

Instruction Sheet

Wire Make/Break Trigger Cable

A Make/Break trigger cable allows you to trigger a measurement in sync with an event. This cable controls when a unit starts recording an event by using either a switch or a break in a wire referenced from the last activity or from a unit.

The unit's auxiliary channel senses the wire trigger signal via a 22 gauge Make/Break wire and starts recording. A signal occurs when the Make/Break trigger wires separate or create a contact. For example:

- a) A **Break** signal occurs when a blast physically breaks the trigger wire.
- b) A **Make** signal occurs when the trigger wires make contact, such as an operator pressing on a push-button switch.



Range of Applications

- Civil Projects
- Dynamic Compaction
- Pile Driving
- Blasting
- Underground Mines
- Demolition
- Construction
- Quarries
- Tunnels/Subways
- Underwater

Physical Installation

See following pages for a detailed description of installation instructions.



DANGER - Exercise Extreme Caution

This unit can supply up to a maximum of 10 mA of electrical current and 7 volts to the cable. You are responsible for ensuring that this amount of electrical current and/or voltage is safe for the type of detonator and explosives used. Calculate the compatibility of the detonators being used to ensure a charge delivery that is under the minimum firing currents of the blasting accessories being used. Properly trained and skilled personnel in explosives must assess and approve the use of this instrument.

DO NOT connect a Wire Make/Break Trigger Cable to the AUXILIARY connector until all other components are installed and ready to operate. Ensure that area safety is performed by properly trained and skilled personnel, and that unauthorized personnel keep clear of the blast area.

DO NOT install, use, or allow the Wire Make/Break Trigger Cable to remain in place if there is any possibility of an electrical storm.

Please refer to the applicable safety regulations for more information and guidance on the use of this product.

Tools and Materials Required

- Minimate Pro4 monitoring unit (P/N: 720A2301)
- Minimate Pro6 monitoring unit (P/N: 720A2401) up to six units (Pro4/Pro6) may be connected.
- Wire Make/Break Trigger Cable. . . . (P/N: 720A3501) one for each connected unit.

Supplementary Tools

- Red and black, 22 gauge wire (up to 152 m /500 ft)
- Wire strippers
- A two-way switch, for each **Make** trigger setup
- Electricians tape, as required
- Volt meter/ammeter

THOR Software Setup

The Make/Break Trigger can be enabled using InstanTel's THOR software. Once configured, THOR must send the setup file to update the Minimate Pro unit. Depending on the active THOR License, the interface will vary. In both cases the procedure is the same.

Installation Steps:

1. 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: Minimate Pro**. **Setup Type: Compliance** or **Advanced**.
5. Under the **Unit Setup** subsection, click the **Auxiliary IO** dropdown list and select **External Trigger**.
6. Click **OK** (save the changes in the popup dialog box).
7. Send the **Setup File** to the unit by selecting the unit from the list and clicking the **"Send to Unit(s)"** button.
8. Note: If you prefer to trigger the Minimate Pro exclusively from the external wire, you can disable the triggers on the sensors by unchecking the field "Enable Trigger".

The screenshot displays the THOR software interface with several key elements highlighted by green boxes and numbers 1 through 8, corresponding to the installation steps:

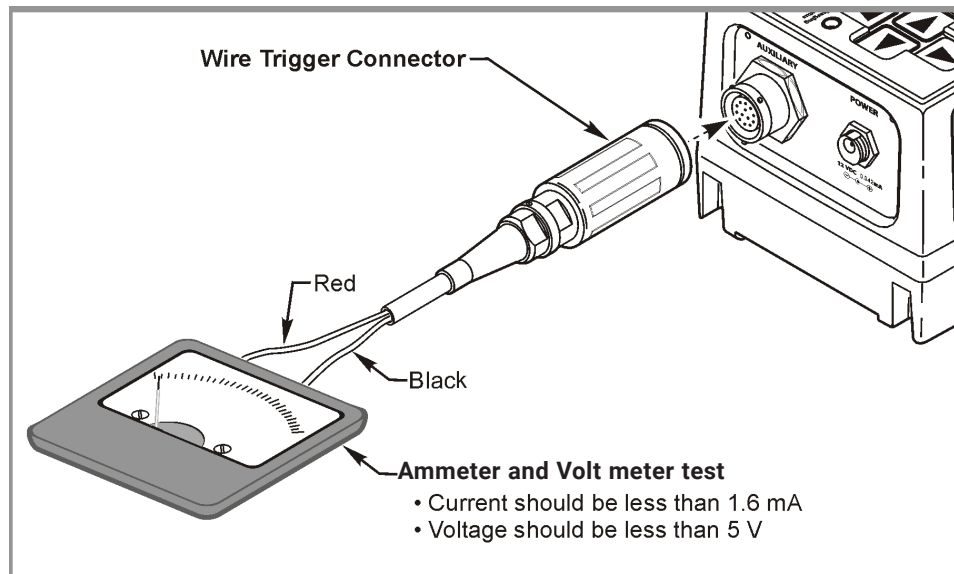
- 1**: The 'Unit' tab in the top menu bar.
- 2**: The 'Unit Setup' icon in the toolbar.
- 3**: The 'New unit setup file' option in the context menu.
- 4**: The 'Unit Type' dropdown set to 'Minimate Pro' and the 'Setup type' dropdown set to 'Compliance'.
- 5**: The 'Auxiliary IO' dropdown menu set to 'External Trigger'.
- 6**: The 'OK' button at the bottom of the 'Active Sensors' section.
- 7**: The 'Send to Unit(s)' button at the bottom right of the interface.
- 8**: The 'Enable Trigger' checkbox checked in the 'Active Sensors' section.

THOR software installation steps to enable the External Trigger (Compliance Mode)

Installing the Wire Make/Break Trigger Cable

WARNING: The Wire Make/Break Trigger Cable (P/N: 720A3501) should be tested prior to each use.

Attach the Wire Make/Break Trigger Cable to the unit as shown:



Shown is the Minimate Pro test configuration to check the circuitry

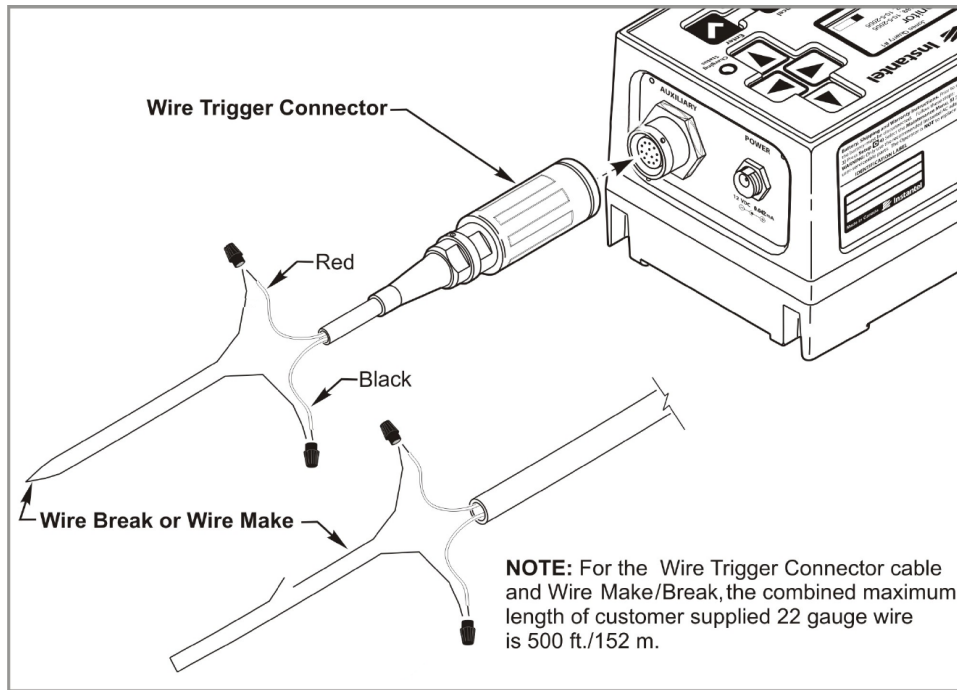
- Test the open circuit voltage of the Wire Make/Break Trigger Cable while attached to the Minimate Pro. The voltage should be less than 5 V.
- Test the short circuit current of the Wire Make/Break Trigger Cable while attached to the Minimate Pro. The current should be less than 1.6 mA.

Single Wire Make/Break Trigger Cable Setup

WARNING: DO NOT connect a Wire Make/Break Trigger Cable (P/N: 720A3501) to the AUXILIARY connector until all other components are installed and ready to operate. Ensure that area safety is performed by properly trained and skilled personnel, and that unauthorized personnel keep clear of the blast area. Visually check all connections.

1. Measure the required length of 22 gauge wire, strip the protective covering from the ends, and connect to the corresponding red and black wires of the **Wire Break/Make Trigger Cable** to complete the sensing loop.
2. Use the supplied connectors to secure the wires and ensure the leads are not exposed. Use electrician's tape, as required.
3. For a **Make** trigger setup, add a two-way switch to complete the sensing loop. Recording begins when the operator presses the button.
4. For a **Break** trigger setup, carefully wrap the wire trigger around a zero time delay detonator.
5. Turn the unit On.
6. Press the **Setup** key, then press the **Down Arrow** key until **View Edit/Setup File** is highlighted. Press the **Enter** key to access this menu.
7. Press the **Down Arrow** key and scroll down to highlight **Auxiliary**. Press the **Right Arrow** key to enter the menu item.
8. With **Auxiliary I/O** highlighted, press the **Right Arrow** key. Press the **Right Arrow** key again until **External Trigger** appears as the selection. Press **Enter** to save this setting.
9. Press the **Up/Down Arrow** key to scroll and highlight **Trigger Level**. Press the **Right Arrow** key to enter this menu item.
10. Press the **Up/Down Arrow** key to scroll and highlight **Vibration** or **Pressure Trigger On/Off**. Press the **Right Arrow** key to turn these options **On** or **Off**, as required.

11. Press the **Up/Down Arrow** key to scroll and highlight **Vibration** or **Pressure Trigger Level**. Press the **Right Arrow** key to turn change the **Trigger Level** values for these options.
12. Install the cables and detonators. Ensure that the blast area is clear.
13. For a single **Break** trigger setup, connect the **Wire Make/Break Trigger Cable** to the communications port on the unit labeled **AUXILIARY**.
14. The unit regards interruptions in sensing current as a trigger signal. The unit will fail to trigger if there is an improper connection.



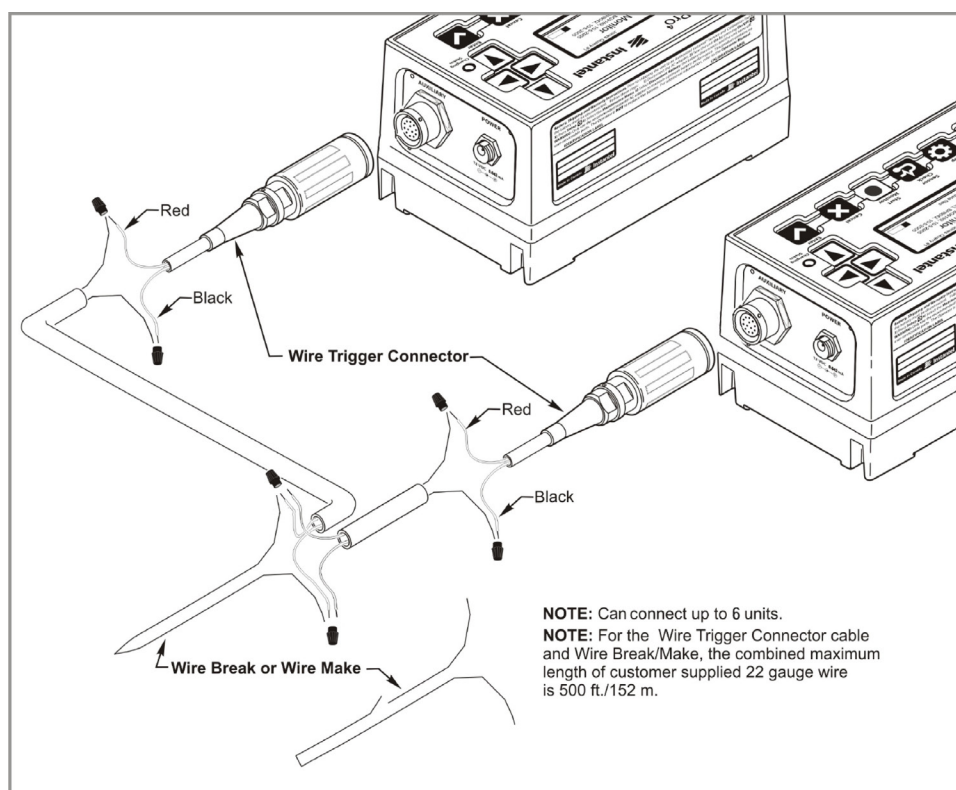
Single Wire Make/Break Trigger Cable Setup

Multiple Wire Make/Break Trigger Cable Setup

WARNING: DO NOT connect a Wire Make/Break Trigger Cable (P/N: 720A3501) to the AUXILIARY connector until all other components are installed and ready to operate. Ensure that area safety is performed by properly trained and skilled personnel, and that unauthorized personnel keep clear of the blast area. Visually check all connections.

1. Supply 22 gauge connecting cable to each unit being added to the sensing loop (connect up to six units), as required, and strip the protective covering from the ends. Connect to the corresponding red and black wires of the **Wire Make/Break Trigger Cable** to complete the sensing loop.
2. Use the supplied connectors to secure the wires of the connecting cable and wire **Make** or **Break** and ensure the leads are not exposed. Use electrician's tape, as required.
3. For a **Make** trigger setup, add a two-way switch to complete the sensing loop. For **Make** trigger applications, recording begins when the operator presses the button.
4. For a **Break** trigger setup, carefully wrap the wire trigger around a zero time delay detonator.
5. Turn the unit On.
6. Press the **Setup** key, then press the **Down Arrow** key until **View Edit/Setup File** is highlighted. Press the **Enter** key to access this menu.
7. Press the **Down Arrow** key and scroll down to highlight **Auxiliary**. Press the **Right Arrow** key to enter this menu item.
8. With **Auxiliary I/O** highlighted, press the **Right Arrow** key. Press the **Right Arrow** key again until **External Trigger** appears as the selection. Press **Enter** to save this setting.
9. Press the **Up/Down Arrow** key to scroll and highlight **Trigger Level**. Press the **Right Arrow** key to enter this menu item.

10. Press the **Up/Down Arrow** key to scroll and highlight **Vibration** or **Pressure Trigger On/Off**. Press the **Right Arrow** key to turn these options **On** or **Off**, as required.
11. Press the **Up/Down Arrow** key to scroll and highlight **Vibration** or **Pressure Trigger Level**. Press the **Right Arrow** key to turn change the **Trigger Level** values for these options.
12. Install the cables and detonators. Ensure that the blast area is clear.
13. For a multiple **Make** or **Break** trigger setup, connect the **Wire Make/Break Trigger Cable** to the communications port on the unit labeled **AUXILIARY**.
14. The unit regards interruptions in sensing current as a trigger signal. The unit will fail to trigger if there is an improper connection.



Multiple Wire Make/Break Trigger Cable Setup

Warranty

InstanTel products come with a one-year warranty. 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 and the operator's manual, due to a defect in materials or workmanship, it will be repaired or replaced at InstanTel's option, free of charge. This warranty is void if the equipment has been dismantled, altered or abused in any way. This warranty is nontransferable.

This warranty does not include any implied warranty of functionality for a particular purpose. InstanTel assumes no responsibility for damages of any description resulting from the operation or use of its products. Since it is impossible to anticipate all of the conditions under which its products will be used either by themselves or in conjunction with other products, InstanTel cannot accept responsibility for the results unless it has entered into a contract for services which clearly define such an extension of responsibility and liability.

Any shipments returned directly to InstanTel Inc. must have our prior approval and all packages must display the Return of Material Authorization (RMA) number issued by InstanTel. Shipping charges to InstanTel's plant will be paid by the customer and those for return 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 there is no warranty card on file at InstanTel. Retain this portion and the proof of purchase for your records.