

Instruction Sheet

Micromate® Monitoring Unit Linear Microphone

The Linear Microphone for the Micromate monitoring unit automates the monitoring of air overpressure and vibration monitoring in the same unit, making it a cost effective and flexible device for these applications.

The Linear Microphone is calibrated to the ISEE-2022 standard with a frequency measuring range from 2 to 250 Hertz and an amplitude range up to 500 Pascals (0.0725 psi, or 148 dB).

Range of Applications

- Blasting
- Demolitions
- Quarries
- Construction
- Dynamic Compaction
- Tunnels and Subways



Tools and Materials Required

- Micromate ISEE Base Unit (P/N: 721A2501) or
- Micromate DIN Base Unit (P/N: 721A2601) or
- Micromate Swedish Blasting Base Unit. (P/N: 721A3601) or
- Micromate Swedish Pile Driving Base Unit (P/N: 721A3801)
- Linear Microphone (P/N: 721A0201)
(stand and windscreen included)
- Microphone Stand Extension Rod (28 cm/11 in) (P/N:400-720020-000)
- Extension cables, as required:
 - 10 m (32.8 ft) (P/N: 721A0803)
 - 30 m (98.4 ft) (P/N: 721A0801)
 - 75 m (246.1 ft) (P/N: 721A0802)
- Custom Extension Cable Kit (P/N: 721A3201)
 - THOR software (free version included with any Micromate purchase) or
 - THOR Advanced software (Additional license purchase required) (P/N: 72300201) or
 - Vision II software (Additional license purchase required) (P/N: 72600101)

Physical Installation

(for a detailed description see page 3.)

1. If required, assemble the 3-piece microphone stand (see Figure 1. on page 3).
2. Point the microphone in the direction of the pressure source.
 - If required, place the windscreen on the end of the microphone.
3. Connect the microphone to the Micromate monitoring unit by aligning the red end of the connector with the indicated red microphone port.
4. Make sure the Micromate monitoring unit has the proper **Setup File** (see THOR Software Setup below) and then perform a sensor check by pressing the **Sensor Check** key on the keypad.

Specifications

Field	Values
Response Standard	ISEE - 2022
Frequency Weighting	Linear
Frequency Range	2 Hz - 250 Hz
Amplitude Range	Up to 500 Pa (0.0725 psi, or 148 dB)
Trigger Levels	2 to 500 Pa (0.00029 to 0.0725 psi, or 100 dB(L) to 148 dB(L))
Sample Rates	1,024 - 4,096 S/s
Resolution	0.0156 Pa (0.05 dB)
Cable Length	2 m (6.6 ft)
Maximum Cable Length	75 m (246.1 ft)
Temperature Range	-40° to 50°C (-40° to 122°F)

Micromate Monitoring Unit Setup

1. On the Micromate monitoring unit keypad, press the **Power** button.
Note: To navigate the menu, use the **Arrow** keys followed by the **Checkmark** key or tap on the touchscreen display.
2. Press the **Setup** key then tap **View/Edit Current Setup**.
2. Tap **Active Sensors** until either **Microphone** or **Geophone/Microphone** is selected.
3. Tap **Microphone Type** until **Linear** is selected.
4. Select the **Record Mode** (Waveform, Waveform Manual, Histogram or Histogram-Combo).
5. Tap **Trigger Level**, then tap **Microphone Trigger** until **Enabled** is selected.
6. Tap **Trigger Level**, then swipe up or down on the spinner wheel or use the arrow keys.
7. Press the **Checkmark** key, this prompts you to save any changes. Use the **Checkmark** key to save the changes or the **Cancel** key to cancel the changes and return to the previous screen.
8. Tap either the **Save** icon on the touchscreen display or press the **Cancel** key for a prompt to save the changes to a **Setup File**.
9. Select the **Checkmark** and then **Save to Current File/Overwrite File**.

Calibration

Note: The Linear Microphone must be sent to a manufacturer certified calibration facility, or Instantel headquarters for calibration. Please visit our calibration facility locator at www.instantel.com. Instantel recommends calibrating all air overpressure microphones once a year and provides the Next Calibration date on the unit and sensors. The calibration process is the only method to ensure the instrument is performing as it was designed and accurately measuring the air overpressure it receives.

Using a manufacturer certified facility ensures the proper procedures are followed when calibrating your microphone. This removes any uncertainty associated with the reliability and measurement accuracy of your microphone. It also helps ensure the integrity of the measured recorded events if they are ever called upon as evidence in a court of law. Using unauthorized facilities may have negative legal consequences if the reference equipment is not traceable, the proper procedures are not followed or if the certification documents are incomplete. Please visit our calibration facility locator at instantel.com.

Installing the Linear Microphone

(Taken from Section 14.4. of the Micromate Operator Manual)

The microphone installation procedures are based on ISEE field practice guidelines for blasting seismographs. This section illustrates the installation procedures recommended by InstanTel. Your particular monitoring activities may employ one, or a combination of all, of the following procedures.

The Linear Microphone is supplied with a 3-piece microphone stand. The top section has a clip to hold the microphone, the extension section is threaded at both ends and the bottom section is pointed to assist in the installation. When the three pieces are assembled, the microphone stand is approximately 80 cm (31.5 in) tall. If the air overpressure is to be monitored at a height greater than 80 cm (31.5 in), additional extension sections can be purchased. (Microphone Stand Extension Rod, P/N: 400-720020-000)

Installation Steps:

1. Assemble the microphone stand at the desired location (see Figure 1.). Section 1 has a pointed tip to drive the stand into the ground. Section 2 has a male and female thread. Screw in the female threaded end of section 2 into the male threaded end of section 1. Section 3 contains the microphone clip. Screw in the female threaded end of section 3 into the male threaded end of section 2.
2. Push the pointed end of the microphone stand into the ground. If the ground is too hard, use a rubber mallet to install the microphone stand.
Note: Do not use a metal hammer or other hard object as it may damage the top of the microphone stand.
3. Attach the windscreen to reduce false triggering caused by wind. The windscreen attenuates the microphone reading by approximately 0.2 dB.
4. Install the Linear Microphone in the clip at the top of the microphone stand and point the microphone in the direction of the noise source.
5. Ensure that the microphone cable is securely attached to the Micromate.
6. Press the **Sensor Check** key on the Micromate ensuring the microphone is properly attached and has passed the Sensor Check.



Figure 1.
3-Piece
Microphone Stand



Figure 2.
Soft Ground Installation



Figure 3.
Hard Ground Installation



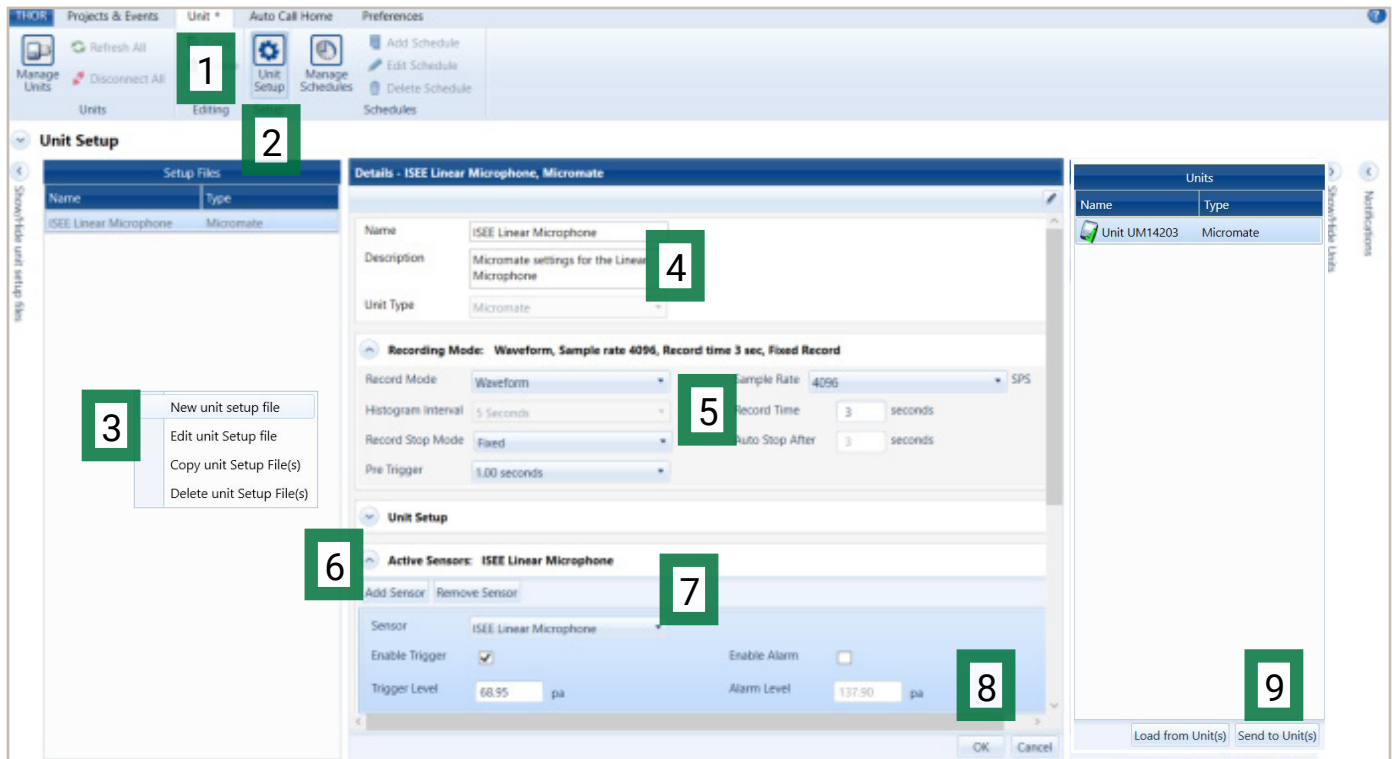
Figure 4.
Installing the Microphone

THOR™ Software Setup

The Linear Microphone can be configured using THOR software. Once configured, THOR software must send the microphone's setup file to update the Micromate unit.

Installation Steps:

1. Within THOR software, click on the **Unit Tab**.
2. Click on the **Unit Setup** icon.
3. In the **Unit Setup** section, right-click and select **New Unit Setup File**.
4. Fill in the details and select **Unit Type: Micromate**.
5. Select the **Record Mode** and fill in the recording details.
6. Under **Active Sensors**, click on **Add Sensor**.
7. Under **Sensor** select **ISEE Linear Microphone**.
8. Fill in any **Trigger and Alarm** details and click **OK**.
9. Select the Micromate unit and click **Send to Unit(s)** to send the configuration file to the Micromate unit.



A visual display of the THOR software installation steps for a Linear Microphone

Vision // Software Setup

The Linear Microphone for the Micromate monitoring unit can be configured within the Vision // software platform when the Micromate monitoring unit is connected to Vision // and has an internet or cellular connection. Once configured, the settings will automatically update.

1. Within Vision //, ensure that the corresponding Micromate unit is in the inventory and has been deployed to a project. This can be viewed on the inventory page.
2. The status of the unit should be green and the project column should have a project name in it.
3. If the Micromate unit is not currently in Vision //, it can be added by selecting the Register Devices icon on the screen. A new screen appears where the device serial number is added.
4. You then assign the device to a company by selecting the Assign icon at the top menu bar (the + sign beside the Register Devices icon.) A new screen appears to select the company.

5. Once the company has been selected, click on the company name to open the Company Home page to launch a new project where settings are configured. Once a project is launched, enter the sensor limits on the first screen. Continue to the next screen where the device is selected and assigned.
6. To assign to an existing project, select the Company Inventory Page where all devices are listed. Click on the box beside the serial number of the Micromate and assign to an existing project by selecting the Assign icon. A new screen appears with the available projects. Select the desired project.
7. Project settings can be modified by selecting the project name. The project menu appears where settings can be modified in the Project Settings menu item. Scroll down to the Sound Level Microphone settings.

Warranty

One-year limited warranty against defects in materials or workmanship. The warranty begins on the date of shipment from the InstanTEL factory to the customer and is subject to certain exclusions and conditions as stated in the product warranty policy found on our website at: <https://www.instanTEL.com/service-and-support/warranty-form>.

EC Warning

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.