

# Micromate<sup>®</sup>

The Industry's #1 Selling Vibration Monitor

With over 40 years of expertise, Instantel has set the industry standard with our vibration, air-overpressure and sound monitoring units. The Micromate monitoring unit is used worldwide enforcing our reputation as a global leader of tough, rugged and reliable products.

## Key Features

- Fits in the palm of your hand.
- Histogram-Combo mode captures full-waveform events in parallel to Histogram recording.
- Versatile USB Port for USB memory sticks, field printer, and modem.
- Large, easy-to-read, color touch-screen display.
- Can store over 1,000 events (4,000 with optional memory).
- Trigger multiple units within 1 sample of each other.
- Synchronizes Class 1 noise monitoring or air-overpressure and vibration data on the same monitoring unit.
- Internal battery lasting up to 15 days.
- Uninterrupted monitoring with zero dead-time between events.

## Range of Applications

- Construction
- Blasting
- Demolitions
- Pile Driving
- Compaction
- Heavy Transportation
- Environmental
- Tunnels and Subways
- Sound/Noise
- Structural
- Bridges

## Monitor Remote Locations

- Integrates seamlessly into the THOR/Vision Event Management Software.
- Auto Call Home relays any Instantel unit's data to you via the THOR or Vision software.
- Schedule diagnostics, monitoring or Auto Call Home using the Scheduler tool in the THOR software.

## Sensor Options

- ISEE Triaxial Geophone
- DIN Triaxial Geophone
- Triaxial Borehole Geophone
- Swedish Pile Driving Geophone
- Swedish Blasting Geophone
- ISEE Linear Microphone
- Sound Level Microphone

## Enhance Your Data Analysis Using THOR Advanced Software

- Reduce vibrations efficiently using the Signature Hole Analysis feature.
- Calculate the structural response based on a comparison of two waveforms recorded inside and simultaneously outside a structure.
- Calculate the effects of vibrations (Vibration Dose Value, VDV) with our Human Exposure Reports feature.

## THOR Software Includes the Following Compliance Standards and Graphs

- Australia 2187.2-1993
- Brazilian Standard NBR 9653/2005
- British Standard 7385
- BS 6472:1992 (Curves 8,16,20,32,60,90,128)
- Criterio Prevencion (Une 22.381)
- Czech and Slovak Standard
- DIN 4150
- DIN 45669-1 (2010)
- Function de Ponderation
- GFEE + Ministère Environnement
- Harmoniska Svängningar
- Indian CMRI, DGMS India (A) & (B)
- Indonesian SNI 7571:2010
- ISEE Seismograph Specification (2022)
- New Zealand 4403:1976
- NOM-026-SESH-2007
- QLD APP Standard
- NZS/ISO 2631-2:1989 Combined curves
- Recommendation GFEE/GFEE\*
- Swiss SN 640 312a (Mining/Pile Driving/Traffic)
- Toronto 514-2008
- Turkey Mining & Quarry
- USBM RI8507 And OSMRE



Protective Boot



ISEE Geophone with a Linear Microphone or Sound Level Microphone



Available Sensors

## General Specifications

### Micromate Unit Channels Geophone

- Range
- Response Standard
- Resolution
- Frequency Range
- Accuracy
- Phase Response
- Transducer Density
- Maximum Cable Length

Microphone and Triaxial Geophone (ISEE or DIN)

#### ISEE

Up to 254 mm/s (10 in/s)  
ISEE Seismograph Specification (2022)  
0.00788 mm/s (0.00031 in/s)  
2 to 250 Hz  
From 2 to 4 Hz and 125 to 250 Hz: +5% to -3 dB of an ideal flat response, from 4 to 125 Hz:  $\pm 5\%$  or  $\pm 0.5$  mm/s (0.02 in/s) whichever is larger.  
Phase shift from 2.5 to 250 Hz <10% of maximum absolute value of 2 superimposed harmonic vibrations.  
2.2 g/cc (137 lbs/ft<sup>3</sup>)  
1,000 m (3,280 ft)

#### DIN

Up to 254 mm/s (10 in/s)  
DIN 45669-1  
0.00788 mm/s (0.00031 in/s)  
1 to 315 Hz  
DIN: 45669-1 standard

### Microphones

- Weighting Scales
- Response Standard
- Range
- Resolution
- Frequency Range
- Accuracy
- Maximum Cable Length
- Temperature Range

#### ISEE Linear Microphone

ISEE Linear Microphone  
ISEE Seismograph Specification (2022)  
Up to 500 Pa (0.0725 psi) [148 dB]  
0.0156 Pa (2.2662 x 10<sup>-6</sup> psi) [0.05 dB]  
2 to 250 Hz  
2 Hz: -3 dB  $\pm$  1 dB, 3 Hz: -1 dB  $\pm$  1 dB, from 4 Hz to 125 Hz:  $\pm 1$  dB, 200 Hz: +1 dB to -3 dB, 250 Hz: +1 dB to -4 dB  
75 m (250 ft)  
-40 to 50 °C (-40 to 122 °F)

#### Sound Level Microphone

A-Weight or C-Weight  
Fast (125 ms) or Slow (1 s)  
30 to 140 dB, max 160 dB (A or C)  
0.05 dB (display limit 0.1dB)  
10 Hz to 20 kHz  
IEC 61672 Class 1  
75 m (250 ft)  
-10 to 50 °C (14 to 122 °F)

## Waveform Recording

### Record Modes

#### Seismic Trigger

#### Linear Acoustic Trigger

#### Sound Level Microphone Trigger

#### Sample Rate

#### Record Stop Mode

#### Record Time

#### Auto Record Time

#### Cycle Time

#### Waveform Storage Capacity

Waveform, Waveform Manual  
0.13 to 254 mm/s (0.005 to 10 in/s)  
2.0 to 500 Pa (0.00029 to 0.0725 psi) [100 to 148 dB]  
33 to 140 dB (A or C)  
1,024 / 2,048 / 4,096 S/s per channel (independent of record time)  
Fixed record time, AutoRecord™ (see Auto Record Time below)  
1-90 seconds (programmable in one-second steps) plus a pre-trigger at 0.25, 0.50, 0.75, or 1.0 second  
Event is recorded until activity remains below trigger level for duration of auto window, or until available memory is full.  
Recording uninterrupted by event processing, monitoring, or communication - zero dead time between events.  
1,000 1-second events at 2,048 S/s (memory upgrade optional up to 4,000 1-second events at 2,048 S/s)

## Histogram Recording

### Record Modes

#### Recording Interval

#### Histogram Storage Capacity

#### Histogram Combo Storage Capacity

Histogram and Histogram-Combo™ (unit captures triggered waveforms while recording in Histogram mode)  
2 to 30 seconds (1-second increments), and 30 seconds to 30 minutes (30-second increments)  
222,000 intervals (Examples: 5 days at 2-second intervals, 150 days at 1-minute intervals)  
30 days of Histogram recording at 1-minute intervals, and over 900 1-second waveform events

## Physical Specifications

### Dimensions

### Unit Weight

### Battery

### User Interface

### Display

### PC Interface

### Auxiliary Inputs and Outputs

### Environmental

- LCD Operating Temperature
- Electronics Operating Temperature
- Operating Temperature

101.6 x 135.1 x 44.5 mm (4.15 x 5.32 x 1.75 in)

0.5 kg (1.1 lbs)

10 day rechargeable lithium ion (optional 15 day battery upgrade available)

10 domed tactile keys, colour touch screen, with display keyboard and dedicated shortcuts for common functions

QVGA, 320 x 240 color touch screen

USB

External Trigger and Remote Alarm (factory installed option)

### Remote Communications

Supported modems: Sierra Wireless™ Airlink® RV-55, GX-450, RV-50, GX-400, LS-300.  
Automatically transfers events when they occur through the Auto Call Home feature, monitor start/stop timer.

### Optional Features

- Printer
- GPS
- Vision (Cloud-Based Software)
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Precision high-resolution

Synchronize time and download coordinates

Provides stakeholders with secure, encrypted, access to event data, and allows instant sharing for time-sensitive projects.

### Electrical Standards

CE Class B - The Micromate has been tested and passed IEC 61010-1:2010 (CB scheme test report available).