



8873^{v3} Pathfinder Locator User Manual

Attention rental customers!

get used to using the cable locator by laying an unplugged extension cord out straight. Hook the transmitter up to the cord and practice using the locator on the extension cord. You can learn how the locator is going to react while seeing the cord. You will remove the guesswork as to how to use the locator while not being able to see what you are trying to locate!

Introduction Congratulations on the purchase of your new **8873 Pathfinder** Locator. The **8873** Locator is specially designed to detect sondes and camera systems, and the unit is capable of detecting buried power cables, CATV cables, gas and water pipes, sewer lines, telephone cables, fiber optic cables with sheath.

For SONDE LOCATING & CAMERA HEAD LOCATING a signal is generated by the sonde or camera head and the receiver detects the signal giving the user proximity cues to determine its location.

The TRANSMITTER emits a signal that is conducted or coupled to a conductor. The RECEIVER detects the signal. You can locate the relative position of the buried conductor by following the tracing signal.

WARNING



Electric shock hazard:

- Tool is designed to detect electromagnetic field emitted from Camera Sondes and buried metallic utilities. **There are buried cables, pipes, and utilities this instrument CANNOT detect.**
 - LOCATING is not an exact science. **The only certain way to be sure of the existence, location, or depth of buried utilities is to carefully expose (dig up) the utility.**
 - **De-energize any circuits in or around the work area.**
 - Do not expose tool to rain or moisture.
 - Use tool only for intended purpose as described in this manual
- Failure to observe these warnings could result in severe injury or death.**

DISCLAIMER OF LIABILITY

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8873 Receiver Controls and Indicators

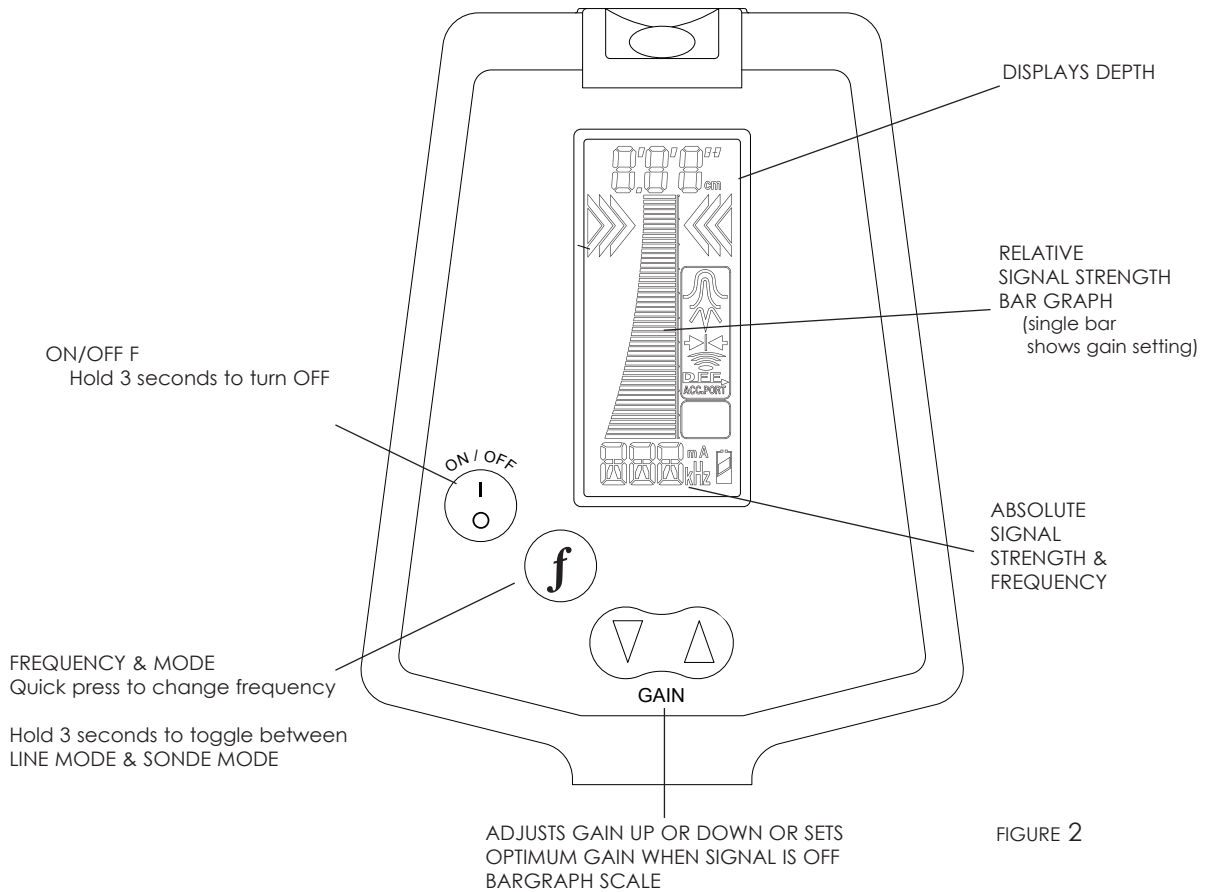


FIGURE 2

ON/OFF

Press the ON/OFF button to turn the RECEIVER on.

Note: Unit will automatically shut off if no keys are pressed within a 10 minute period.

FREQUENCY & MODE Button

The unit may be configured (SEE PAGE 3) to the following LINE MODE FREQUENCIES: PASSIVE RF, 8kHz, 82kHz

GAIN Button (Up or Down)

Used to adjust the gain level for the receiver. When the GAIN button is pressed, the RECEIVER will adjust the gain up or down. If the bar graph is off scale, pressing the GAIN up or down key will automatically adjust to 85% on the scale display.

Absolute Signal Strength

The **8873** Locator RECEIVER provides the operator with a direct measurement of the RECEIVER's signal strength. The measurement is displayed with three numerical digits (ex: **485**) located at the bottom of the LCD display. The measurement range is from -100 to 999 indicating a very weak signal (-050) to a very strong signal (999). Absolute Signal Strength is independent of the GAIN setting or meter reading. It gives the operator information about the actual amount of signal being radiated from the conductor and received by the RECEIVER.

Measuring Absolute Signal Strength at any time is done by reading the number at the top of the LCD display. The Absolute Signal Strength is displayed even when the meter reading is off scale (too high or too low).

Gain Change Indication

The GAIN up and down buttons are used to increase and decrease the gain in small amounts. If the meter reading is very low, pressing the GAIN up button will center the meter reading to mid-scale. Likewise, if the meter reading is very high, pressing the GAIN down button will center the meter reading to mid-scale.

Digital Depth Estimate

The **8873** Locator estimates the depth automatically. The depth is displayed at the top of the LCD display in feet or inches. Digital depth is useful in quickly determining the depth of the conductor during path locating.

To change the Depth Measurement from SONDE to LINE, hold the Frequency Key for three seconds and the next setting will appear.

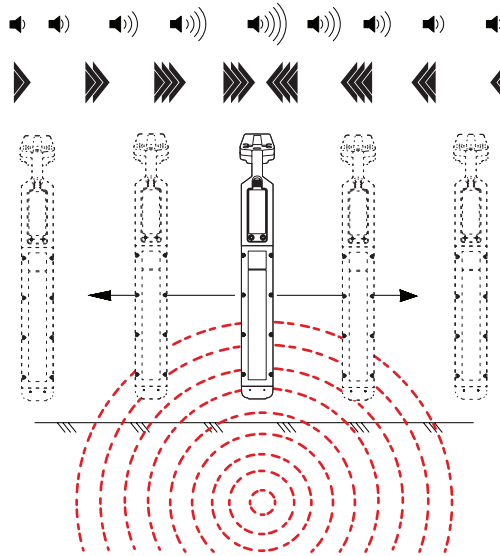
Caution must be exercised when using the digital depth feature, as tilted magnetic fields and adjacent conductors can significantly influence this measurement. The operator should periodically check for adjacent conductors and tilted magnetic fields when taking push button depth readings.

Low Battery

The **8873** Locator will indicate low battery condition by displaying low battery icon at the bottom right of the LCD screen. (SEE FIGURE 2)

LOCATING MODE - SIMULTANEOUS PEAK & NULL

In the line locate mode the unit will operate the audio, the signal strength and the graph in a peak function, while also displaying line direction indicators (operating on null antenna). When the RECEIVER is directly above the cable or pipe, a PEAK (Highest graph reading and highest audio tone) will occur. When moving the RECEIVER to left or right of the PEAK point, the graph reading will decrease. When the RECEIVER is moved beyond the PEAK, the meter reading will begin to fade. The 3 digit signal strength reading will read the highest when directly over the target conductor.



Trace the path by walking away from the TRANSMITTER at a moderate pace. Move the RECEIVER to the left and right while walking, following the indications.

As you trace the path, the meter reading may slowly fade as you move away from the TRANSMITTER. Press and release the GAIN buttons as needed to compensate for changes in level (higher or lower). One of the following may occur:

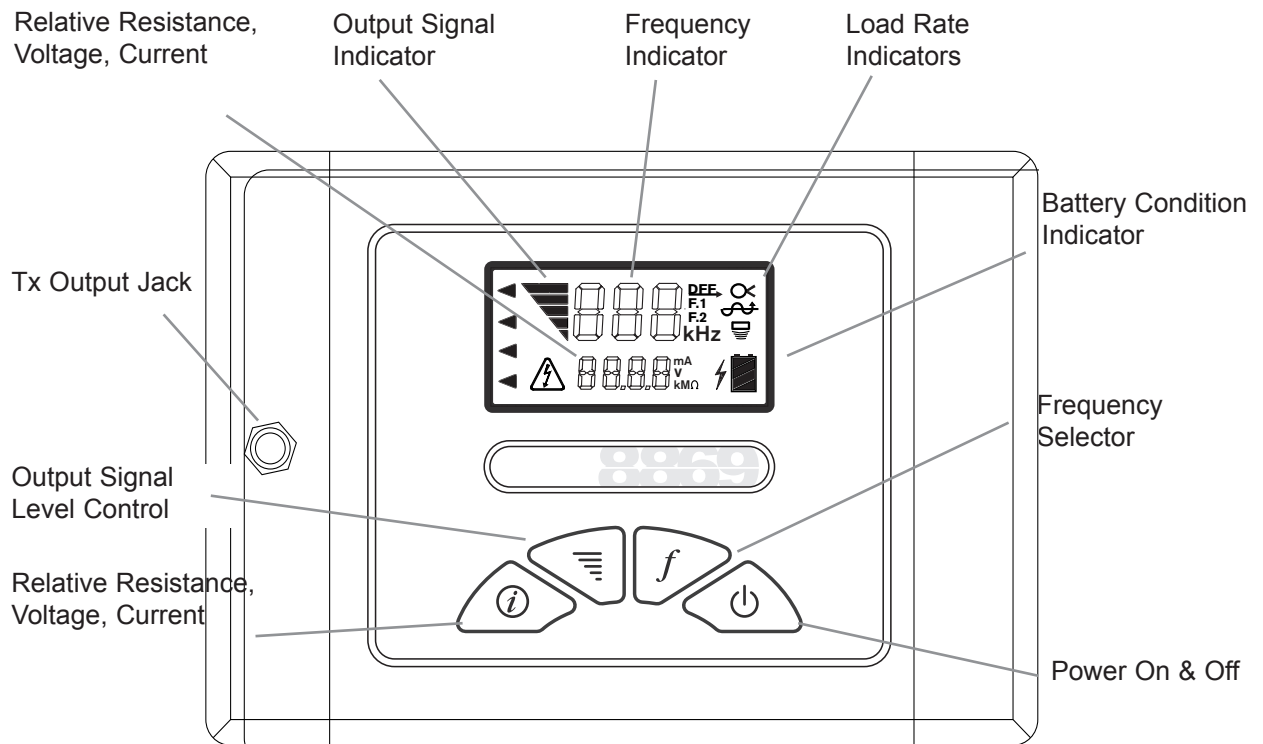
- a) a junction where the signal divides and goes several directions.
- b) a break in the cable or shield.
- c) a change in the depth of the cable or pipe.
- d) an insulated pipe fitting.
- e) a slack loop of cable.

If you can no longer trace the path, even with the GAIN set to maximum, connect the TRANSMITTER to the far end of the path and trace back to the point where you lost the signal.

Mark the straight sections of the path every few feet. Mark sharp curves, loops, and cable bundles every few inches. Sharp changes in the path cause the RECEIVER PEAK and NULL indications to behave differently than when tracing a straight path. Practice on the path that you know has turns and laterals in it. This will help you to recognize the conditions within the field.

8873 Pathfinder Locator Series

Transmitter Controls and Indicators



TX OUTPUT JACK

The RED/BLACK CORD, Coupler and FLEXICOUPLER connects here to create a direct connect or coupler inductive circuit on the buried utility.

TX ON

Frequency and other LCD segments visible indicates unit is on.

FREQUENCY SELECTOR

Selects frequencies by toggling through the available frequencies. The unit may be configured (SEE PAGE 3) to the following LINE MODE FREQUENCIES:
512Hz, 640Hz, 8kHz, 9kHz, 33kHz, 65kHz, 82kHz, 200kHz, 478kHz

LOAD RATE INDICATOR

The Load Rate Indicator symbol flashes to indicate signal transmission via coupler induction or direct connection.

OUTPUT SIGNAL LEVEL CONTROL

The OUTPUT SIGNAL LEVEL CONTROL adjusts the power output from the TRANSMITTER.

RELATIVE RESISTANCE, VOLTAGE AND CURRENT METER

The transmitter can display the resistance, voltage and amperage of the transmitted frequency. NOTE: This is a relative measurement based on the feedback from the transmitted signal.

Direct Connection



CAUTION
DO NOT CONNECT TO LIVE OR
ENERGIZED POWER CABLES

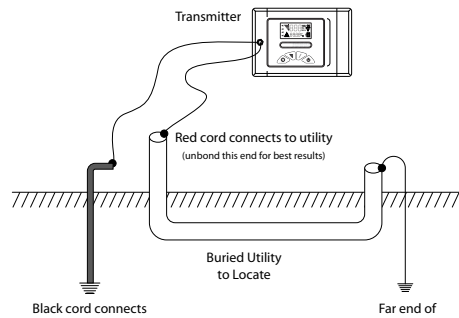


CAUTION
ALWAYS TURN OFF TRANSMITTER BEFORE
CONNECTING AND DISCONNECTING TEST LEADS

Direct Connection is the most reliable method of signal application. This method is relatively free of interference. The greatest amount of signal strength can be achieved by this method. All frequencies may be used. The far end of the utility must be grounded.

Connect the RED TEST CORD to an existing ground point or an exposed metallic section of the utility. Place the GROUND ROD approximately 10 feet from this point, at an angle of 90° to the buried cable or pipe. Push the GROUND ROD into the ground 8 to 10 inches. Connect the BLACK TEST CORD to the GROUND ROD.

Plug the RED/BLACK TEST CORD into the TX OUTPUT JACK. Select the FREQUENCY. The Power Output Indicator, Load Rate Indicator and the Frequency will be displayed.

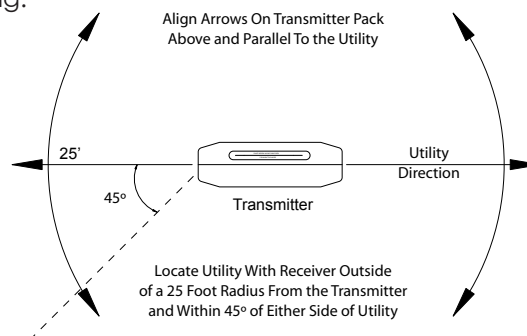


Inductive Connection

This method is convenient to use, and services are not interrupted. No test cords or connections are needed. The cable or pipe must have good insulation or non-conductive coating, or the operating range will be short.

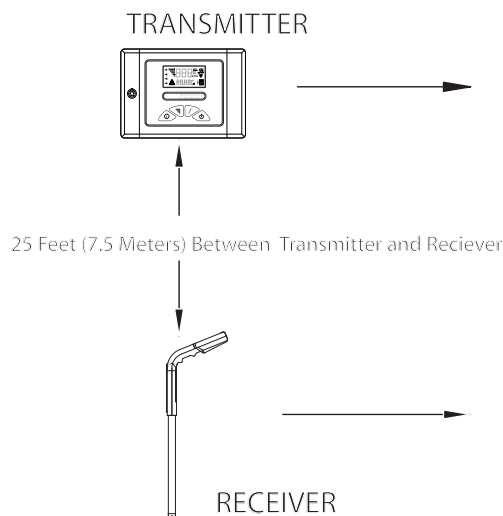
Turn the TRANSMITTER ON. Select 82kHz Frequency. Place TRANSMITTER ON ITS SIDE as close as possible to the path of the cable or pipe. Align the ARROWS on the SIDE OF THE TRANSMITTER in line with the cable or pipe. First, locate the broad TRANSMITTER Null, then move toward the expected cable path while looking for the signal carried by the cable.

Start tracing the path with the RECEIVER 25 feet from the TRANSMITTER. Search in the 90° zone as shown above. Locate the cable or pipe, and follow the path. If the signal becomes weak, move the TRANSMITTER to a point 25 feet behind the last strong signal, and continue searching.



Blind Search

The Blind Search locating techniques is used if the operator is not aware if a buried utility exists. Two people are needed for this technique. The TRANSMITTER and the RECEIVER are Held 25 feet away from each other. Each operator walks at the same speed keeping a distance of 25 feet from each other. When the receiver gives an audio response, then a buried utility is present between the RECEIVER and the TRANSMITTER.



Selecting the Tracing Signal

The choice of MID-RANGE 8kHz, HIGH 82kHz frequency is dependent on the conditions of the locate.

The frequencies each have their advantages. It is recommended to begin by using the frequencies, and continue as long as you are confident in the results. If the signal is very weak try to adjust the connection or grounding. If there is no improvement in signal then try 8 kHz. Repeat adjustments of ground and connection point again before switching to 82kHz.

Lower frequency signal is usually preferred to the high frequency signal, because it is much less susceptible to locating errors caused by nearby cables or pipes. The low frequency locating range is also much longer than the high frequency. The low frequency signal will not travel well through disconnected shield bonds or insulated pipe bushing.

Mid range frequencies takes the best of both high and low frequency. The mid range frequency is not very susceptible to bleed off or coupling, but it can jump impedance on the utility better than the low frequencies. It is still best to use low, but mid range frequencies are some of the most common frequencies used to locate.

The high frequency signal is also better for "jumping" disconnected shield bonds or grounds, or tracing signal may indicate one of these characteristics. The locating range is quite short for the high frequency signal so the TRANSMITTER must be repositioned more often during the tracing operation. This FREQUENCY is also useful for applying a signal using transmitter induction and for coupler application using the FLEXICOUPLER OR THE HARD COUPLER.

8873 Locator Specifications

Receiver

Operating Frequency	PASSIVE 50Hz & 60Hz, PASSIVE RF, 512Hz, 640Hz, 8kHz, 9kHz, 33kHz, 65kHz, 82kHz, 200kHz, 478kHz
Antenna Mode	Peak & Null (horizontal & vertical coil)
Audio Indication	Variable pitch audio
Operating Temperature	-4°F to 133° (-20°C to +55°C)
Battery Type	6 - "C" Duracell alkaline batteries
Battery Life	
Continuous	40 hours
Intermittent	82 hours (10 minute auto shut off)
Dimensions	30.3" x 3.75" x 9.4"
Weight	3 pounds
Signal Strength	Analog LCD bar graph Absolute Signal Strength readout 0 - 999
Gain Control	Up/down button for automatic centering and manual control
Dynamic Range	126 dB
Depth Measurement	
Automatic	Auto 3 digit readout to 30 feet
Manual	Bubble level triangulation for verification of automatic readout in congested environments

8873 Pathfinder Specifications

Transmitter

Operating Frequency	PASSIVE RF, 8kHz, 82kHz.
Operating Temperature	-4°F to 133° (-20°C to +55°C)
Hook-up Method	Direct Connection Transmitter Induction
Load Matching	automatic from 5 Ω to 30,000 Ω
Battery Type	8 - "C" Duracell alkaline batteries
Battery Life	greater than 30 hours*
Dimensions	8.4" x 5.57" x 2.6"
Weight	2.2 lbs (0.99kg)

*depending on load, frequency and power setting

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