Trig-Tek™ 620C

Article Protector

The Trig-Tek™ 620C Article Protector monitors the feedback from an accelerometer on a shaker and provides rapid shutdown when a preset limit for acceleration overtest, undertest, displacement overtravel, signal loss, or power interrupt is encountered.

Key Features

- **Shutdown faults: Undertest, Overtest, Overtravel, Start Up, Signal Loss, Power Interrupt**
- **Dual mode: 0.1 to 120 pC-mV/g sensor**
- **Sine or Random**
- **Compressor (shutdown)**
- **100 to 230 V_{rms} power**

Product Information

The Trig-Tek 620C's shutdown is accomplished by an independent compressor circuit which provides a controlled shutdown. The time required for shutdown is the total of the detection time plus the compression time.

When in the "Sine" mode, the detection time is varied by the excitation frequency. It is approximately 100 ms at 20 Hz and changes to about 5 ms at 2000 Hz. Time after detection to full compression is about 3 ms.

When in the "Random" mode, the detection time is preset for 330 ms. The "Accel" input is dual mode and will also operate with differential accelerometers.

A built-in dual-mode charge amplifier accommodates accelerometers with 0.1 to 120 pC-mV/g sensitivities as well as differential accelerometers. A built-in current source with an "On-Off" switch provides power to accelerometers with built-in electronics.

A mV/g input can be used with the current off. The normalized acceleration signal is integrated to velocity and again to displacement, and the three parameters—Acceleration, Velocity, and Displacement—are simultaneously brought out as normalized AC signals.

A "Sine-Random" switch selects RMS units at the input for the "Random" position and Pk units for the "Sine" position.

The acceleration test level is set by a "Multiplier" and "Decade" switch for levels between 0.1 to 100 g's. Once the test level is set, the "Overtest" +dB set and "Undertest" -dB set switches can be set in any of six settings from 1 dB to 6 dB independently. A separate "Displacement Overtravel" is provided that responds to the Pk-Pk Displacement with up to 2990 MILS in 10-MIL steps.

A "Deviation" meter provides a monitor to verify the test settings and observe the ±deviation from the set position. Loss of signal detection is provided during the "Start Up" mode; and when the -1 dB REF point is passed, the unit switches to the "Operate" mode. If there is no feedback to the controller, the detector will do a controlled shutdown when the "Overtest" setting is reached.

ASTRONICS TEST SYSTEMS

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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.

Acceleration Input

Level
- pC Accel: 0.1 pC/g to 120 pC/g
- mV Accel: 0.1 mV/g to 120 mV/g

Frequency Range
- 2 Hz to 10 kHz

Impedance
- pC Accel: >10 MΩ
- mV Accel: >100 kΩ; constant current source for accelerometers with built-in charge converter (with "On-Off" switch)
- Differential: >10 MΩ

Connectors
- Microdot and BNC for pC and mV, and 3-Pin for differential accelerometers

Acceleration Output

Level
- 0 to 3 V_{rms}

Sensitivity
- 10 mV_{rms}/g

Impedance
- 50 Ω (5 mA max)

Frequency Range
- 2 Hz to 10 kHz

Amplitude vs Frequency
- ±3% of reading ±0.5% FS

Dynamic Range
- 70 dB (min)

Connector
- BNC (ISO)

Reference Frequency Input

Level
- 0.1 to 60 V_{rms}

Impedance
- > 50 kΩ

Frequency Range
- 2 Hz to 10 kHz

Waveform
- Any recurring waveform

Connector
- BNC (ISO)

Compressor Input

Level
- Sine: 0 to 10 V_{rms}
- Random: 0 to 2 V_{rms}

Impedance
- 100 kΩ

Connector
- BNC (ISO)

Compressor Output

Level
- Sine: 0 to 10 V_{rms}
- Random: 0 to 2 V_{rms}

Impedance
- <50 Ω (5 mA max)

Gain
- "Zero" compression: 0 dB ±1dB
- "Full" compression:-80 dB

Velocity Output

Level
- 0 to 3 V_{rms}

Sensitivity
- 10 mV_{rms}/ips

Impedance
- 50 Ω (5 mA max)

Frequency Range
- 5 Hz to 2000 Hz

Frequency Response
- Follow a 6 dB/oct slope
- 10 Hz to 1,000 Hz ±3% of reading ±1% FS
- 5 Hz to 2000 Hz ±5% of reading ±1% FS

Dynamic Range
- 50 dB (min)

Connector
- BNC (ISO)

Displacement Output

Level
- Random: 0 to 3 V_{rms}

Sensitivity
- 1 mV_{rms}/MIL (DA)

Impedance
- 50 Ω (5 mA max)

Frequency Range
- 5 Hz to 1,000 Hz

Frequency Response
- Follows a 12 dB/octave slope
- 10 Hz to 500 Hz ±4% of reading ±1% of FS
- 5 to 1000 Hz ±5% of reading ±1% of FS

Dynamic Range
- 40 dB (min)

Connector
- BNC (ISO)

Terminals

Shutdown NORMAL Relay
- "NO-COM-NC" contacts, relay energizes when any set-in limit is exceeded; it remains energized until the condition is reset

Shutdown Delay Relay
- "NO-COM-NC" contacts, relay energizes approximately 500 ms after the shutdown relay; it remains energized until the condition is reset

Reset-Start
- Normally, terminal at GND opens to "Reset"

Shut down
- Normally, terminal at GND opens to "Shut Down"

Bypass
- Normally, terminal at GND opens to "Bypass"

Interface

Power Requirement
- 90 to 230 V_{rms}, 50 to 400 Hz, approx 25 W

Controls

Power Switch
- Turns power "On"

Input Switch (RP)
- Selects pC/g, mV/g, or mV/g "Curr"

Sensitivity Switch
- Selects 0.1 to 1.2, 1 to 12, or 10 to 120 multiplier for the sensitivity thumb switch

Sensitivity Thumb Pot
- Four-decade thumb pot to set the acceleration gain to accommodate the particular pickup being used; switch covers 1 to 12 range and works in conjunction with the sensitivity multiplier switch to cover the range of 0.1 to 120 pC/g

SE-ISO-DIFF Switch (RP)
- Provides for "ISO" or "SE" operation for pC, "SE" for pC/g, and "DIFF" for differential pickups

Specifications
continued

Sine-Random Switch
- Selects RMS units at the input when in the “Random” position and Pk units when in the “Sine” position

Overtest +dB Set Thumb Switch
- A six-position switch to set “1,” “2,” “3,” “4,” “5,” or “6” dB, and “0” is “Off”

Undertest -dB Set Thumb Switch
- A six-position switch to set “1,” “2,” “3,” “4,” “5,” or “6” dB, and “0” is “Off”

Test Level Set Thumb Pot
- Calibrated to set from 1 to 12 used in conjunction with the “Accel g’s” switch

Accel g’s Switch Selects
- 1 to 1.99, 1 to 19.9, or 10 to 199 as the switch multiplier for the “Test Level” set thumb pot

Operate-Bypass
- “Operate” position is for normal operation; the “Bypass” position connects the compressor input to the compressor output jack

Start-Reset Switch
- The “Reset” switch, when depressed, will reset any fault condition (if the fault is removed) and set up the start condition

Displacement Overtravel (Thumb Switch)
- Provides adjustment from 0.300 to 2.999 MILS for the displacement overtravel set pts

Indicators

Deviation Meter
- 3.5-digit digital voltmeter to display the monitor input level

Bypass LED
- Illuminates “Red” when “Bypass” is selected

Power Interrupt LED
- Illuminates “Red” if the power is interrupted; it stays lit until the “Reset” switch is depressed

Overtest LED
- Illuminates “Red” when the +dB “Set” setting is exceeded; it remains lit until the “Fault-Reset” switch is depressed

Undertest LED
- Illuminates “Red” when the -dB “Set” setting is exceeded; it remains lit until the “Fault-Reset” switch is depressed

Displacement Overtravel LED
- Illuminates “Red” when the overtest “Set” level has been exceeded; it remains lit until the “Fault-Reset” switch is depressed

Fault LED
- Illuminates “Red” if any fault occurs or if a signal is present at the compressor input when the “Reset” switch is depressed

Start LED
- Illuminates “Red” until the input signal is detected, and then it turns “Green”

Drive LED
- Illuminates“Red” and turns “Green” if feedback is detected before timer expires

Oper LED
- Illuminates “Red” and turns “Green” when the g level reaches 90%

Mechanical

Dimensions
- 3 ½” H x 19” W x 9” D (8.9 cm x 48.3 cm x 22.9 cm)

Ordering Information

408383-001 : Trig-Tek™ 620C
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