

# Minimate Pro 4™

## Advanced Vibration, Air Overpressure and Sound Monitoring Using 4 Channels

With over 38 years of expertise, InstanTEL has set the industry standard with our vibration, air-overpressure and sound monitoring units. Our monitoring units are used worldwide enforcing our reputation as a global leader of tough, rugged and reliable products.

### Key Features

- 8,000+ events storage capacity. (32,000 with extended memory)
- Uninterrupted monitoring with zero dead-time between events.
- Records full waveform events up to 2.5 hours long. (triggered, 4-channel at 1024 SPS)
- Records full waveform events up to 24 hours long. (manual, 4-channel at 1024 SPS with extended memory)
- Histogram-Combo mode captures full-waveform events in parallel to Histogram recording.
- Synchronize event data to within 100 microseconds. (optional GPS required)
- EMI Shielding, Ethernet Connection and Waterproof rating of IP67.
- Internal battery lasting up to 10 days.

### Range of Applications

- Construction Activity
- Near/Far-Field Blast Analysis
- Vibration Dose Value (VDV)
- Underwater Monitoring
- Demolitions
- Heavy Transportation
- Sound Monitoring
- Research/Education
- Pile Driving

### Monitor Remote Locations

- Integrates seamlessly into InstanTEL's THOR/Vision Event Management Software
- Auto Call Home relays your data straight to you or automatically posts the data to Vision

### Sensor Options (Compliance)

- ISEE Triaxial Geophone
- DIN Triaxial Geophone (1-80 Hz or 1-315 Hz)
- Triaxial Borehole Geophone
- ISEE Linear Microphone
- Sound Level Microphone

### Sensor Options (Requires THOR Advanced Licence)

- High-Frequency Geophones and Boreholes (30 - 1,000 Hz)
- High-Pressure Microphone (up to 10 psi)
- Hydrophone (8 - 500 Hz)
- Accelerometers (1 - 3,000 Hz for 0.5 g and 50 g, 0.5 - 500 Hz for 500 g)

### Enhance Your Data Analysis Using InstanTEL's 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 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 Svangningar
- Indian CMRI, DGMS India (A) & (B)
- Indonesian SNI 7571:2010
- ISEE Seismograph Specification -2017
- New Zealand 4403:1976
- NOM-026-SESH-2007
- NZS/ISO 2631-2:1989 Combined curves
- QLD APP Standard
- Recommendation GFEE/GFEE\*
- Swiss SN 640 312a (Mining/Pile Driving/Traffic)
- Toronto 514-2008
- Turkey Mining & Quarry
- USBM RI8507 And OSMRE



## General Specifications

### Minimate Pro Channels

Channels 1-3, ISEE or DIN Triaxial Geophone or various configurations of advanced sensors. Channel 4, ISEE Linear Microphone or Sound Level Microphone or a single channel advanced sensor.

### Geophone

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

#### ISEE

Up to 254 mm/s (10 in/s)  
ISEE Seismograph Specification (2017)  
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>)  
75 m (250 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 or 1 to 80 Hz  
DIN: 45669-1 standard

### Microphones

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

#### ISEE Linear Microphone

ISEE Linear Microphone  
ISEE Seismograph Specification (2017)  
Up to 500 Pa (0.0725 psi) [148 dB]  
0.0156 Pa (2.2662x10<sup>-6</sup> psi)  
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)

#### Sound Level Microphone

A-Weight or C-Weight  
Fast (125s) or Slow (1s)  
30 to 140 dB A or C  
0.05 dB (Display limit 0.1 dB)  
Up to 20 kHz  
IEC 61672 Class 1

75 m (250 ft)

### Optional Advanced Sensors

High Pressure Microphone, High Frequency Geophone, High Frequency Borehole Geophone, Uniaxial and Triaxial Accelerometers, Hydrophone (Please contact InstanTel for more information).

## Waveform Recording

### Record Modes

Waveform, Waveform Manual

### Seismic Trigger

0.13 to 254 mm/s (0.005 to 10 in/s)

### Linear Acoustic Trigger

2.0 to 500 Pa (0.00029 to 0.0725 psi) [100 to 148 dB]

### Sound Level Microphone Trigger

33 to 140 dB (A or C)

### Sample Rate (per channel)

512, 1,024, 2,048, 4,096, (with an advanced license: 8,192, 16,384, 32,768, 65,536) S/s (independent of record time)

### Record Stop Mode

Fixed record time, AutoRecord™ (see Auto Record Time below)

### Record Time

1-9,000 seconds (1-30 seconds, then 30-second increments up to 9,000 seconds) plus a 0.25 second pre-trigger.

### Auto Record Time

Event is recorded until activity remains below trigger level for duration of auto window, or until available memory is full.

### Cycle Time

Recording uninterrupted by event processing, monitoring, or communication - no dead time below 65 KHz.

### Storage Capacity

64 MBs. Optional 240 MBs.

### Full Waveform Events

8,000+ 1-second events at 1,024 S/s sample rate (32,000 with extended memory)

## Histogram Recording

### Record Modes

Histogram and Histogram-Combo™ (unit captures triggered waveforms while recording in Histogram mode)

### Recording Interval

2 seconds up to 30 seconds (1-second increments), 30 seconds up to 60 minutes (30-second increments)

### Histogram Storage Capacity

800,000 intervals, (18.5 days at 2-second intervals, >2 years at 1.5-minute intervals)

### Histogram Combo Storage Capacity

30 days of Histogram recording at 1-minute intervals, and over 7,500 1-second waveform events at 1,024 S/s

## Physical Specifications

### Dimensions

25.4(l) x 11.75(w) x 10.80(h) cm (10.00 x 4.63 x 4.25 in); length dimension includes connectors and dust caps

### Unit Weight

2.27 kg (5 lbs)

### Battery

10 Days

### User Interface

10 domed tactile with separate keys for common functions

### Display

7-line x 32-character, high-contrast, backlit LCD

### PC Interface

Ethernet® cable, supplied, for PC to unit connection or RS-232 with an optional USB adapter

### Auxiliary Inputs and Outputs

External Trigger and Remote Alarm

### Environmental

- LCD Operating Temperature
- Electronics Operating Temperature
- Water Resistance

-20 to 45 °C (-4 to 113 °F)

-40 to 45 °C (-40 to 113 °F)

IP67 – submerge to 30 cm (1 ft) for 24 hours

### Remote Communications

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

### Optional Features

- GPS
- Vision (Cloud-based software)

Factory installed, for time synchronizing event data.

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

### Electrical Standards

CE Class B. The Minimate Pro has been tested and passed IEC 61010-1:(2nd ed. 2001) (CB scheme test report available).