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OG3273AT
REV C ECN 6920 08/04/10
Rev D, ECN 7060 09/10/10

OPERATING GUIDE

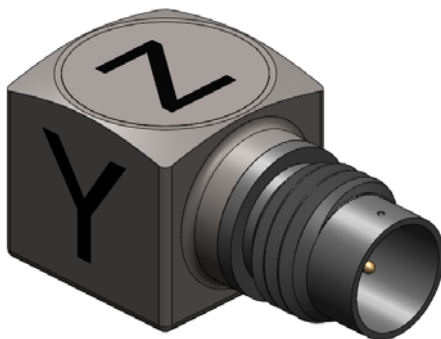
3273AT SERIES MINIATURE TRIAXIAL IEPE ACCELEROMETER

WITH SINGLE 4-PIN CONNECTOR,

CASE GROUNDED

WITH IEEE 1451.4 COMPATIBLE

TRANSDUCER ELECTRONIC DATA SHEET (TEDS) FUNCTION



3273AT SERIES is a miniature, **IEPE** triaxial accelerometer featuring a single, side mounted, 4-pin electrical connector. This feature allows the 3273AT series to be used in situations where vertical space is limited. 3273AT series is case grounded. The sensitivity of each of the three orthogonal axes of 3273AT series is indicated on the specification sheet.

This Guide contains:

- 1) Specifications, 3273AT series
- 2) Outline/Installation Drawing 127-3273AT series
- 3) Paper, "Low Impedance Voltage Mode (LIVM) Theory and Operation"

NOTE: **IEPE** is an acronym for Integrated Electronics Piezoelectric types of low impedance voltage mode sensors with built-in amplifiers operating from constant current sources over two wires. **IEPE** instruments are compatible with most other manufacturers' comparable systems. It is equivalent to the Dytran LIVM system.

OPERATING INSTRUCTIONS

3273AT SERIES TRIAXIAL ACCELEROMETER

INTRODUCTION

3273AT series is a miniature three-axis accelerometer using the latest in ceramic shear technology coupled with 2-wire internal IEPE electronics.

The "T" designation denotes the inclusion of the IEEE 1451.4 Transducer Electronic Data Sheet or "TEDS" function. This function allows the user to query each sensor in a large array of sensors, say, in a large field test, as to model number, serial number, sensitivity and other attributes using a TEDS compatible signal conditioner/data acquisition system.

This instrument contains three miniature ceramic planar shear mode accelerometer elements mounted to a single support and welded into a titanium housing. The three elements are mounted orthogonally to each other so that they can measure the complete motion of a point.

3273AT series mounts with adhesives into very small spaces since its vertical dimension is .360 in. It weighs only 3 grams.

IEPE (Integrated Electronics Piezoelectric) design means that three miniature IC amplifiers are built into the instrument, one for each axis, to lower the impedance of the ceramic seismic elements by many orders of magnitude. This technique allows the driving of long cables without affecting sensitivity and the use of very simple constant current type power units.

DESCRIPTION

Refer to the outline/installation drawing 127-3273AT series for the dimensions of 3273AT series.

This novel accelerometer features three modular style ceramic elements mounted to a single vertical post. Each planar shear mode element is connected to a miniature IEPE amplifier. The element assembly is mounted in a titanium housing.

The electrical connections from the elements are brought out to the contacts of a four-pin connector side mounted to a vertical face of the housing. The three signal/power connections to the elements are connected to three separate pins while the three ground returns for the elements are tied together to

one common pin of the four-pin connector. The case of this instrument is connected to electrical ground.

The performance specifications and criteria for 3273AT series are delineated on the specification sheet included with this operating guide.

INSTALLATION

Select a smooth surface approx. .50 in. diameter and clean off all oil, debris and any contaminants or foreign matter which would preclude a good bond. Various adhesives may be used to mount 3273AT series but the adhesives of choice for ease of use are any of the cyanoacrylate "instant" adhesives. They are tough and they set almost instantly. They also do not need a thick bond line which is good for high frequency response. The selected (or prepared) mounting area should be flat to within .001 in TIR for best high frequency response.

NOTE: Before mounting, be sure to clean the mounting surface thoroughly to avoid inclusion of machining chips and other debris between mating surfaces. Intimate contact between mating surfaces is important for best performance.

Spread a light layer of adhesive on the mounting surface and apply the 3273AT series to the mounting area in the desired orientation and press and hold firmly for several seconds.

If a fair amount of motion is expected during the test, it is good practice to tie the cable down to a stationary point as close as possible to the accelerometer (but not closer than 1 inch) to avoid potentially damaging cable whip. You are now ready to connect the 3273AT series to the power unit.

OPERATION

Use with TEDS compatible signal conditioners.

Be sure to check the orientation of each axis with the markings on the instrument upper surface and/or the outline/installation drawing supplied with the Operating Guide. The polarity of each axis is also defined with arrows marked on the top surface of the 3273AT series and again, on the outline/installation drawing 127-3273AT series. The arrows indicate the direction and sense of motion of the accelerometer

that will produce positive-going output signals. The vertical axis, axis 3, produces positive-going output voltage when the accelerometer is accelerated upward, i.e., away from the mounting surface.

REMOVAL (OR UNINSTALLATION)

It is very important when removing this instrument to remember that, although it is built to be very rugged, it is a sensitive measuring instrument and as such should be treated gently when being removed from its installation. Never strike the unit to break it free from its mounting surface. Simply grip two opposing flats with an adjustable or open-end wrench and gently twist the instrument until the adhesive bond fails in shear. This method avoids any trauma to the instrument and will help ensure a long life for the accelerometer.

MAINTENANCE AND REPAIR

This instrument is not field repairable. No maintenance is required, or possible. If a problem occurs, contact the factory for help. You will be assigned a Returned Material Authorization (RMA) number should the instrument have to be returned to the factory for evaluation. A short note describing the problem will facilitate the repair procedure.

There is no charge for evaluation of the instrument and we will perform no repair work until you are notified of any charges.

It is good practice to return the instrument to the factory for recalibration from time to time with frequency of recalibration dependent on usage intensity and frequency.