ACCELEROMETERS

MODEL 357B53
- Sensitivity: 100 pC/g
- Measurement Range: ±150 g pk
- Frequency Range: 3 kHz pk
- Electrical Connector: 10-32 coaxial jack

MODEL 357B54
- Sensitivity: 100 pC/g
- Measurement Range: ±150 g pk
- Frequency Range: 3 kHz pk
- Electrical Connector: 10-32 coaxial jack

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

MODEL 422E65/A
- Sensitivity: 1 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -65 to +250 °F

MODEL 422E66/A
- Sensitivity: 10 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -65 to +250 °F

RADIATION HARDENED HIGH TEMPERATURE CHARGE ACCELEROMETERS

HARDLINE CABLE, RADIATION HARDENED

10-32 COAXIAL PLUG
MODEL RP

COAXIAL HARDLINE CABLE
MODEL 023XXX

10-32 COAXIAL PLUG
MODEL RP

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A Model 357B53 or 357B54 – Charge accelerometer
B Model 023RPXXXRP – Cable with 10-32 plug to 10-32 plug
C Model 422E65/A or 422E66/A – In-line charge amplifier
D Model 023RPXXXGA – Cable with 10-32 plug to 10-32 jack
E Model 003C03 – Cable with 10-32 plug to BNC plug
F ICP® sensor signal conditioner
G Model 012A03 – Cable with BNC plug to BNC plug
H Readout, recording, or data acquisition device

XXX = Denote cable length, 010 = 10 feet (Metric lengths available)
RADIATION HARDENED VERY HIGH TEMPERATURE CHARGE ACCELEROMETERS

**VERY HIGH TEMPERATURE CHARGE ACCELEROMETER**
**MODEL 357B63**
- Sensitivity: 0.53 pC/g
- Measurement Range: ≤5000 g pk
- Frequency Range: 10 kHz pk
- Electrical Connector: 10-32 coaxial jack

**VERY HIGH TEMPERATURE CHARGE ACCELEROMETER**
**MODEL 357B61**
- Sensitivity: 10 pC/g
- Measurement Range: ≤1000 g pk
- Frequency Range: 5 kHz pk
- Electrical Connector: 10-32 coaxial jack

**VERY HIGH TEMPERATURE CHARGE ACCELEROMETER**
**MODEL 357B69**
- Sensitivity: 3.5 pC/g
- Measurement Range: ≤500 g pk
- Frequency Range: 6 kHz pk
- Electrical Connector: 10-32 coaxial jack

HARDLINE CABLE, RADIATION HARDENED

**10-32 COAXIAL PLUG**
**MODEL RP**

**COAXIAL HARDLINE CABLE**
**MODEL 023XXX**

**10-32 COAXIAL PLUG**
**MODEL RP**

HARDLINE CABLE, RADIATION HARDENED

**IN-LINE CHARGE AMPLIFIER**
**MODEL 422E65/A**
- Sensitivity: ±2% 1 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -65 to +250 °F

**IN-LINE CHARGE AMPLIFIER**
**MODEL 422E66/A**
- Sensitivity: ±2% 10 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -65 to +250 °F

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A  Model 357B63 or 357B61 or 357B69 – Charge accelerometer
B  Model 023RPXXXR – Cable with 10-32 plug to 10-32 plug
C  Model 422E65/A or 422E66/A – In-line charge amplifier
D  Model 023RPXXXGA – Cable with 10-32 plug to 10-32 jack
E  Model 003C03 – Cable with 10-32 plug to BNC plug
F  ICP sensor signal conditioner
G  Model 012A03 – Cable with BNC plug to BNC plug
H  Readout, recording, or data acquisition device

XXX = Denote cable length, 010 = 10 feet (Metric lengths available)
RADIATION HARDENED VERY HIGH & EXTREME TEMPERATURE CHARGE ACCELEROMETERS

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357A100
- Sensitivity: 5 pC/g
- Measurement Range: ±200 g pk
- Frequency Range: 5 kHz pk
- Electrical Connector: 7/16-27 2-pin

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357C7X
- Sensitivity: 10 pC/g (71), 50 pC/g (72), 100 pC/g (73)
- Measurement Range: ±1000 g pk
  (71) ±500 g pk (72) ±300 g pk (73)
- Frequency Range: 4 kHz pk (71) 2.5 kHz (72) 2kHz pk (73)
- Electrical Connector: 7/16-27 2-pin

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODEL EX357A9X
- Sensitivity: 3.3 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Electrical Connector: 7/16-27 2-pin

HARDLINE CABLE, RADIATION HARDENED

2-SOCKET PLUG, 7/16-27 THD
MODEL GN

2-CONDUCTOR HARDLINE CABLE
MODEL 013XXX

PTFE JACKETED CABLE

DIFFERENTIAL CHARGE AMPLIFIERS

DIFFERENTIAL CHARGE AMPLIFIER
MODEL 422M183
- Sensitivity: 6 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -60 to +185 °F

DIFFERENTIAL CHARGE AMPLIFIER
MODEL 422M182
- Sensitivity: 4 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -60 to +185 °F

DIFFERENTIAL CHARGE AMPLIFIER
MODEL 422M196
- Sensitivity: 10 mV/pC
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -60 to +185 °F

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A Model 357A100 or 357C71 or 357C72 or 357C73 or EX357A9X – Charge accelerometer
B Model 013GNXXXGP – Cable with 2 socket plug to 2 pin jack
C Model 045M198 – Cable with PY connector to BP connector
D Model 422M182 or Model 422M183 or Model 422M196 – Charge amplifier
E Model 003D03 – Cable with BNC plug to BNC plug
F ICP® sensor signal conditioner
G Model 012A03 – Cable with BNC plug to BNC plug
H Readout, recording, or data acquisition device

XXX = Denote cable length, 010 = 10 feet (Metric lengths available)
RADIATION HARDENED VERY HIGH & EXTREME TEMPERATURE CHARGE ACCELEROMETERS

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357A100
- Sensitivity: 5 pC/g
- Measurement Range: ±200 g pk
- Frequency Range: 5 kHz pk
- Electrical Connector: 7/16-27 2-pin

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357C7X
- Sensitivity: 10 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 4 kHz pk
- Electrical Connector: 7/16-27 2-pin

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODELS EX357A9X
- Sensitivity: 3.3 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Electrical Connector: 7/16-27 2-pin

HARDLINE CABLE, RADIATION HARDENED

2-socket plug, 7/16-27 THD
MODEL GN
PTFE JACKETED CABLE
MODEL 013XXX

DIFFERENTIAL CHARGE AMPLIFIERS

DIFFERENTIAL CHARGE AMPLIFIER
MODEL 421B3X
- Sensitivity: Configurable
- Voltage Output: ±5 V pk
- Temperature Range (Operating): -22 to +185 °F

DIFFERENTIAL CHARGE AMPLIFIER
MODEL EX682A40
- Sensitivity: 10 mV/pC
- Voltage Output: ±2.5 V pk
- Temperature Range (Operating): -60 to +185 °F

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A Model 357A100 or 357C71 or 357C72 or 357C73 or EX357A9X – Charge accelerometer
B Model 013GNXXXGP – Cable with 2 socket plug to 2 pin jack
C Model 045M21B – Cable with PY connector to pigtails
D Model 421B3X or Model EX682A40 – Charge amplifier
E Model 003ACXXXAD – Cable with pigtails to BNC plug
F ICP® sensor signal conditioner
G Model 012A03 – Cable with BNC plug to BNC plug
H Readout, recording, or data acquisition device

XXX = Denote cable length, 010 = 10 feet (Metric lengths available)
RADIATION HARDENED EXTREME TEMPERATURE CHARGE ACCELEROMETERS

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODEL EX357E90
- Sensitivity: 5 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Output into sensor base

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODEL EX357E91
- Sensitivity: 5 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Output perpendicular to sensor base

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODEL EX357E92
- Sensitivity: 2.3 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Output into sensor base

EXTREME TEMPERATURE CHARGE ACCELEROMETER
MODEL EX357E93
- Sensitivity: 2.3 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 3.0 kHz pk
- Output perpendicular to sensor base

PTFE JACKETED CABLE

AXIS OF MEASUREMENT
MODELS EX357E90 & EX357E92

AXIS OF MEASUREMENT
MODELS EX357E91 & EX357E93

HARDLINE CABLE, RADIATION HARDENED

IN-LINE CHARGEAMPLIFIER
MODEL 422E35
- Sensitivity: 1 mV/pC
- Voltage Output: ±2.5 V pk
- Temperature Range (Operating): -65 to +250 °F

IN-LINE CHARGEAMPLIFIER
MODEL 422E36
- Sensitivity: 10 mV/pC
- Voltage Output: ±2.5 V pk
- Temperature Range (Operating): -65 to +250 °F

IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED
A Model EX357E90 or EX357E91 or EX357E92 or EX357E93 – Charge accelerometer
B Model 003EBXXEB – Cable with 10-32 plug to 10-32 plug
C Model 422E35 or 422E36 – In-line charge amplifier
D 003DXX – Cable with BNC plug to BNC plug
E Model 003C03 – Cable with 10-32 plug to BNC plug
F ICP® sensor signal conditioner
G Model 012A03 – Cable with BNC plug to BNC plug
H Readout, recording, or data acquisition device
XXX = Denote cable length, 010 = 10 feet (Metric lengths available)

Radiation Area
≤ 1200 °F (649 °C)

Safe Zone
≤ 259 °F (121 °C)