



# Trig-Tek™ 203M Charge Amplifier

The versatile Trig-Tek™ 203M Charge Amplifier covers the frequency range from 5 Hz to 30,000 Hz.

## Key Features

- PC/g or mV/g
- Accel, Vel, Displ
- 1 to 110 pC/g or mV/g
- DVM indicator
- Alarm
- Level hold
- Built-in calibrator

## Product Information

The Trig-Tek™ 203M will accommodate sensors with sensitivities ranging from 1 to 110 pC/g or mV/g and provides an output of either 10 mV/g or 100 mV/g with selectable Pk or RMS indication.

A double integration process provides velocity and displacement outputs. A "Cal-Oper" switch connects the charge amplifier input to either the calibrate signal or to the normal input. The 203M comes with three Low-Pass Filters with cutoff frequencies of 3, 10, or 30 kHz; other cutoffs can be supplied at the time of order.

The unit will operate with high-temperature accelerometers where pyroelectric effects may be encountered and will function with 100 k $\Omega$  or greater shunt input resistance.

The unit has an alarm circuit to alert if preset levels are exceeded as well as a relay contact closure.

Up to six 203M modules can plug into a standard 19" cabinet space that's 7" high or in a single-module cabinet.

# Specifications

Note: The Astronics Test Systems policy is one of continuous development and improvement. Consequently, the equipment may vary in detail from the description and specifications in this publication.

## Input

### Connector

- BNC

### Charge Sensitivity

- 1 to 110 mV or pC/g (provided with two selectable ranges), "1-11" and "10-110" mV or pC/g with continuous adjustment for each

### Frequency Response

- $\pm 3\%$  from 5 Hz to 30,000 Hz, referred to 100 Hz
- Overload Recovery
- 10,000 pC or less; 1 ms half Sine input pulse will cause no effect at the output, except clipping
- Amplitude (stability vs input capacity): <0.1% change per 1000 pF

### Amplitude (Stability vs Temperature)

- <3% change from 30° to 130° F

### Shunt Resistance

- Will operate with any input impedance above 100 k $\Omega$

### Filtering

- 12 dB/oct roll-off with 3 dB cutoffs selectable for 3 kHz, 10 kHz, and 30 kHz (other cutoff frequency supplied on request)

## Acceleration Outputs (NOR and AUX)

### Voltage (Max)

- 10 V<sub>rms</sub>

### Sensitivity

- 10 mV/g or 100 mV/g

### Impedance

- <50  $\Omega$  (NOR 10 mA max; AUX 10 mA max)

### Amplitude Linearity

- $\pm 1\%$  of best straight line approximation of output vs input amplitude

### Amplitude Accuracy

- $\pm 2\%$  of reading  $\pm 1\%$  of FS in series with selected Low-Pass Filter

### Noise

- 0.05 pC maximum with 1.0 pC/g sensitivity; noise increases 0.007 g/1000 pF of additional capacity at the input

### Harmonic Distortion

- <1%

### DC Offset

- <5 mV

## Velocity Output

### Voltage Max

- 10 V<sub>rms</sub>

### Sensitivity

- 10 mV/ips

### Impedance

- <50  $\Omega$  (10 mA max)

### Frequency Response

- $\pm 3\%$  5 Hz to 30,000 Hz of a -6 dB/oct slope, in series with selected input Low-Pass Filter

### Dynamic Range

- 46 dB below FS

### DC Offset

- <5 mV

## Displacement Output

### Level

- 0 to 10 V<sub>rms</sub>

### Impedance

- <50  $\Omega$  (20 mA max)

### Sensitivity

- 10 mV/mil DA

### Amplitude Accuracy

- $\pm 5\%$  of reading  $\pm 0.5\%$  FS

### Frequency Response

- $\pm 3\%$  10 Hz to 10,000 Hz of a -12 dB slope;  $\pm 5\%$  for 5 Hz to 3000 Hz of a -12 dB slope in series with the selected Low-Pass Filter

### Dynamic Range

- 36 dB below FS

### DC Offset

- <5 mV (noise signal must be averaged)

## DC Output

### Level

- 10 VDC FS (meter range)

### Impedance

- <50  $\Omega$  (10 mA max)

### Sensitivity

- 10 V for selected FS

### Linearity

- 1% FS

### Amplitude Accuracy

- 2% of reading  $\pm 1\%$  FS

### Dynamic Range (Accel)

- 60 dB below FS

## Interface

### Power

- 115 or 230, 10% V, 50 to 400 Hz, 3 W nominal

### Controls

#### Filter Switch

- Selects "Lo", "Med", and "Hi" nominal -3dB frequency cutoffs for the Low-Pass Filter

#### Cutoff Frequency KHz

LO	MED	HI
3	10	30

#### Cal-Oper Switch

- Connects the amplifier input to either the internal calibrator signal or to the "Accel" input jack.

#### mV/g Output Switch

- Selects "10" or "100" mV/g output

#### mV/g-pC/g Switch

- Selects "mV/g," which accommodates accelerometers with built-in electronics, or "pC/g," which accommodates standard accelerometers.

#### Sensitivity Switch

- Selects "1-11" or "10-110" mV/g or pC/g

#### Sensitivity Dial

- Adjusts the charge sensitivity from 1 to 11 for each range

#### Units Switch

- Selects either "g's," "ips," or "MILS" as the meter units

#### FS Switch

- Selects "10," "100," or "1000" units as FS for the meter

#### RMS-Pk Switch

- Scales the front panel DVM for either "PK" or "RMS" units at the input

#### Alarm Set Switch

- Provides the means of monitoring the alarm set point; also resets the alarm

#### SE-DIFF Switch

- Selects either "SE" (single-ended) or "DIFF" (differential) configuration at the input

#### Read-Hold Switch

- The "Read" position connects the level stored in the Pk-Hold circuit to the meter, and the "Erase" position resets the Pk-Hold circuit to zero

# Specifications

continued

## Indicators

### Cal Light

- Illuminates when the "Cal" mode is selected

### Alarm Light

- Illuminates when the alarm set point is exceeded

## Mechanical

### Dimensions

- 7" H x 2.7" W x 13" D  
(17.8 cm x 6.9 cm x 33 cm)
- Up to six units mounted side by side in a standard 19" wide rack

# Ordering Information

408316-001 : Trig-Tek™ 203M

Charge Amplifier

