

# Wand Signal Receiver



Part 17-100R  
WAND SIGNAL RECEIVER

Part 17-100RTK  
WAND SIGNAL RECEIVER WITH TRANSMITTER



Part 17-500T  
TRANSMITTER

### General Information

Jameson's Wand Locator is specially designed to detect buried utilities. This device may detect buried power cables, CATV cables, gas and water pipes, sewer lines, telephone cables, fiber optic cables with sheath, sondes and inspection camera transmitters. The Transmitter emits a signal. The Receiver detects the signal. You can locate the relative position of the buried utility, sonde or camera by following the tracing signal.

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## WARNING

### Electric Shock Hazard



- Tool is designed to detect electromagnetic field emitted from camera sondes, buried metallic utilities and Duct Hunters™. 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

Jameson shall not be liable to distributor, reseller or any other person for any incidental, indirect, special, exemplary or consequential damages, or injury of any type whatsoever and caused directly or indirectly by products sold or supplied by Jameson.

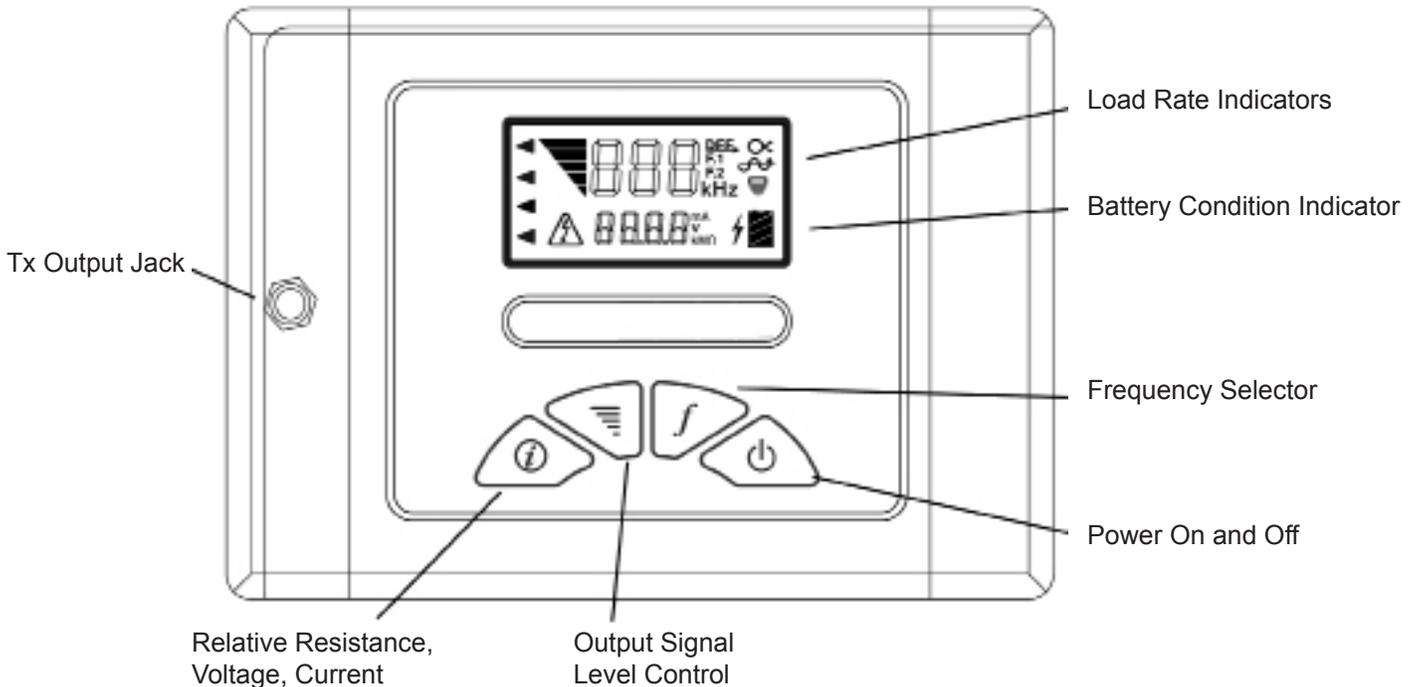
### Warranty

Jameson products carry a warranty against any defect in material and workmanship for a period of one year from date of shipment unless failure is due to misuse or improper application. Jameson shall in no event be responsible or liable for modifications, alterations, misapplications or repairs made to its products by purchaser or others. This warranty is limited to repair or replacement of the product and does not include reimbursement for shipping or other expenses incurred. Jameson disclaims any other express or implied warranty.

## Prepare for Use

Unpack Wand Cable & Pipe Locator . Make sure there is no shipping damage and all parts are included. Locate battery compartment on back of Receiver "head" and open by unscrewing cap. Install six "AA" batteries as marked.

## Transmitter Controls and Indicators



### TX OUTPUT JACK

The Red/Black Cord, Coupler and Flexicoupler connects here to create a circuit on the buried utility.

### FREQUENCY SELECTOR

The 82 kHz reading indicates that the 82 kHz frequency is in use. The 82 kHz frequency is capable of locating cables and pipes and is capable of jumping disconnected shield bonds or grounds. The 82 kHz may bleed off onto non-target conductors within close proximity. The 512 Hz reading indicates the 512 Hz frequency is in use. The 512 Hz frequency can travel greater distances, but may generate a weaker signal. The Wand Receiver is only capable of detecting either 82 kHz or 512 Hz.

### LOAD INDICATOR

The Load Rate Indicator symbol flashes to indicate signal transmission and the output circuit impedance. When the indicator blinks 4 times per second, it is indicating a nearly short circuit. When the indicator blinks 1 time every 3 seconds, it is indicating a nearly open circuit.

### OUTPUT SIGNAL LEVEL CONTROL

The OUTPUT SIGNAL LEVEL CONTROL adjusts the power output from the Transmitter. The three selections include: LOW, MEDIUM, HIGH.



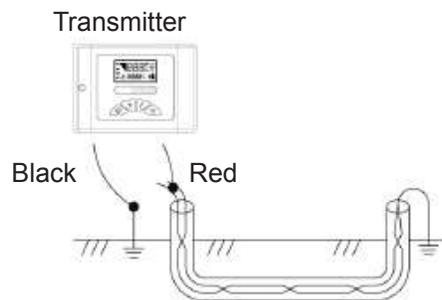
## WARNING

DO NOT CONNECT TO LIVE POWER OR ENERGIZED POWER CABLES

### Direct Connection

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. Low, mid and high frequency may be used. The far end of the utility must be grounded.

Connect Red Test cord to an existing ground point or an exposed metallic section of the utility. Place Ground Rod approximately 10 feet from this point, at an angle of 90° to the buried cable or pipe. Push Ground Rod into ground 8 to 10 inches. Connect Black Test Cord to Ground Rod. Plug Red/Black Test Cord into TX Output Jack. Press Frequency Button for 82 kHz or 512 Hz. The Power Output Indicator and the Frequency light of the chosen frequency will light up.



### 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.

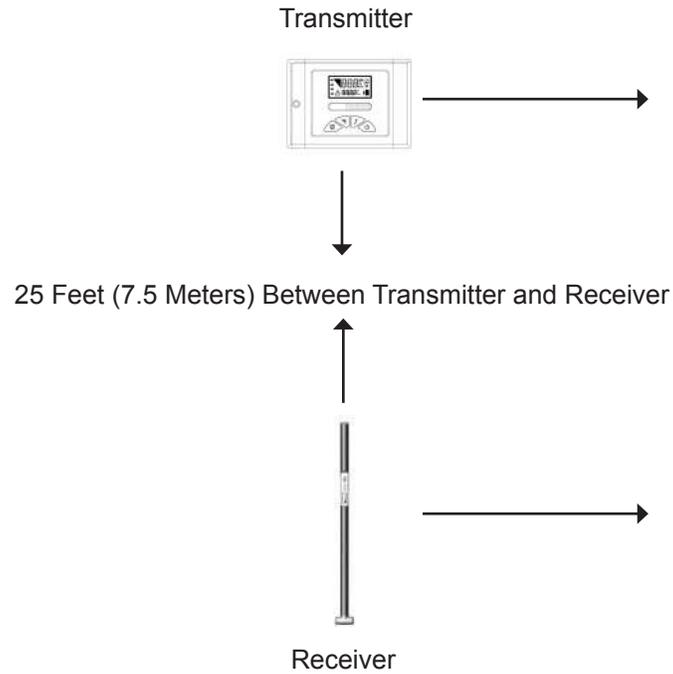
Turn Transmitter ON. Press 82 kHz button. Place Transmitter on its side as close as possible to path of cable or pipe. Align arrows on side of transmitter in line with cable or pipe. First, locate broad Transmitter Null, then move toward expected cable path while looking for signal carried by cable.

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

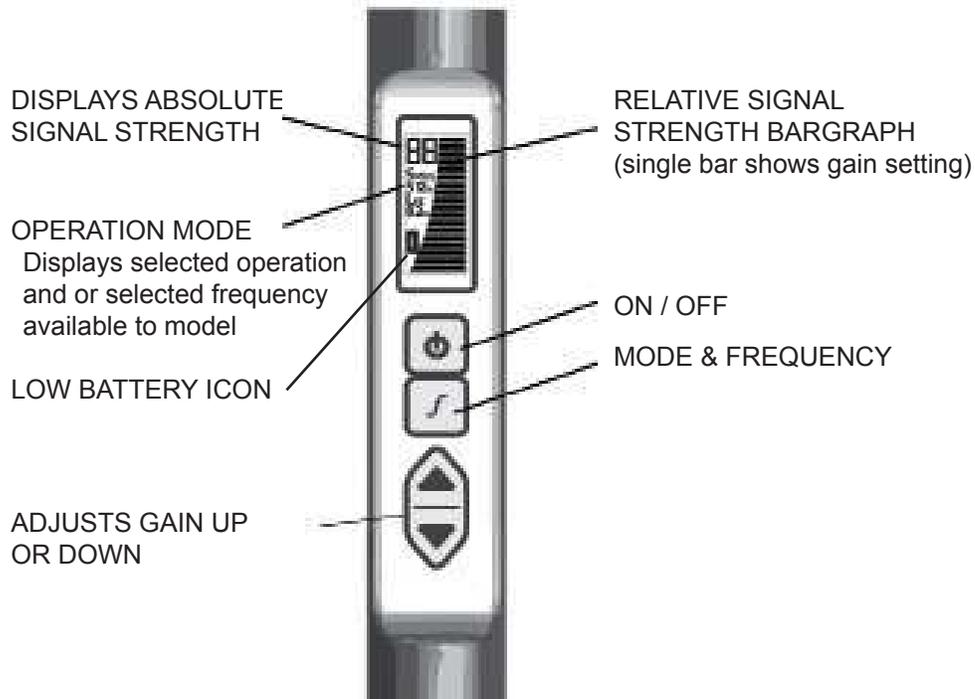


## Blind Search

The Blind Search locating technique is used if the operator is not aware if a buried utility exists. Two people are needed for this technique. The Transmitter and 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, a buried utility is present between the Receiver and the Transmitter.



## Receiver Controls and Indicators



### **ON/OFF Button**

The unit will load settings from previous usage.  
Note: Automatic shut off after 10 minute of no use.

### **FREQUENCY & MODE Button**

Toggles through available frequencies and models (model specific).  
Wand - 82 kHz Line Mode & 512Hz Sonde Mode

### **GAIN Button (Up or Down)**

Adjusts the gain up or down. Gain level displayed as solid or missing bar on bar graph.

## **Absolute Signal Strength**

The Locator Receiver provides the operator with a direct measurement of the Receiver's signal strength. The measurement is displayed with two numerical digits (ex: 85) located at the top of the LCD display. The measurement range is 0 to 99 indicating a very weak signal (0) to a very strong signal (99). 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.

The Absolute Signal Strength will not be displayed if the gain is too high or too low. Adjust Gain to move meter reading to mid-scale. The numerical display will change from '--' to a valid measurement.

## **Gain Change Indication**

The GAIN up and down buttons are used to increase and decrease gain sensitivity in small amounts.

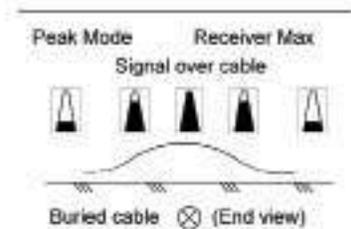
## **Low Battery**

The Locator will indicate low battery condition by displaying low battery icon on the LCD screen.

## Locating the Cable or Pipe

Make sure Transmitter is connected and in the ON position. Move approximately 15 feet (4.5 meters) away from Transmitter along the path. (Move about 25 feet (7.5 meters) for the Inductive search mode.)

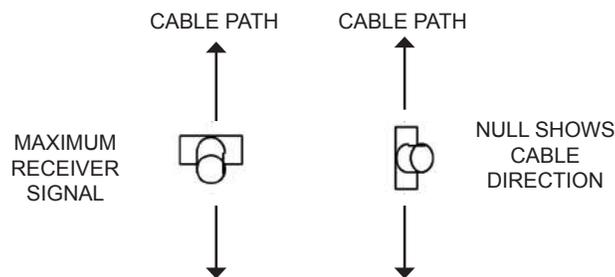
Hold Receiver so you can see LCD bar graph and controls easily. Make sure Receiver and Transmitter Frequency are set for the same Frequency, 82 kHz. Or, select Sonde locating mode, 512Hz, which does not require the transmitter. Note: The Wand is capable of detecting a 512 Hz signal from the transmitter, although it is optimized for use with a 512 Hz sonde.



## Peak Mode Locating

Keep the Receiver in a vertical position. Move Receiver left to right across the path. When Receiver is directly above the cable or pipe, rotate Receiver for a maximum signal. As you move Receiver away from cable path, the meter reading (and audio frequency response) will drop off.

If you rotate Receiver while over the cable, a sharp Null will identify the cable's direction. It is aligned with the flat side of the Receiver.



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

As you trace the path, the Peak 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 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 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.

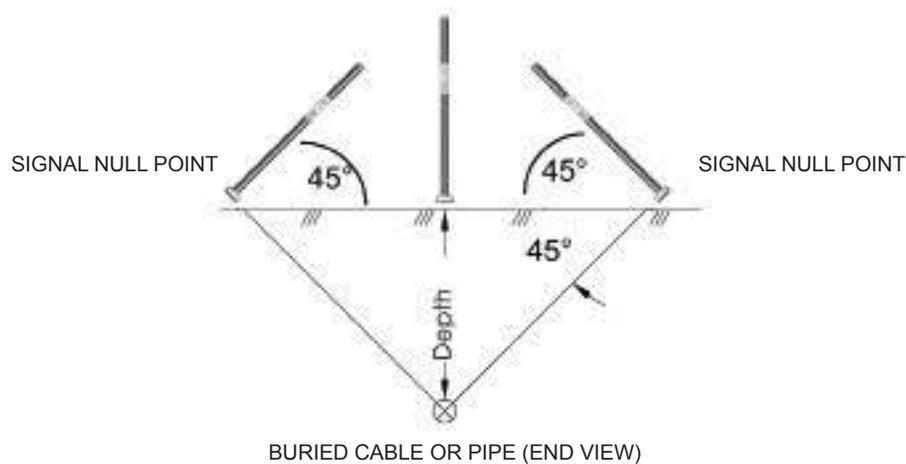
Practice on path you know has turns and laterals in it. This will help you recognize conditions within the field.

## Depth Measurement 45° Angle Method

Move to location you want to measure depth. Stay at least 15 feet away from Transmitter. Move Receiver left to right across path until cable is located. Mark path on the ground as precisely as possible. Pull Receiver away from cable path (at 90° to cable path) keeping the unit at 45°. When receiver indicates a Null reading, mark location of the receiver's foot. The distance between the Receiver and the cable path is the depth of the pipe or cable.

A false depth reading may be caused by nearby buried metallic objects, such as a second cable, pipe, sewer, fence and railroad tracks or from signal conducting on multiple lines. Confirm depth measurement by repeating the above steps on the opposite side of the pipe or cable.

A variance greater than 5 inches in depth measurement may indicate a skewed electromagnetic field caused by the presence of additional buried cables, pipes or other objects. Note: This method is only recommended when tracing at 82 kHz.



## Tilted Magnetic Field Identification

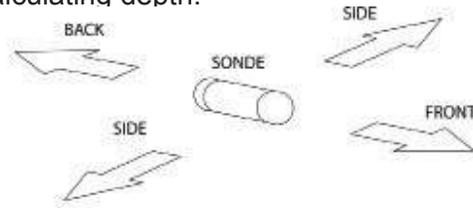
When adjacent cables or pipes are present, they will sometimes create locating errors. Some of the Transmitter signal is picked up by adjacent conductors and is redirected so it combines with the original signal. The result is a Tilted Magnetic Field. This is often the reason numeric depth readouts are sometimes created in error.

The operator can verify accuracy of path locate by performing the 45° Angle Method locate on both sides of the cable path. If the right and left side depth readings agree to within 5 inches, the path locate is accurate. If the two depth readings do not agree, then dig with care. A closer locate would be halfway between the two outside depth locate marks.

This is an important technique that should be used to ensure the most accurate location possible.

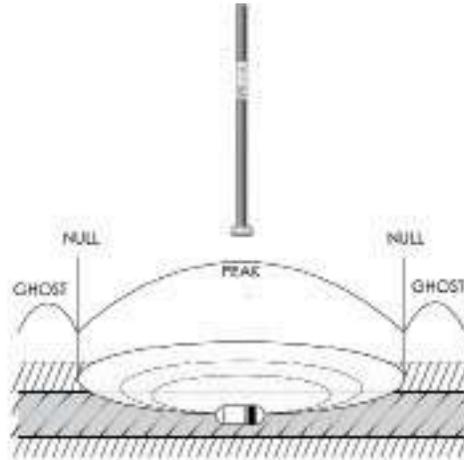
## Locating a Sonde or Camera Head Using the Wand

Before you begin, choose a Sonde or Camera Head that matches the same frequency as the Receiver. You need a Sonde with a frequency of 512kHz to use with the Wand Receiver. The key to Sonde locating success is practice and patience. Before going out on your first locate, it is a good idea to take the Receiver and Sonde out and try locating the Sonde and calculating depth.



## Locating a Sonde

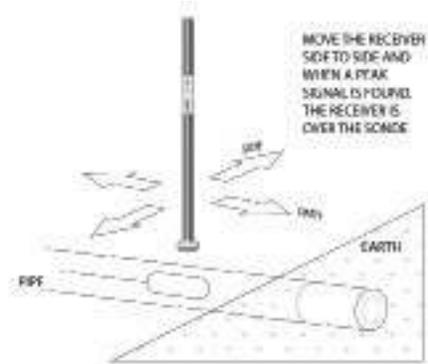
Hold Receiver antenna directly above and in line with Sonde (shown below) with Receiver sensitivity adjusted for a meter reading within scale. The radiation pattern of the Sonde is shown below. The peak signal is when Receiver is held directly over the Sonde with the antenna in line with the Sonde. Both Ghost signals can be located behind and in front of the Sonde. By locating ghost signals, the user confirms the accuracy of the locate.



Start by following suspected path of pipe and use Locator to locate Sonde. Stop locating when PEAK reading is found. Then rotate Receiver as shown in figure below. When pivoting Receiver, do not change vertical position. The Receiver will indicate a peak when Receiver antenna is in line with Sonde.



Now move Receiver side to side (across path of pipe) as shown below. When PEAK is found, Receiver is directly over Sonde. Mark this location. Next, check for ghost signals in front of and in back of Sonde to confirm location.



## Wand Specifications

### Receiver

Operating Frequency	82 kHz • 512 Hz
Battery Type	6 - "AA" alkaline batteries
Battery Life Continuous Intermittent	40 hours 82 hours (10 minute auto shut off)
Dimensions	Tube 33.0" x 1.38" Tee 1.38" X 3.25"
Weight	1.62 pounds (0.734 kg)
Gain Control	up/down button for manual control
Dynamic Range	126 dB
Depth Measurement	Manual Triangulation



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