



How to play it safe when locating underground utilities

UAT-600-EUR Series
Application Note

Before you break ground for a new commercial structure or residential development, or extend electrical, water or gas lines into a new area, you need to accurately locate buried utilities to avoid risking outages and to prevent potential injuries and fatalities. The first step is to review a utility map of the area if one is available. However, if there is no map or it is out of date, this gets complicated and expensive, so you'll need to look for other options.

If you don't find out exactly what's underground before you dig, you may find out the hard way by cutting an electrical, gas, or water line. The risk to human life, the cost and delay, and the damage to your organization's reputation of such an accident can be significant.

What truly sets the UAT-600-EUR Series apart is that it is the only underground utility locator on the market with a CAT IV 600 V safety rating.

Why take the risk?

Taking note of the ever-increasing number of buried utilities to be identified and accurately mapped, Beha-Amprobe saw the need for an underground utilities locator that was easy to use, applicable to a variety of locating needs, affordable, and above all, safe. That led to the development of the Beha-Amprobe UAT-600-EUR Series Underground Utilities Locator, which allows you to safely connect and accurately trace energized lines and find other utilities so you know exactly what is underground before you dig.

Intuitive Transmitter automatically chooses the correct locating function



UAT-620-EUR
Underground Utilities
Locator Kit*



*SC-600-EUR Signal Clamp is included in the UAT-620-EUR Kit

Large LCD Display with auto
backlight for clear viewing
in full sunlight



Multiple active and passive tracing modes

The UAT-600-EUR Series provides multiple tracing modes to locate and trace energized and de-energized utilities in a variety of applications. The Receiver detects the presence of buried utilities up to 30 meters deep and accurately determines the depth of utilities to 6 meters depth.

What truly sets the UAT-600-EUR Series apart is that it is the only underground utility locator on the market with a CAT IV 600 V safety rating. This means it is also the only underground utility locator that allows you to safely connect the Transmitter directly to an energized line up to 600 V in a CAT IV environment—wearing proper PPE of course. Previously, if a crew needed to trace a specific electrical line by transmitting a signal through it, the line had to be de-energized first. That adds time and reduces productivity.

Using the Receiver with the directly connected Transmitter surveyors can easily trace an individual cable, find shorts and breaks, or locate connections and junction boxes and determine the depth of those components, even if other utilities are buried in the vicinity.

With its rugged, water resistant case, the UAT-600-EUR is ideal for many outdoor applications including highway construction, underground communications installations, and rerouting electrical lines. The Receiver features a high-contrast screen display that allows you to clearly view results in full sunlight and an automatic backlight for high visibility in shade or low-light conditions.

The complete solution for active and passive tracing

The UAT-600-EUR Series comes as a complete kit with a Transmitter, Receiver, test lead kit, Signal Clamp (UAT-620-EUR kit), batteries, and extra fuses. For passive mode applications you can use the Receiver alone to detect energized wires and buried metal pipes. In active mode you can use the UAT-600-EUR Transmitter to generate a unique 8kHz or 33kHz signal that can then be detected by the Receiver.

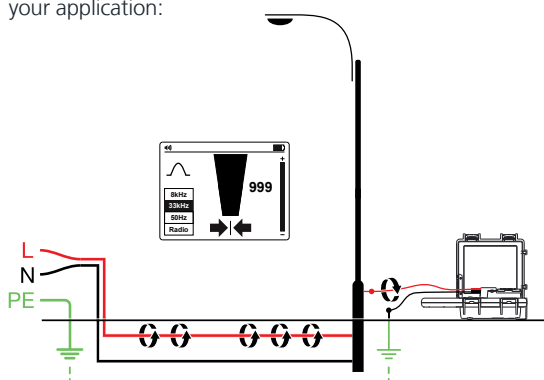
Passive modes

The easiest and quickest way to locate energized wires and metallic pipes is by using the UAT-600-EUR Receiver without the Transmitter. You can set the Receiver in either of two passive modes to detect a signal directly from a live circuit:

- 50/60 Hz mode detects 50Hz or 60Hz energized electrical lines
- Radio frequency mode detects buried metal objects such as electrical lines in metal conduit or gas and water lines.

Active modes

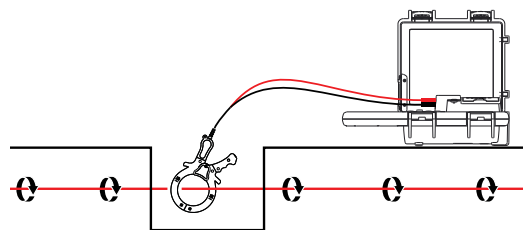
The intuitive UAT-600-EUR Series Transmitter offers three types of active mode tracing, and automatically selects the correct mode for your application:



Direct test lead contact signal injection:

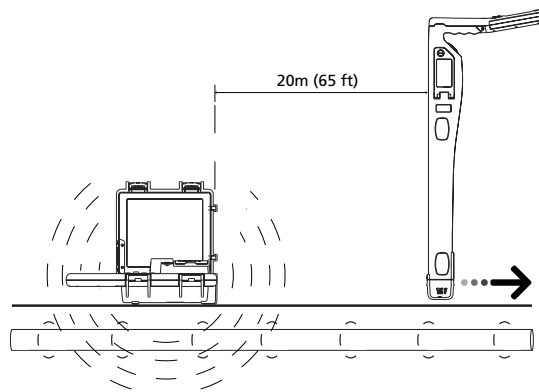
The UAT-600-EUR Series, with its CAT IV 600 V rating makes it uniquely suited for applications where you have access to an energized circuit. Now you don't have to shut down power to the circuit. You can safely connect the transmitter directly to an energized circuit (up to 600 V) using the test leads. The UAT-600-EUR kit also includes a ground rod to provide a separate ground for the UAT-600-EUR Transmitter.

Connecting directly to the circuit via test leads delivers the best accuracy when you need to trace a single wire in an area where multiple wires are overlapping. It is particularly useful for locating shorts, opens, and breaks in energized lines, and for locating underground connections and junction boxes.



Signal Clamp non-contact signal injection:

For applications with low impedance closed circuits, where it is difficult or impossible to access a lead connection point, you can use the UAT-600-EUR Signal Clamp (UAT-620-EUR kit) with the Transmitter. This allows you to trace individual energized and de-energized wires and metallic pipes without a direct connection to the bare metal of the wire. The Signal Clamp fits over cables, wires, and pipes up to 10 cm (4 in) diameter to trace a specific pipe or cable. This is a good choice for tracing underground lighting systems, verifying substation or junction box wiring, or tracing the "last kilometer" of wires from the transformer to the building.



Induction non-contact signal injection:

If you can't access an energized line to map buried metal utilities, the UAT-600-EUR Transmitter in induction mode generates a unique 8 kHz or 33 kHz pulsing signal into the ground. Anything below the Transmitter that has any kind of metallic conductor takes the pulse and reflects it directly to the entire grid. You can then use the UAT-600-EUR Receiver to trace the signal and determine the depth of the pipe and the direction it runs. The UAT-600-EUR Transmitter needs to be placed at least 20 meters (65 feet) from buildings or electrical towers to avoid signal interference.

Key applications for the UAT-600-EUR Series Underground Utilities Locator

Residential or Commercial Developments

To set up a safe and productive excavation plan for building in an already developed area, project engineers are legally obligated to survey the area and map out any utilities that are located underground. Using the UAT-600-EUR Receiver, with or without the Transmitter, surveyors can detect the location of individual electrical lines as well as gas, water, and other utilities. Using the receiver and the transmitter you can also accurately determine the depth of those utilities to 6 meters.

Highway Projects

Before highways are designed and built, engineers need to know where any utilities are buried. The UAT-600-EUR provides an accurate picture of what pipes and cables are underground and how deep they are. This helps reduce the number of test holes that need to be dug, thus saving time and costs, and reducing risk.

Cabling Installation Conduction Monitoring

Ground faults are a common problem with electrical cables. Using the optional Beha-Amprobe AF-600-EUR A-Frame Ground Fault Locator with a UAT-600-EUR Series Transmitter, surveyors can pinpoint leakage points in seconds. Just set up the UAT-600-EUR Transmitter to apply a fault find signal to the utility under test using induction, the Signal Clamp, or direct test lead connection modes. The AF-600-EUR A-Frame receives the signal and identifies the location of the fault. The AF-600-EUR will pinpoint where a cable metal conductor (either a sheath or a metallic conductor of the wire) touches the ground and can also detect other ground faults such as pipeline coating defects.

Accurately and Safely Pinpoint Underground Utilities Before you Dig

Beha-Amprobe knows there are many electrical safety challenges associated with outdoor maintenance and construction. With the UAT-600-EUR Series, hitting underground utilities won't be one of them. Now you can confidently pinpoint the location of any utility, energized or de-energized, buried up to 30 meters deep. And with a CAT IV 600 V rating, your time and safety are never compromised.

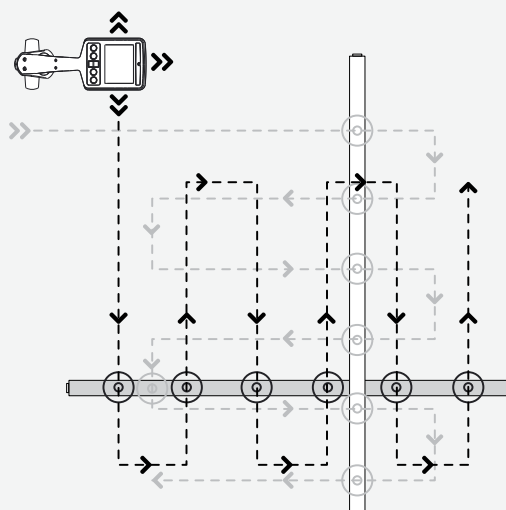
Visit beha-amprobe.com for more information about the UAT-600-EUR Series.

Get to work fast!

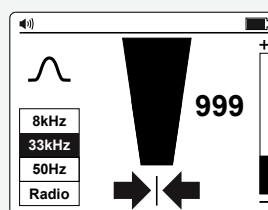
The UAT-600-EUR underground utilities locator can save you time in multiple ways. First, it's easy to learn to use. Just a few minutes of practice and you'll be ready to start locating utilities. It also is extremely fast to use.

You can refer to the [user manual](#) and [online videos](#) for helpful tips on how to use the UAT-600-EUR, but here are some general techniques that can help you get the most from your UAT-600-EUR Receiver:

1. **Collect as much information as possible about the environment.** Review field plans, utility maps, electrical features, valves or hydrants, surface irregularities, etc.
2. **Define a virtual surface perimeter where you believe the utilities are buried.**
3. **Turn on the Receiver and set it to maximum sensitivity.**
4. **Keeping the Receiver vertical** at a slight angle to the ground, walk across the perimeter in a grid pattern. (see diagram below)
5. **If the meter reading increases,** move the Receiver forward, backward, and left to right to detect the maximum signal.
6. **Once you find the utility at the maximum level (999),** adjust the sensitivity down to improve accuracy. When you see two arrows pointing horizontally to each other, you are directly over the line and in alignment with the cable. (see diagram below)
7. **Follow the path of the cable,** moving the Receiver as needed to stay in alignment with maximum signal strength.



(4) Walk across the perimeter in a grid pattern



(6) When you see two arrows pointing horizontally to each other, you are directly over the line and in alignment with the cable.