

# METROZET TSA-100S

## Triaxial Seismic Accelerometer



The Metrozet TSA-100S is an advanced sensor for the most critical applications in earthquake recording and structural engineering. Packaged for surface applications, the TSA-100S delivers a large sensing range ( $\pm 4$  g), wide frequency response (DC to  $>225$  Hz), high accuracy (ultra low non-linearity and hysteresis), and industry-leading noise performance. You benefit through more accurate seismic data, more usable data, improved signal integrity and confidence in the quality of your system.

**“The noise of the Metrozet TSA-100S is on average 6dB lower than [the competition] in the 1-10 Hz frequency band”**

– UC Berkeley Seismological Laboratory



### HIGHEST PERFORMANCE:

As the technical data below show, the TSA-100S is a very high performance alternative to a number of common and lower performance earthquake accelerometers (Guralp CMG-5T, RefTek 131A, etc.). The TSA-100S is pin-compatible with the Kinometrics EpiSensor.

### TODAY:

Despite a best-in-class sensor acceptance rate, Metrozet is the first and only supplier to begin dual coherence self-noise testing of every production seismic accelerometer. You can expect highly competitive pricing and delivery through our distributors, OEM and system integration partners as well as our direct purchase program

### APPLICATIONS

Advanced Seismic Networks

Tsunami Warning Arrays

Structural Monitoring Systems

### SINGLE SUPPLY OPTION TSA-100S-S:

Wide Input Power Range

### DIGITAL OUTPUT OPTION TSA-100S-D24:

24-bit Digital Data

50, 100, 200, 500 Hz Sampling Rates

125dB, 0.1 to 40 Hz, Integrated

144 dB Anti-alias Protection

Streaming Data

Native miniSEED Data Format

GPS Timing

Up to 32 GB Non-volatile Data Buffer

Standard Isolated RS-485 Interface



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# TSA-100S

## Specifications

<b>Technology</b>	Triaxial, force-balance accelerometer with capacitive displacement sensor, restoring coil and calibration coil
<b>Full-Scale Range</b>	+/- 4 g Peak-to-Peak
<b>Responsivity</b>	5V/g Differential; 2.5V/g Single-Ended
<b>Output</b>	Differential to > +/- 20V Peak-to-Peak Single-Ended to > +/- 10 V Peak-to-Peak
<b>Bandwidth</b>	DC to 225 Hz
<b>Dynamic Range</b>	> 160 dB, at 1 Hz, in 1 Hz bandwidth 147 dB, typical, 3 Hz to 30 Hz, integrated 135 dB, typical, 0.1 Hz to 100 Hz, integrated
<b>Self-Noise</b>	2.2 x 10 <sup>-8</sup> gRMS /rtHz @ 1 Hz, Typical 2.0 x 10 <sup>-8</sup> gRMS/rtHz @ 10 Hz, Typical 2.0 x 10 <sup>-8</sup> gRMS/rtHz @ 20 Hz, Typical 2.8 x 10 <sup>-8</sup> gRMS/rtHz @ 50 Hz, Typical 7.0 x 10 <sup>-8</sup> gRMS/rtHz @ 100 Hz, Typical 3.0 x 10 <sup>-7</sup> gRMS/rtHz @ 200 Hz, Typical
<b>Offset</b>	< 0.05 g (less than 0.02g available upon request)
<b>Non-Linearity</b>	< 0.015% Total Non-Linearity
<b>Total Harmonic Distortion (THD)</b>	< -74 dB
<b>Cross-Axis Sensitivity</b>	< 0.002% within each sensor <0.5% total, within triaxial sensor, including axis misalignment
<b>Hysteresis</b>	<200 micro-g peak-to-peak, with +/- 1 g excitation OR <0.005% of Full-Scale
<b>Calibration Coil</b>	Standard, digitally enabled Nominal scale factor: 0.04 g/V Calibration Input impedance: >100 MOhms
<b>Offset Temperature Coefficient</b>	60 micro-g/oC, typical, Horizontal Sensor 320 micro-g/oC, typical, Vertical Sensor

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## Specifications (Continued)

<b>Supply Voltage Ranges</b>	+/- 12V to +/-16V (standard dual supply) 9 9-18 Volts (single supply option)
<b>Power Consumption (Standard Dual Supply)</b>	Quiescent: +75 mA/-70 mA on +/-12 V Supply Dynamic: +/- 4 mA/g/axis on +/- 12V Supply
<b>Power Consumption (Single Supply Option)</b>	Quiescent: 180 mA @12V; 140 mA @ 15V Dynamic: 9 mA/g/axis @12V; 7.5 mA/g/axis @15V
<b>Operating Temperature Range</b>	-40oC to +85oC
<b>Connector</b>	19-Socket circular connector Connector Technology, Inc. 851-07A14-19S50-A7
<b>Physical Size</b>	8" (L) x 8" (W) x 3.75" (H) with leveling screws extended Total height with right angle mating connector is <5.75"
<b>Mounting Holes</b>	Three ¼ -20 clearance holes at edges with sufficient space for washers/nuts; ¼ - 20 adjust able leveling feet and bubble level

