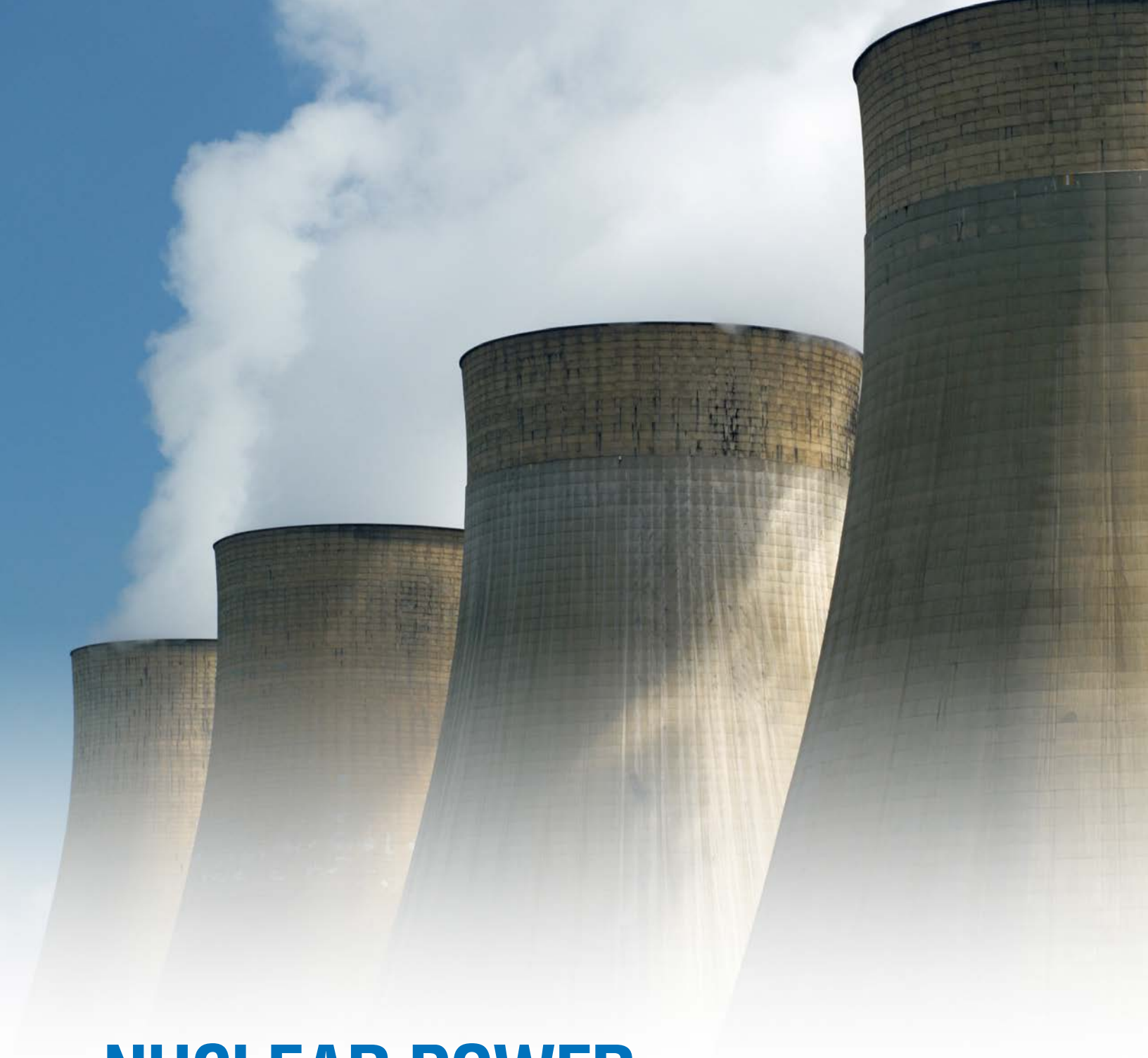

NUCLEAR POWER INSTRUMENTATION

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NUCLEAR POWER INSTRUMENTATION

Survive integrated gamma flux to 10^8 rads

Survives integrated neutron flux to 10^{10} N/cm^2

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.

RADIATION HARDENED VERY HIGH TEMPERATURE SINGLE-ENDED CHARGE ACCELEROMETERS

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357A63

- 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

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL EX356A73

- Sensitivity: 10 pC/g
- Measurement Range: ±1000 g pk
- Frequency Range: 5 kHz pk
- Electrical Connector: 10-32 coaxial jack

HARDLINE CABLE, RADIATION HARDENED

10-32 COAXIAL PLUG
MODEL FZ

COAXIAL HARDLINE CABLE
MODEL 023

10-32 COAXIAL PLUG
MODEL FZ

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

FOR SENSOR CHAIN SCHEMATIC, SEE FIGURE 1 ON PAGE 7

RADIATION HARDENED VERY HIGH & EXTREME TEMPERATURE DIFFERENTIAL CHARGE ACCELEROMETERS

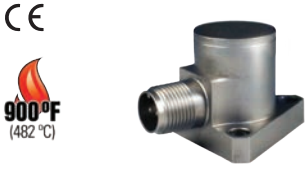
VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357A100

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
MODELS 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
MODELS EX357A94 & EX357A95

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

2-PIN JACK, 7/16-27 THD
MODEL GP

PTFE JACKETED CABLE

PTFE JACKETED CABLE WITH 2-SOCKET PLUG, TO 2-SOCKET PLUG, MS3106 (25 FT CABLE)
045M19B CABLING

DIFFERENTIAL CHARGE AMPLIFIERS

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

FOR SENSOR CHAIN SCHEMATIC, SEE FIGURE 2 ON PAGE 7

RADIATION HARDENED EXTREME TEMPERATURE DIFFERENTIAL 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
MODELS 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

2-CONDUCTOR HARDLINE CABLE
MODEL 013XXX

2-PIN JACK, 7/16-27 THD
MODEL GP

PTFE JACKETED CABLE

PTFE JACKETED CABLE WITH 2-SOCKET PLUG, 7/16-27 THD TO PIGTAILS (25 FT CABLE)
045M21B CABLING

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

FOR SENSOR CHAIN SCHEMATIC, SEE FIGURE 3 ON PAGE 7

RADIATION HARDENED EXTREME TEMPERATURE SINGLED-ENDED CHARGE ACCELEROMETERS

AXIS OF MEASUREMENT
MODELS EX357E90 & EX357E92

AXIS OF MEASUREMENT
MODELS EX357E91 & EX357E93

EXTREME TEMPERATURE CHARGE ACCELEROMETER
EX357E9X SERIES

Sensitivity: 5 pC/g (EX357E90 & EX357E91)
2.3 pC/g (EX357E92 & EX357E93)

Measurement Range: ±1000 g pk

Frequency Range: 3.0 kHz pk

Output into sensor base (EX357E90 & EX357E92)
Output Output perpendicular to sensor base (EX357E91 & EX357E93)

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357A64

Sensitivity: 5 pC/g

Measurement Range: ±200 g pk

Frequency Range: 5 kHz pk

Electrical Connector:
10-32 Coaxial jack

VERY HIGH TEMPERATURE CHARGE ACCELEROMETER
MODEL 357M168

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:
10-32 Coaxial jack

PTFE JACKETED CABLE

PTFE CABLE WITH 10-32 PLUG TO 10-32 PLUG
MODEL 003EBXXXEB

XXX = Denote cable length, 010 = 10 feet
(Metric lengths available)

HARDLINE CABLE, RADIATION HARDENED

IN-LINE CHARGE AMPLIFIER
MODEL 422E35

Sensitivity: 1 mV/pC

Voltage Output: ±2.5 V pk

Temperature Range (Operating):
-65 to +250 °F

IN-LINE CHARGE AMPLIFIER
MODEL 422E36

Sensitivity: 10 mV/pC

Voltage Output: ±2.5 V pk

Temperature Range (Operating):
-65 to +250 °F

FOR SENSOR CHAIN SCHEMATIC, SEE FIGURE 4 ON PAGE 7

FIGURE 1:
IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A Model 357B63 or 357B61 or 357B69 – Charge accelerometer
B Model 023FZXXXFZ – Cable with 10-32 plug to 10-32 plug
C Model 422E65/A or 422E66/A – In-line charge amplifier
D Model 023FZXXXGA – 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)

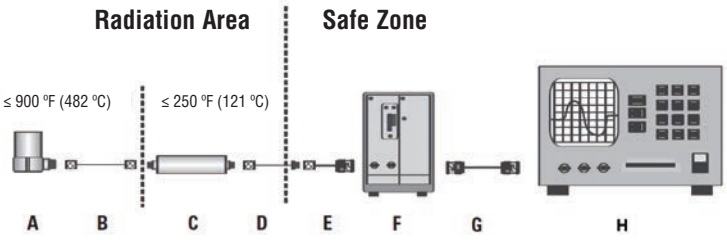


FIGURE 2:
IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

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 045M19B – Cable with PY connector to BP connector
D 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)

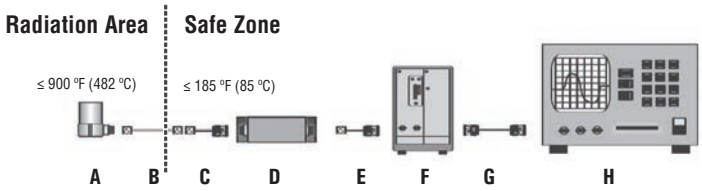


FIGURE 3:
IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

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)

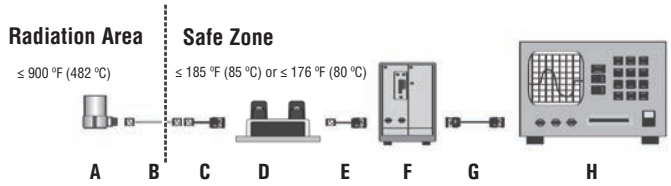
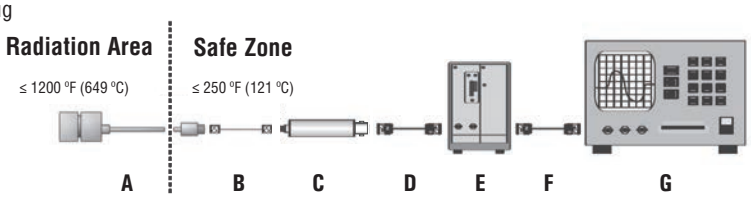


FIGURE 4:
IN-LINE CHARGE AMPLIFIERS, RADIATION HARDENED

A Model EX357E90 or EX357E91 or EX357E92 or EX357E93 – Charge accelerometer
B Model 003EBXXXEB – 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)



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