

EDR-3C & EDR-3D

Shock, Vibration & Environmental Recorders

Our portable impact, shock and vibration recorder has a built-in tri-axial accelerometer along with many other features including easy setup and use and can be battery powered for over thirty days, onboard memory and more.



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Highlights:

- Measures Shock, Vibration & Temperature
- Options for Humidity, Pressure, Strain, Load, Full Waveform, Time History Recording and More
- Download via USB or high speed serial
- Built-in piezoresistive Tri-axial Accelerometer
- Continuous recording from minutes to hours depending on memory & sample rate
- Triggered recording up to several months or longer
- 5,291 "event" memory capacity
- All events date/time stamped
- Patented IST Sliding Window Overwrite (SWO) memory mode
- Fully programmable sample rates, triggering, event lengths, memory modes
- Up to 6 High-Speed Accelerometer channels
- External input channel options for PE voltage mode accelerometers
- Precision Low Noise accelerometers, DC response
- Full scale g ranges from 2g to 500g
- Sampling Frequency to 3.2 kHz/channel
- Triggering: threshold, time-interval, time-delayed, time at level, external input, manual and networked
- Automatic Offset Correction (for DC accelerations, Bridge Balancing)
- Vibration Controller Compatibility for Field Data Replication, PSD Profiles
- Battery powered continuous recording to 30+ Days, 60+ Days with **New** "Powersave" feature
- Memory nonvolatile to 6+ months
- Pre-trigger and post-trigger programmability- never misses anything
- Extremely rugged: 500g+ shock fragility
- Small Size: 37 cu in, 2.2 lb.
- Powerful Windows NT/2000/XP/7 Software Included
- Easy to Set Up and Use

| Channel | Left Cursor | Right Cursor | Right Value | RMS | % RMS |
|---------|-------------|--------------|-------------|-----------|--------|
| 1 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |
| 2 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |
| 3 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |
| 4 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |
| 5 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |
| 6 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 1.000e+00 | 100.0% |

On-board battery pack (5 volt optional.)

The EDR-3C recorder is used in conjunction with IST's DynaMax Suite Software programs and downloads the EDR-3C's memory to a PC using USB or high speed serial communications. Together, the EDR-3C and the DynaMax software program provide a powerful tool for accurately recording and analyzing dynamic environments.

Operation of the Instrument

During recording acceleration, with the built-in triaxial accelerometer, signals are digitized and stored in on-board memory. The choice of A/D allows for precision, low noise measurements while still making effective use of available data memory and battery power. The EDR-3C recorders are capable of recording many hours of equivalent real-time data over a typical 100 Hz vibration analysis bandwidth for typical ground applications. If you're interested in getting a handy spreadsheet for use in calculating memory usage based on your own specifications, contact us and we're happy to e-mail it to you.

Triggering

Advanced data management capabilities of the EDR-3C/3D unit allow it to measure and record over 5,000 separate 3 or 6-channel waveform sets consisting of transient shock events and/or continuous vibration time samples. IST's unique "Event Type Partitioning" of separate time-triggered and event-triggered data may also be performed during recording. This feature makes post-collection data reduction and indicator analysis easier. The length of each event is also selectable between event types, enabling the unit to be optimized for capture of both shock and vibration data during a single recording session.

Advanced triggering schemes allows the user to select from threshold (event amplitude based), time-interval, time-delayed, time-at-level, external input, manual, and networked (multi-unit-connected) triggering. This flexibility enables the instrument to be configured for a wide variety of dynamic recording applications.

Temperature and Humidity Recording

The EDR-3C unit also measures and records environmental temperature using a sensor built into the unit and/or an externally connected temperature sensor. Optional internal and external relative humidity sensors are available.

Pressure Recording

The EDR-3C unit can measure various pressures -- atmospheric pressure, or differential pressure for shipment under positive pressures, and other configurations. These can be provided as external sensors.

Strain, Load and other Resistance Bridge (strain-gage based) Sensors

The EDR-3CM4 and EDR-3DM4 recorder units are also available for up to six channels of differential inputs, for resistance-bridge sensors. Contact IST for details on these configurations. The standard single ended (PE accelerometer) channels can also be used with acoustic pressure transducers, force gauges and load cells.

linearity, and extremely low power consumption. Acceleration recording can be configured for the internal tri-axial accelerometer channels and/or up to 3 optional external accelerometer inputs.

External Accelerometers

The optional external accelerometer input channels are designed for use with "low bias" versions of ICP piezoelectric voltage mode devices. External channels provide signal conditioning, filtering, and constant current excitation for use with voltage mode accelerometers.

External Input Triggering

An external bi-directional trigger channel is available as an option on all EDR-3C/3D recorder models.

Flexible USB & Serial Communication

The EDR-3C and 3D recorders offer a communications port for USB or high speed serial data transfer to a host PC.

Advanced Programmability

Our EDR-3 series recorders are set up for recording applications using IST's DynaMax software package. After field recording, data is transferred back to the host PC for processing and analysis. The EDR-3C is completely user-programmable for accurate recording of either (transient) shock and/or pseudo-stationary vibration data. The instrument may be set up to operate under both event (amplitude-based) and/or time (periodic) triggered recording or combinations of this and other triggering options.

Data Management

Several different data management features are available for handling large numbers of captured time histories. Fill & Stop memory mode records all frames satisfying the trigger condition sequentially in time until the digital memory within the instrument is filled. A second Overwrite memory mode option records a selectable number of events having the largest RMS levels of all events measured.

Sliding Window Overwrite Mode (SWO)

The EDR-3C and -3D recorder models offer a powerful feature called Sliding Window Overwrite (SWO) developed and patented exclusively by IST. SWO provides the advantages of overwrite mode and much more. With SWO the field test period is effectively partitioned into a user selectable number of time windows or bins. The size of the time windows is selected by the user. Event overwriting can only occur within the respective time windows.

Performance History

The EDR-3C & series recorders have been used in a broad range of high-performance applications world-wide for many years. A few of the more prominent applications using the EDR-3C include:

- The recorder of choice by damage prevention professionals at most major U.S. Railroads
- Mandated by U.S. Auto Club as the "crash recorder" for all INDY race cars in the late 90s
- Selected by NASA for measuring cargo bay vibrations aboard the U.S. Space Shuttle
- Selected by NASA Prime Contractor for continuous monitoring of rail car transportation of all Shuttle Solid Rocket Motors (before fleet retirement)
- Selected by many Fortune 500 companies for use in shipment monitoring
- Selected by numerous D.O.D. contractors for ground transport monitoring of critical aerospace hardware.
- Widely used by the DOD Special Ops for parachute rapid deployment test and measurement
- In use by most major small parcel delivery service companies & customers

Certifications

The EDR-3C & 3D series recorder has several certifications allowing it to be used in many useful applications. Contact IST if you've got a specification, chances are we have equipment to meet your specs:

- Meets MIL-STD-810F, most test methods
- Potentially incendiary environments (intrinsically safety)
- Flight Qualified (MIL-STD-461 RE02)
- Manned Space Flight Qualified by NASA

Applications

The EDR-3C series recorders have been designed for applications that require remote, unattended monitoring and recording of shock and vibration data over long periods of time. Their ultra-small size and weight, combined with their extraordinary recording and programmability features make them ideal for applications where space and weight come at a premium. Since human monitoring during recording is not required, personnel cost associated with the field testing using the EDR-3C recorders can be reduced significantly. The instruments also provide a high degree of operational reliability under harsh environmental test conditions.

Specific applications of the EDR-3C/3D include:

- Intermodal Transport Studies
- High-Value Transport Monitoring
- Vibration Test Spec. Development
- Launch Vehicle Vibration
- Avionics Environmental Reliability
- Concealed Monitoring
- Package Test Shipments
- Railcar Impact and Vibration
- Crash Recording
- Aircraft Flight Vibration
- Brake Testing