

Instruction Sheet

Triaxial Borehole Geophone

for the Micromate Monitoring Unit

The Triaxial Borehole Geophone is designed to be lowered into a borehole to measure vertical, transverse and longitudinal ground vibrations.

Each Triaxial Borehole Geophone is coupled with a Micromate Base Unit and calibrated to the same industry standard as the Micromate Base Unit, namely:

- International Society of Explosives Engineers (ISEE-2017)
- Deutsches Institut für Normung (DIN 45669-1)
- Swedish Blasting (SS4604866)
- Swedish Pile Driving (SS025211)



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)
- 30 m (100 ft) Triaxial Borehole Geophone (P/N: 721A2401) or
- 75 m (250 ft) Triaxial Borehole Geophone (P/N: 721A2402)
- Extension cables, as required
 - 10 m (33 ft) (P/N: 721A0803)
 - 30 m (100 ft) (P/N: 721A0801)
 - 75 m (250 ft) (P/N: 721A0802)
 - Custom Extension Cable Kit. (P/N: 721A3201)
- Steel cable to position the geophone into the borehole (third party)

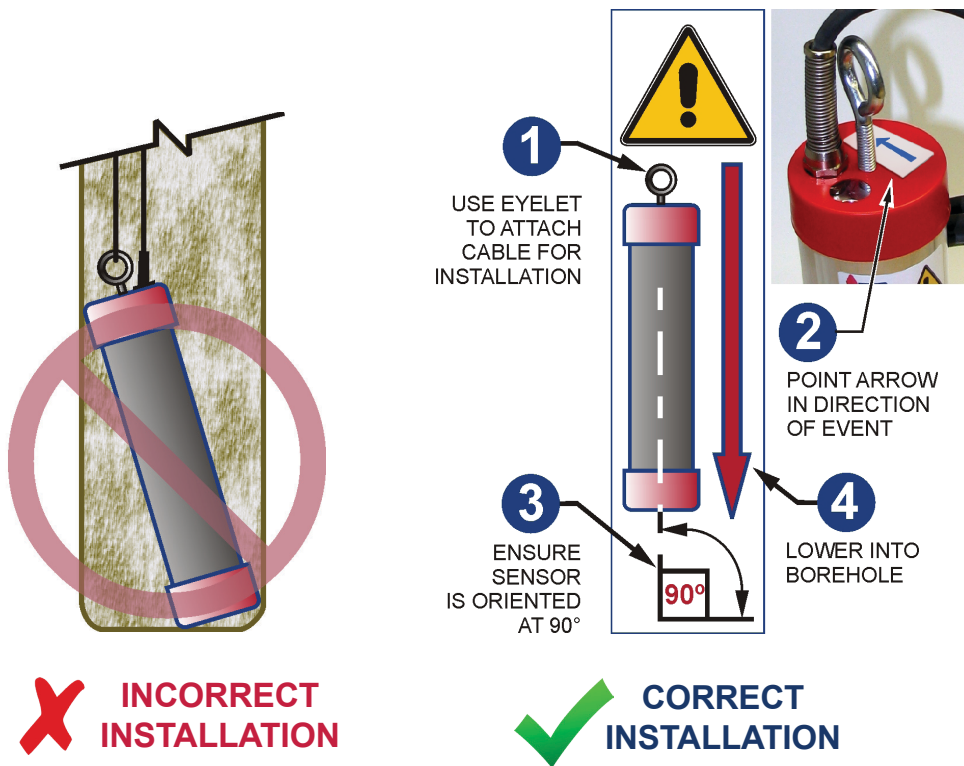
Specifications

PART NUMBER	ISEE BOREHOLE GEOPHONE		DIN BOREHOLE GEOPHONE		SWB BOREHOLE GEOPHONE		SWP BOREHOLE GEOPHONE	
	721A2401 Coupled to the ISEE base unit	721A2402 Coupled to the ISEE base unit	721A2401 Coupled to the DIN base unit	721A2402 Coupled to the DIN base unit	721A2401 Coupled to the SWB base unit	721A2402 Coupled to the SWB base unit	721A2401 Coupled to the SWP base unit	721A2402 Coupled to the SWP base unit
RESPONSE STANDARD	ISEE - 2017		DIN 45669-1 CLASS 1		SS4604866 2011 (SWB)		SS025211 (SWP)	
FREQUENCY RANGE	2 - 250 Hz		1 - 315 Hz		5 - 300 Hz		2 - 150 Hz	
VELOCITY RANGE	Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)		Up to 254 mm/s (10 in/s)	
RESOLUTION	0.00788 mm/s (0.00031 in/s)		0.00788 mm/s (0.00031 in/s)		0.00788 mm/s (0.00031 in/s)		0.000788 mm/s (0.000031 in/s)	
SENSOR DENSITY	1.73 g/cc (108 lbs/ft ³)		1.73 g/cc (108 lbs/ft ³)		1.73 g/cc (108 lbs/ft ³)		1.73 g/cc (108 lbs/ft ³)	
CABLE LENGTH	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)	30 m (100 ft)	75 m (250 ft)
MAXIMUM CABLE LENGTH	1,000 m (3,250 ft)		1,000 m (3,250 ft)		1,000 m (3,250 ft)		1,000 m (3,250 ft)	
REQUIRED SOFTWARE	THOR Compliance		THOR Compliance		THOR Compliance		THOR Compliance	

Physical Installation

Installing the Triaxial Borehole Geophone requires a minimum borehole diameter of 76.2 mm (3 inches).

1. Thread a steel cable through the Triaxial Borehole Geophone's mounting eyelet bolt and bind securely.
Note: DO NOT use the connecting cable to lower or raise the geophone as this may damage the cable.
2. Point the arrow located on the top of the geophone in the direction of the event.
3. Maintain this orientation while lowering into the borehole and ensure that the geophone is at a 90° angle.
4. Once positioned, connect the Triaxial Borehole Geophone cable and run a sensor check.
5. Maintaining the geophone's 90° angle, carefully fill in the hole with cement, grout, or sand to secure its orientation.
6. Repeat the sensor check to ensure the sensor has not moved and all channels still pass the test.



Monitoring Unit Setup

Configuring a Micromate Base Unit (ISEE, DIN, SWB, SWP) with a Triaxial Borehole Geophone follows the same procedure as the Standard Triaxial Geophone. For complete details, please refer to the Micromate Monitoring Unit Operator Manual and THOR Software Operator Manual.

Example Installation



1. Prepare the borehole geophone by wrapping the connections with electrical tape to keep them clean.



2. Drill the borehole and slide the borehole geophone into place.



3. Fill around the borehole geophone and cable with gravel pack.



4. Fill the hole with cement.



5. Hole filled with connectors ready.



6. Borehole geophone location clearly marked with monitoring unit placed in a secure lock box.

Warranty

InstanTel products come with a limited one-year warranty against defects in materials or workmanship unless otherwise stated. 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 below. Monitoring units and sensors will have the warranty extended for a second year if they are returned to the InstanTel factory for service and calibration within 30 days of the 'Next Calibration' date printed on the calibration label located on the product.

If, within a period of one year from the date of shipment to a customer, the instrument fails to perform in accordance with InstanTel's published specifications under normal use and operating conditions, it will be repaired or replaced at the sole discretion of InstanTel free of charge. Components subject to fair wear and tear in regular use, as solely determined by InstanTel, are excluded from this coverage. This warranty will not apply if the damage or malfunction occurs due to (i) adjustments, additions, alternations, abuse, misuse or tampering of the instrument; (ii) instrument operation or use contrary to the operating instructions; (iii) power fluctuations; or (iv) any other cause not within the cause or control of InstanTel. If inspection by InstanTel fails to disclose any defect covered by this limited equipment warranty, the instrument will be repaired or replaced at customer's expense and InstanTel's regular service charges will apply. This warranty is non-transferable.

Any shipments returned directly to InstanTel must have prior approval, and all packages must display the Return of Material Authorization (RMA) number issued by InstanTel. Shipping charges to InstanTel's factory will be paid by the customer and return shipment to the customer will be paid by InstanTel.

To protect your warranty, you must complete and return a Warranty Registration Certificate, or complete the online Warranty Registration Form, within ten days of purchase. Products will be assumed out of warranty if no warranty card is on file at InstanTel. Retain this warranty statement and the proof of purchase for your records.

Except for the foregoing limited equipment warranty, InstanTel makes no other warranties and hereby disclaims and excludes all other warranties, whether statutory, express or implied, whether arising under law or equity or custom or usage, including any implied warranty of merchantability, fitness for a particular purpose, non-infringement, satisfactory quality, or quiet enjoyment, and any warranty that the product supplied may not be compromised, or that the product will in all cases provide the function for which it is intended.

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.