



Dynamic Transducers and Systems

21592 Marilla St. • Chatsworth, CA 91311 • Phone 818-700-7818

www.dytran.com • e-mail: info@dytran.com

OG3583AT
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OPERATING GUIDE

MODEL 3583AT

TRIAxIAL IEPE ACCELEROMETER

INTERNALLY CASE-GROUND ISOLATED

AND IEEE 1451.4 COMPATIBLE

TRANSDUCER ELECTRONIC DATA SHEET (TEDS) FUNCTION



Note:

Model 3583AT is an IEPE triaxial accelerometer featuring a single, transverse mounted, 4-pin connector. This feature allows the sensor to be used in situations where vertical space is limited. Model 3583AT also has TEDS function which allows the user to program sensitivity, model number, serial number, and other attributes of the sensor which can later be recalled on command.

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 other comparable systems labeled LIVM™

OPERATING INSTRUCTIONS MODEL 3583AT TRIAxIAL IEPE ACCELEROMETER

INTRODUCTION

Model 3583AT is a miniature three-axis accelerometer incorporating the latest in piezoceramic planar-shear technology. 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 sensor contains three miniature ceramic planar shear mode accelerometer elements mounted to a single support and installed into the aluminum housing. The three elements are mounted orthogonally to each other so that they can measure the complete motion of a point.

IEPE (Integrated Electronics Piezoelectric) design means that three miniature charge amplifiers are built into the accelerometer, one for each axis, to lower the impedance of the piezoceramic 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.

All elements are internally isolated from the outer case and are enclosed by a faraday shield for improved noise immunity.

DESCRIPTION

Refer to the outline/installation drawing **127-3583AT** for overall model dimensions.

The electrical connections from the charge amplifiers for each element are brought out to the contacts of a single four-pin connector mounted transversely to one vertical face of the housing. The three signal/power connections to the elements are connected to each of three pins while the three ground returns for the elements are tied together to one common pin of the four-pin connector. The mounting surface of this accelerometer is also electrically isolated from electrical signal/power ground.

The performance specifications and criteria for 3583AT are delineated on the specification sheet included with this operating guide.

INSTALLATION

Model 3583AT is designed for adhesive mounting on the flat bottom surface. If the accelerometer is mounted on any other surface, its calibration cannot be guaranteed.

Select a smooth surface approximately 1.0in x 1.0in and clean off all oil, debris and any contaminants or foreign matter that would preclude a good coupling. 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 or 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 install the sensor to the mounting area in the desired orientation. 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 accelerometer to the power unit.

OPERATION

The sensitivities of each of the three axes are directly in mV/g and are specified precisely in the calibration certificate supplied with each unit.

Be sure to check the orientation of each axis with the markings on the unit and/or the outline/installation drawing supplied with this Operating Guide. The polarity of each axis is also defined with arrows engraved on the side surface of the accelerometer and delineated on the outline/installation drawing 127-3583AT.

The arrows indicate the direction and sense of motion of the accelerometer that will produce positive-going output signals. The vertical axis, axis Z, produces positive-going output voltage when the accelerometer is accelerated upward, i.e., away from the mounting surface.

REMOVAL (OR UN-INSTALLATION)

It is very important when removing this accelerometer 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. 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 accelerometer and we will perform no repair work until you are notified of any charges.

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