830R/T

Operator's Manual

N 16819

Issue 1.0

053-2827

ORIGINAL INSTRUCTION

Overview

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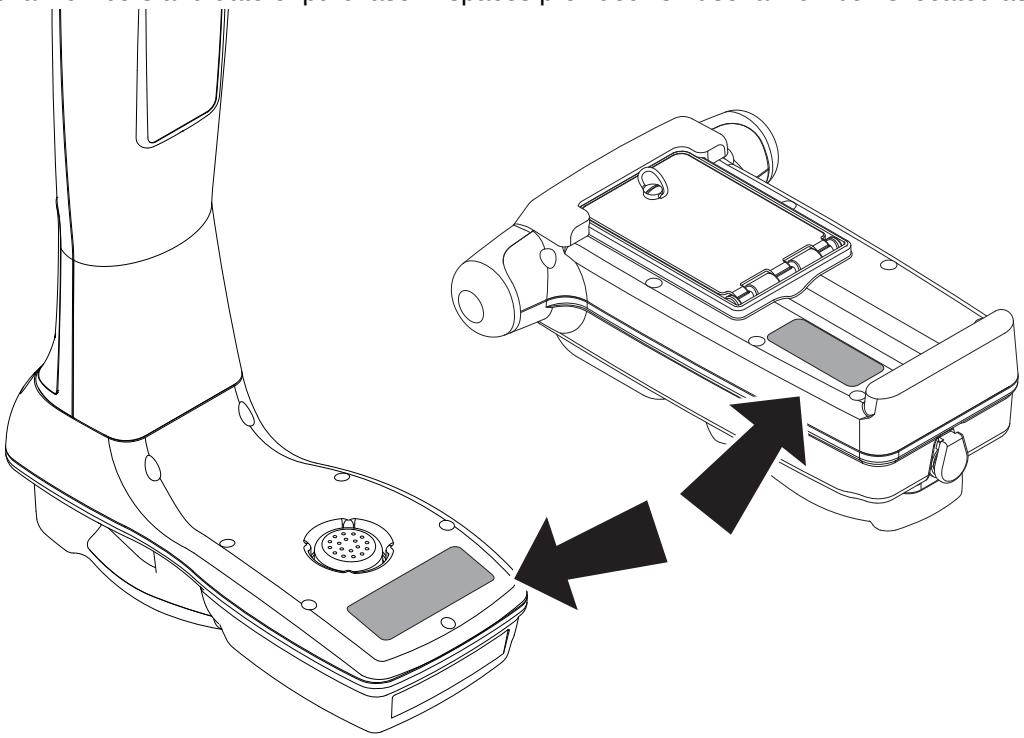
Serial Number Location

Record serial numbers and date of purchase in spaces provided. Unit serial number is located as shown.



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Item	
date of purchase:	
receiver serial number:	
transmitter serial number:	
accessory model & serial number:	
accessory model & serial number:	

Intended Use

The 830R receiver is designed to locate buried pipes and cables at an 83.0775 kHz frequency. Optional passive power and cathodic protection frequencies (60, 120, and 180 Hz in North America; 50, 100, and 150 Hz in other locations) are available.

The 830T transmitter places a single 83.0775 kHz signal on a target cable to be detected by an 830R receiver. The transmitter places a signal on the cable through either direct connection, inductive clamping, or induction (broadcast) modes.

The system is designed for operation in temperatures typically experienced in earth moving and construction work environments. Use in any other way is considered contrary to the intended use. The 830R/T system should be operated only by persons familiar with its particular characteristics and acquainted with the relevant safety procedures. The system should be serviced only by Subsite® Electronics repair centers.

About This Manual

This manual contains information for the proper use of this equipment. Cross references such as "See page 50" will direct you to detailed procedures.

Bulleted Lists

Bulleted lists provide helpful or important information or contain procedures that do not have to be performed in a specific order.

Numbered Lists

Numbered lists contain illustration callouts or list steps that must be performed in order.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by **The Charles Machine Works, Inc.** could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operator's manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IEC Safety Definitions

Hazardous voltage--electrical shock or equipment damage can result if transmitter is connected to live cable. Have qualified utility personnel disconnect both ends of cable before working.

IEC protection class II or double insulated electrical device is one which has been designed in such a way that it does not require a safety connection to electrical ground. In a device of this class, no single failure can result in dangerous voltage becoming exposed so that it might cause an electrical shock. This characteristic must be achieved without relying on a grounded metal casing.

Foreword

This manual is an important part of your equipment. It provides safety information and operation instructions to help you use and maintain your Subsite® Electronics equipment.

Read this manual before using your equipment. Keep it with the equipment at all times for future reference. If you sell your equipment, be sure to give this manual to the new owner.

If you need a replacement copy, contact your Ditch Witch® dealer. If you need assistance in locating a dealer, visit our website at **www.subsite.com**, email info@subsite.com or write to the following address:

Subsite Electronics
Attn: Product Support
1950 W. Fir
Perry, OK 73077
USA

The descriptions and specifications in this manual are subject to change without notice. The Charles Machine Works, Inc. reserves the right to improve equipment. Some product improvements may have taken place after this manual was published. For the latest information on Subsite Electronics equipment, see your Ditch Witch dealer.

Thank you for buying and using Subsite Electronics equipment.

830R/T
Operator's Manual

Issue number 1.0/OM-4/15
Part number 053-2827

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machine serial number, information about the type of work this machine is designed to perform, basic machine components, and how to use this manual

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Safety

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Guidelines

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- Contact your local One-Call (811 in USA) or the One-Call referral number (888-258-0808 in USA and Canada) to have underground utilities located before working. Also contact any utilities that do not participate in the One-Call service.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- Wear personal protective equipment.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins.
- Replace missing or damaged safety signs.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.
- Contact your equipment dealer if you have any question about operation, maintenance, or equipment use.

Safety Alert Classifications

These classifications and the icons defined on the following pages work together to alert you to situations which could be harmful to you, jobsite bystanders or your equipment. When you see these words and icons in the book or on the unit, carefully read and follow all instructions. YOUR SAFETY IS AT STAKE.

Watch for the three safety alert levels: **DANGER**, **WARNING** and **CAUTION**. Learn what each level means.

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

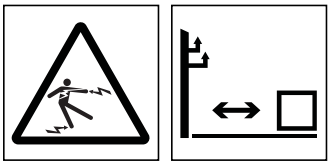
CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Watch for two other words: ***NOTICE*** and **IMPORTANT**.

NOTICE indicates information considered important, but not hazard-related (e.g., messages relating to property damage).

IMPORTANT can help you do a better job or make your job easier in some way.

Safety Alerts



DANGER Electric shock will cause death or serious injury. Stay away.

WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment. 274-050; 274-724 (2P)

WARNING Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.

WARNING Read operator's manual. Know how to use all controls. Your safety is at stake. 273-475

WARNING Moving traffic - hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.

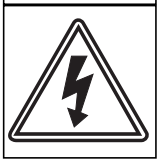
Safety Alert

Read and follow all safety precautions.

Do not operate equipment unless you have completed proper training and have read the operator's manual.

Check that equipment is in good condition and that test leads are clean and have no cracked insulation.

WARNING **HIGH VOLTAGE**. This device produces electric current that could cause death or serious injury. Electric shock may result if you touch the clips on the HV output cable. Use electrically insulating rubber gloves and proper procedures.



DANGER Electric shock or equipment damage can result if transmitter is connected to live cable. Have qualified utility personnel disconnect both ends of cable before working.

Turn off transmitter when connecting or moving ground probe.

Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

WARNING Explosion possible. Do not operate transmitter near explosive devices or blasting operations.

WARNING Battery cells inside may vent or rupture. Do not crush, do not heat or incinerate, do not short circuit, do not dismantle, do not immerse in any liquid. Observe charging instructions.

Controls

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830R Receiver

Controls

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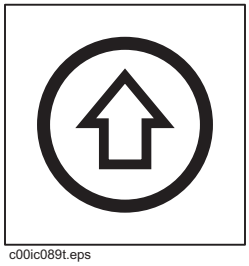
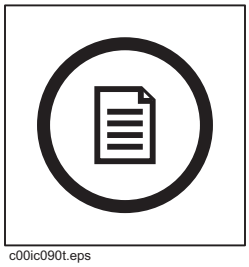
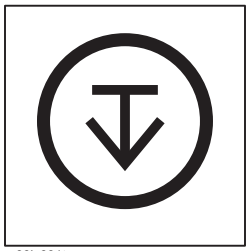
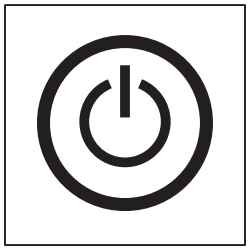
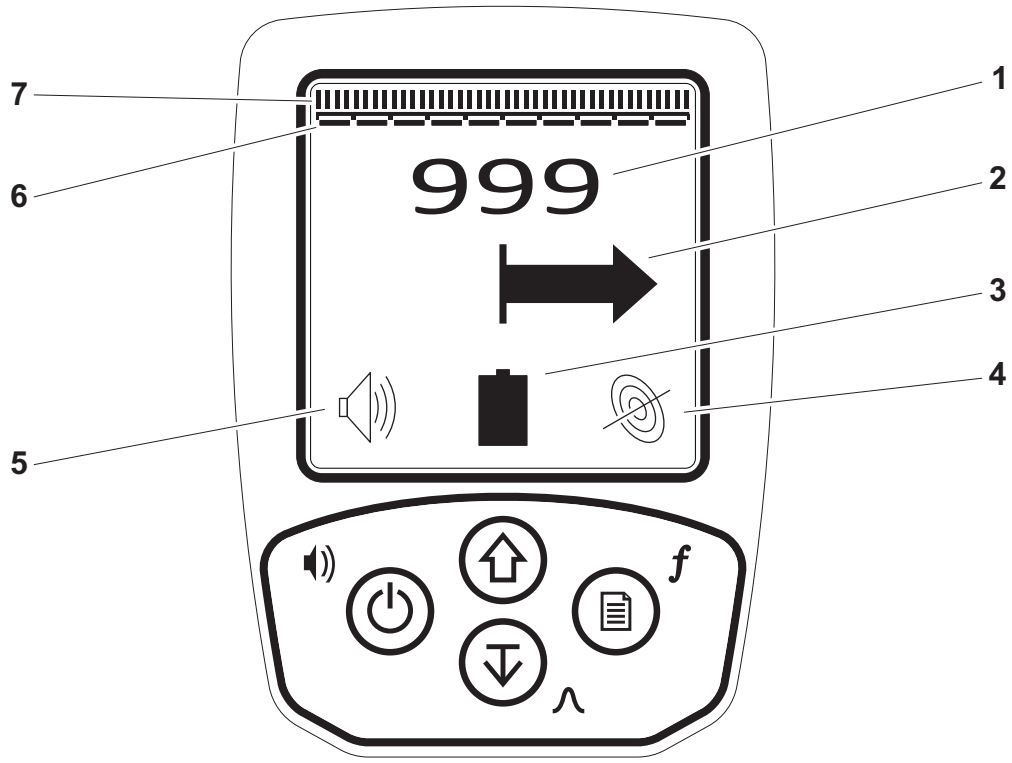
1. Up arrow
2. Menu/Frequency
3. Depth/Peak Verify/Down arrow
4. On/Off/Volume

Item	Description	Notes
1. Up Arrow  c00ic089t.eps	To scroll up in menu, press. To increase gain in optional power mode, press.	

Item	Description	Notes
2. Menu/Frequency  c00ic090t.eps	To enter menu, press and hold. To select a menu option, press. To change operating frequency (if optional power frequencies are installed), press.	 See "Menu" on page 22.
3. Depth/Peak Verify/ Down Arrow  c00ic091t.eps	To estimate depth of properly located signal source, press. To enter peak verify mode, press and hold. To scroll down in menu, press. To decrease gain in optional power mode, press.	
4. On/Off/Volume  c00ic092t.eps	To turn on, press. To turn off, press and hold. To change speaker volume, press. To cancel or back up in menu, press.	

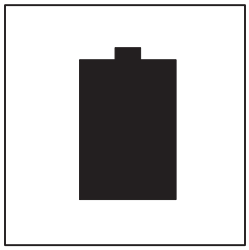
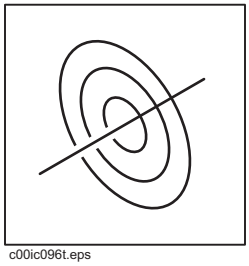
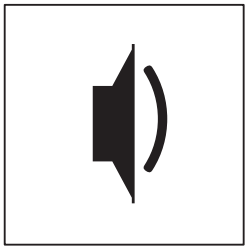
Display - Active (Left/Right) Mode



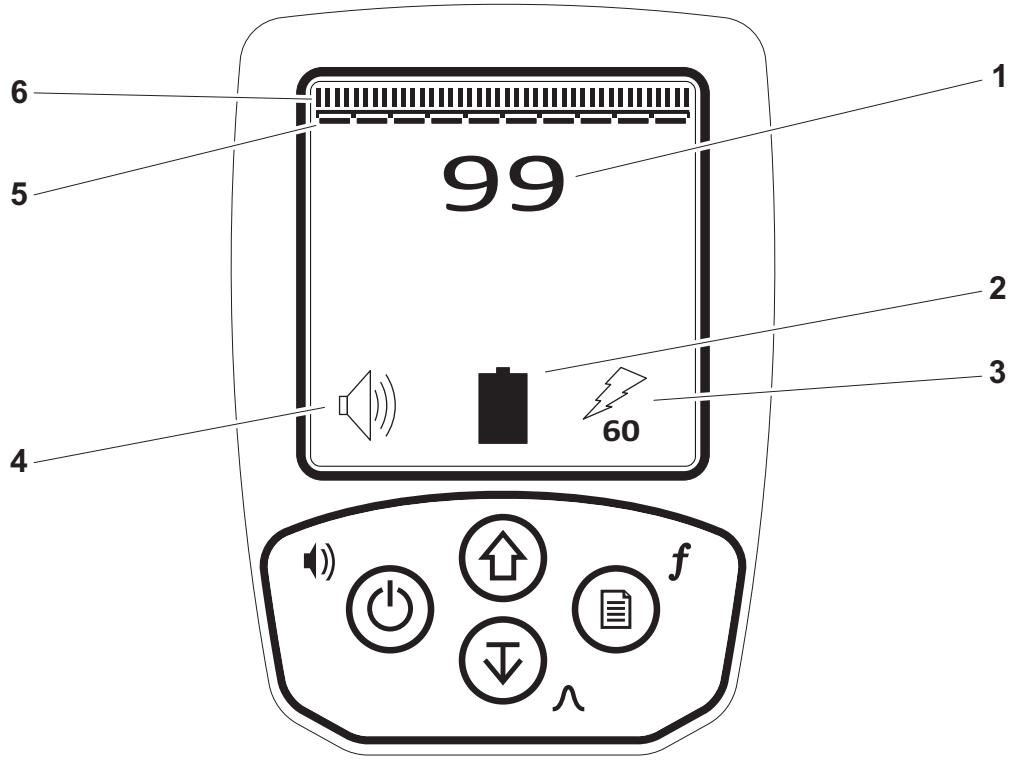
e16om001t.eps

1. Signal strength
2. Left/Right indicator
3. Battery level
4. Frequency indicator
5. Volume level
6. Gain indicator
7. Signal strength indicator

Item	Description	Notes
1. Signal Strength	Numerically displays the signal strength.	
2. Left/Right Arrow	Indicates the direction and relative distance to the line.	

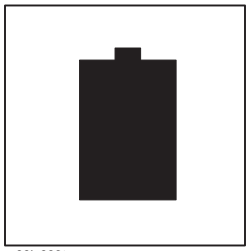
Item	Description	Notes
3. Battery Level  c00ic093t.eps	Indicates battery level. • Three segments indicates full battery power. • One segment indicates low power. • No segments and flashing outline indicates that batteries should be changed immediately.	
4. Frequency Indicator  c00ic096t.eps	Indicates unit is in active 83k (left/right) locating mode.	See "Mode" on page 37.
5. Volume Level  si0004h-d.cdr	Indicates volume level.	**IMPORTANT:** Lower volume to conserve battery life.
6. Gain Indicator	Graphically indicates gain level.	**IMPORTANT:** Gain increases to the right.
7. Signal Strength Indicator	Graphically indicates the signal strength level.	Range is 0-999.

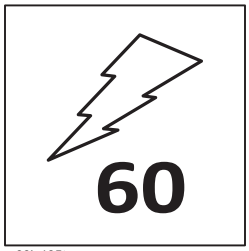
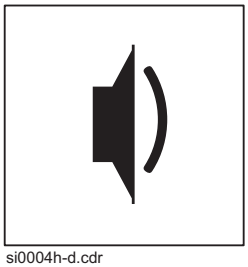
Display - Power Mode



e16om005t.eps

1. Signal strength
2. Battery indicator
3. Frequency indicator
4. Volume indicator
5. Gain indicator
6. Signal strength indicator

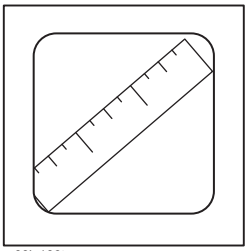
Item	Description	Notes
1. Signal Strength	Numerically displays the signal strength.	Range is 0-99.
2. Battery Level  c00ic093t.eps	Indicates battery level. • Three segments indicates full battery power. • One segment indicates low power. • No segments and flashing outline indicates that batteries should be changed immediately.	

Item	Description	Notes
3. Frequency Indicator  c00ic105t.eps	Indicates frequency when unit is locating in optional power (single peak) mode.	See "Mode" on page 37.
4. Volume Level  si0004h-d.cdr	Indicates volume level.	**IMPORTANT:** Lower volume to conserve battery life.
5. Gain Indicator	Graphically indicates gain level.	**IMPORTANT:** Gain increases to the right.
6. Signal Strength Indicator	Graphically indicates the signal strength level.	

Menu

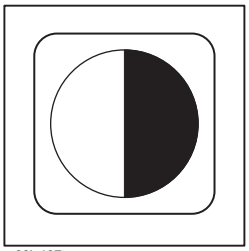
- Press and hold Menu key to enter menu.
- Use Up Arrow and Down Arrow keys to cycle through menu options. Press Menu key to select.
- Press On/Off key from menu screen to return to locating screen.

Units


c00ic106t.eps

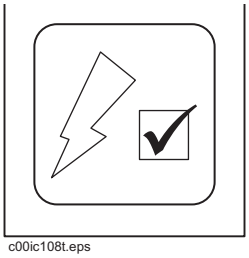
Cycle through depth measurement units with Up Arrow and Down Arrow keys. Press Menu key to select units and return to locating screen. Press On/Off key to return to the menu screen.

Contrast


c00ic107t.eps

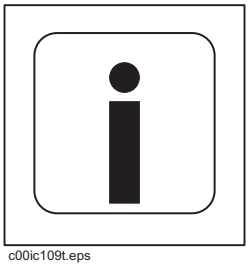
Adjust display contrast with Up Arrow and Down Arrow keys. Press Menu key to save change and return to locating screen or On/Off key to return to menu screen.

Power Setup


c00ic108t.eps

Select power frequencies for unit to cycle through in power mode with Up Arrow and Down Arrow keys. Press Menu key to check or uncheck highlighted frequency. Unit will skip unchecked frequencies when in power mode. Press On/Off key to return to menu screen without making changes.

Info


c00ic109t.eps

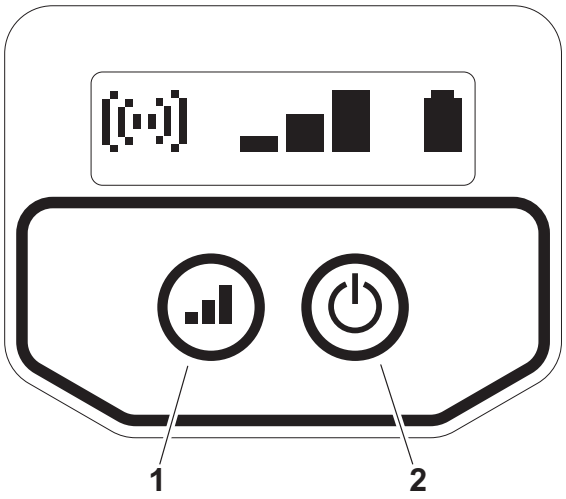
View system information. Press Up Arrow or Down Arrow keys to scroll through screens. Press On/Off key to return to menu screen.

Available Information

- serial number
- software part number and revision level
- date calibrated
- battery voltage
- total run time

830T Transmitter

Controls



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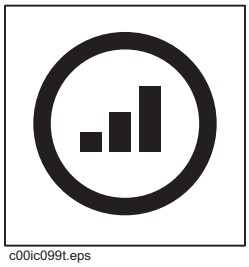
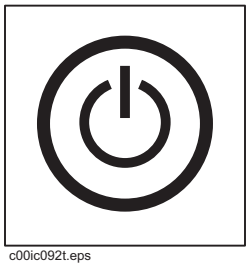
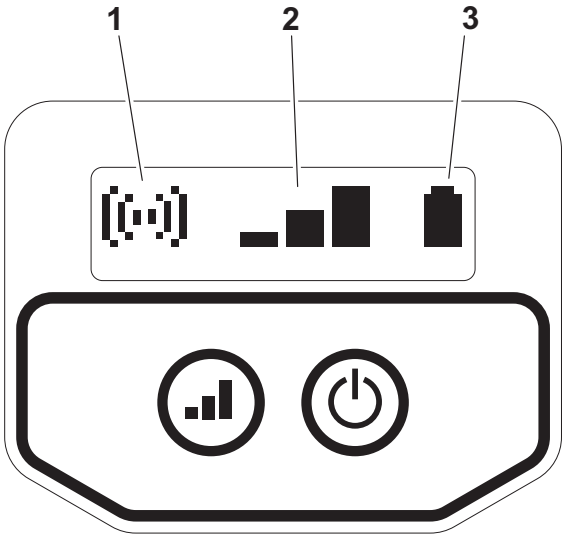
1. Power level
2. On/Off

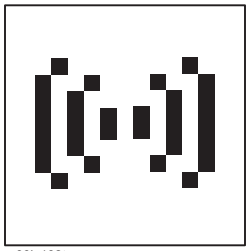
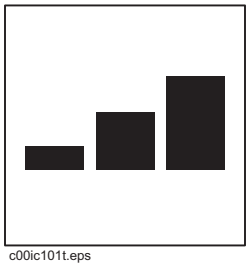
Item	Description	Notes
1. Power Level  c00ic099t.eps	To cycle through power levels, press.	See "Frequency" on page 39.
2. On/Off  c00ic092t.eps	To turn on, press. To turn off, press and hold.	

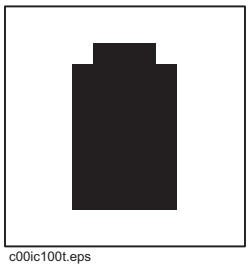
Display



e16om004t.eps

1. Mode
2. Power level
3. Battery level

Item	Description	Notes
1. Mode  c00ic102t.eps	Displays connection mode.	See "Transmitter" on page 38.
2. Power Level  c00ic101t.eps	Displays selected power level.	

Item	Description	Notes
3. Battery Level  c00ic100t.eps	Indicates battery level. • Filled battery indicates sufficient power. • Flashing battery outline indicates it is time to change batteries.	

Locate

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Passive 32

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- Technique 32
- Special Situations 33

Active Location

Setup

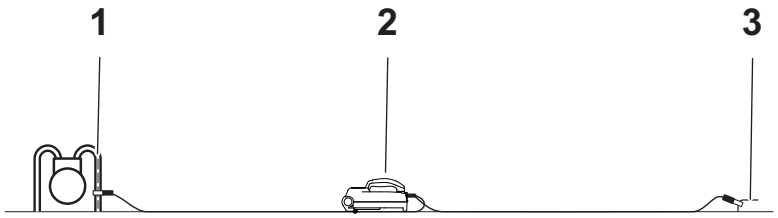
Follow setup procedures for the type of locating you will be doing: direct connection, inductive clamp, or induction (broadcast). For all types of active location that require leads, connect leads at connector. Keep connector covered when not in use.

Direct Connection

WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

NOTICE: Electric shock or equipment damage can result if transmitter is connected to live cable. Contact qualified utility personnel and follow all standards and requirements for disconnecting and grounding cables.

To set up transmitter for direct connection:

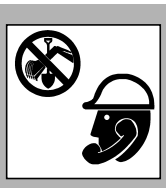


e16om008t.eps

1. Carefully push ground stake (3) into ground.
2. Plug cable into transmitter (2).
3. Connect black lead to ground stake.
4. Connect red lead to cable (1).
5. Turn on transmitter and check battery level.
6. Select power level.

NOTICE: Turn off transmitter when connecting or moving ground stake.

Inductive Clamp

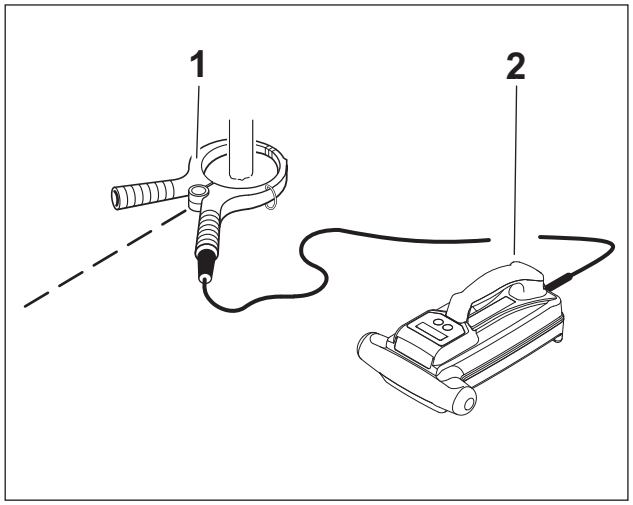



⚠WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

NOTICE: Electric shock or equipment damage can result if transmitter is connected to live cable. Contact qualified utility personnel and follow all standards and requirements for disconnecting and grounding cables.

To set up transmitter for use with inductive clamp:

1. Plug cable into transmitter (2).
2. Place clamp (1) around cable.
3. Turn on transmitter.
4. Check battery level.
5. Select power level. High power is recommended for use with inductive clamp.



e16om009t.eps

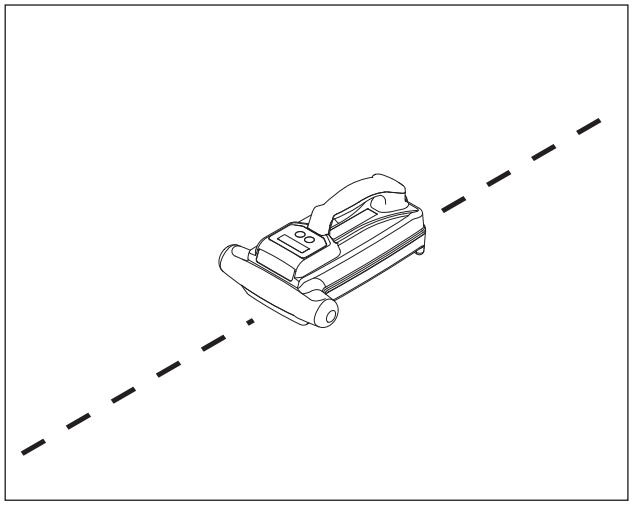
Induction (Broadcast)

To set up transmitter for induction (broadcast):

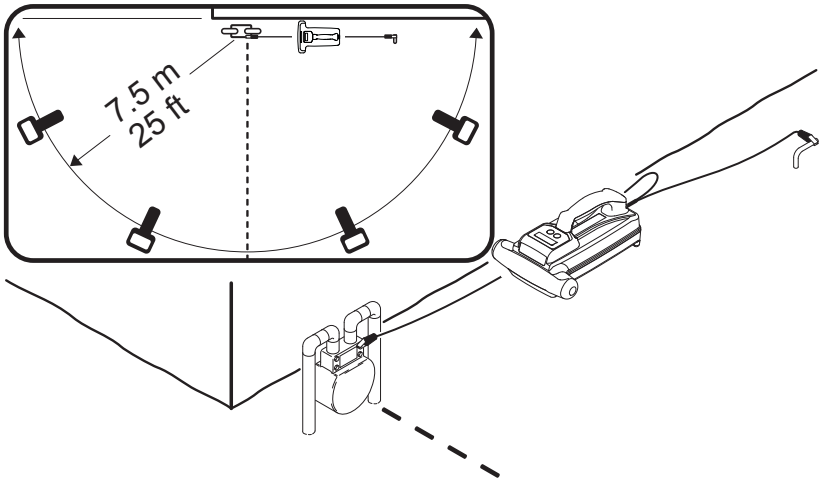
1. Remove leads and clamp from transmitter.
2. Place transmitter with the handle parallel to suspected cable as shown.

Note: Transmitter handle must be parallel to cable, as shown, in order to produce the best signal.

3. Turn on transmitter.
4. Check battery level.
5. Select power level.


e16om010t.eps

Technique



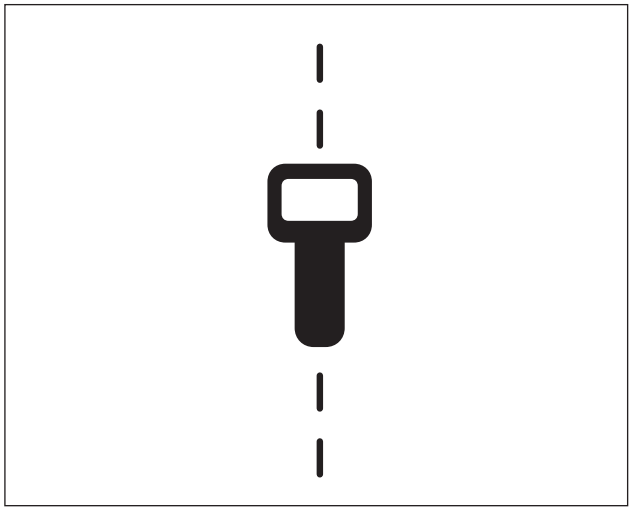
e16om011t.eps

IMPORTANT: Follow steps 1-3 for all types of active location. For reference, the illustration above shows direct connection method. If using induction (broadcast), ensure that transmitter handle is in line with and above suspected cable, as shown on previous page.

1. Walk in an arc approximately 25' (7.5 m) around transmitter.
2. Hold the receiver so that the handle points toward the transmitter**,** as shown.
3. Identify location of cable by using left/right indicators and signal strength.
4. Slowly rotate the receiver to determine which direction the cable runs.

IMPORTANT: Receiver indicates the best signal when the handle lines up with the target cable.

5. Trace the cable and note depth estimates every few paces.
6. Retrace the cable and mark with appropriate flags or paint.



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Mark the Cable

Sweep, focus, and trace all detected signals in the area. Mark cable paths with colored paint or flags. See the chart below for standard color markings for cable locations.

Utility	Color	Marking Symbol
electric	red	-E-
gas/oil	yellow	-G-
communications	orange	-TEL- or -TV-
water	blue	-W-
sewer	green	-S-

Special Situations

Situation	What to try
Signal is lost.	Walk in a circle to detect a tee or bend in the cable.
Signal varies from low to high and is unstable.	Mark as a hand-dig area.
You are near a power line and are receiving interference.	Sweep the area in 50 Hz or 60 Hz power mode. If receiver gives a strong signal response, a power line is interfering with transmitter signal.
Target cable has connections to other cables.	Disconnect target cable from other cables or use direct connect or induction clamp to focus signal on target cable.
Signal is transferring to other cables.	• Use direct connection, if possible, or use inductive clamp. • Move the ground stake away from the target cable and away from other buried cables. • Apply signal at the point where the target cable is farthest from the other cables. • Use lowest power level on transmitter.

Passive Location

Setup

Follow setup procedures for the type of locating you will be doing. Always check receiver battery level at startup.

NOTICE: Cables with no A/C current flowing through them are hard to detect and may be hazardous because they may still have voltage potential. To locate, turn on an appliance to cause current to flow and use active search methods.

Technique

Survey the Site

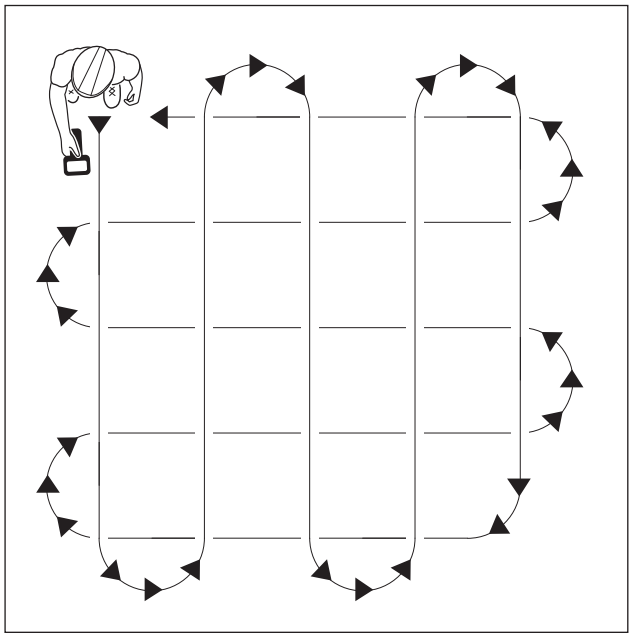
Make a visual check of the site for signs of buried cables such as:

- recent trenching
- buried cable markers
- overhead lines that run down pole and underground
- gas meters
- valve sights
- drains or manhole covers

Sweep the Site

Search the site by walking a grid pattern while holding receiver close to the ground.

NOTICE: Keep receiver vertical.



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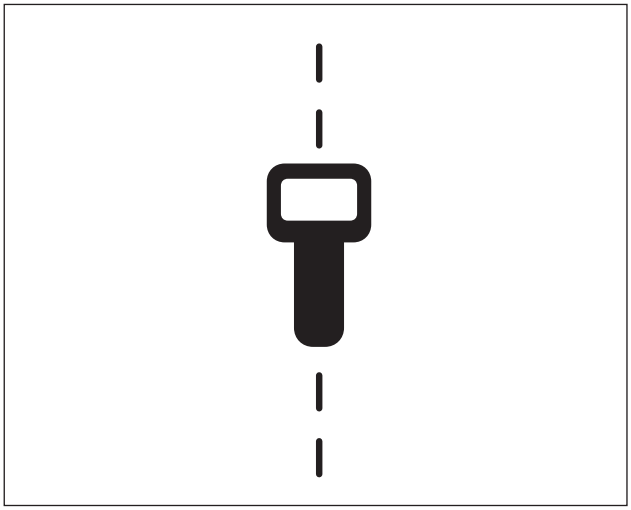
Focus the Signal

Move receiver over detected signal and rotate to find best signal response. Best signal indicates cable direction.

Trace the Cable

Walk along the suspected path while moving the receiver from side to side across the area.

IMPORTANT: Keep receiver handle parallel to the suspected cable path.



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Mark the Cable

Sweep, focus, and trace all detected signals in the area. Mark cable paths with colored paint or flags. See the chart below for standard color markings for cable locations.

Utility	Color	Marking Symbol
electric	red	-E-
communications	orange	-TEL- or -TV-

Special Situations

Situation	What to try
Signal is lost.	Walk in a circle to detect a tee or bend in the cable.
Signal varies from low to high and is unstable.	Mark as a hand-dig area.

Locating Concepts

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- Passive 36

Recommended Settings 36

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- Receiver 37
- Transmitter 38

Receiver Gain Level 39

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Signal Type

The 830R can detect two types of signals:

- Active signals that are placed on a target cable with a transmitter.
- Passive signals that reside on the target cable.

Active

There are three ways to place active signals on a target cable with a transmitter:

- Direct connection (preferred method) requires a connection to be made directly onto target cable.
- Inductive requires placing an optional inductive clamp around target cable.
- Induction (broadcast) method uses a built-in antenna to broadcast a signal onto cables near the transmitter.

Passive

Power cable signals can be detected passively without a transmitter if optional power mode is installed.

Recommended Settings

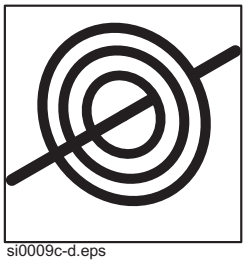
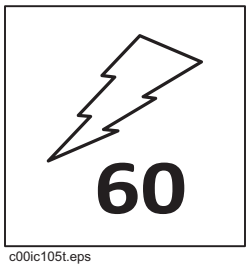
Choose transmitter power level according to how the signal will be placed on the cable.

Direct Connection	Inductive Clamp	Induction (Broadcast)
low power	high power	low power

Mode

Receiver

The 830R receiver has two available modes.

Mode	Description	Notes
Left/Right  si0009c-d.eps	Allows receiver to trace cables that have had an 83.0775 kHz signal placed on them by a transmitter.	
Power  c00ic105t.eps	Allows receiver to trace live power cables. In North America, available frequencies are: 60, 120, and 180 Hz. In other locations, available frequencies are 50, 100, and 150 Hz.	**IMPORTANT:** Current must be flowing through the cable.

Left/Right

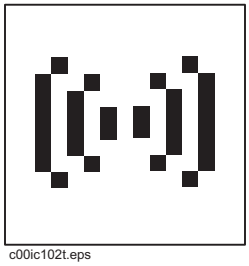
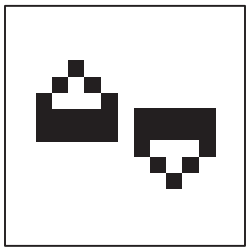
- **Signal display**: 0-999
- **Gain control**: automatic
- **Location display**: distance-sensitive left/right arrows indicate direction to line, become shorter as receiver nears the line, become a diamond when centered, and display a depth icon in the diamond when the receiver is stable.
- **Audio**: low tone to left of line, high tone to right of line, and quiet when centered above the line.

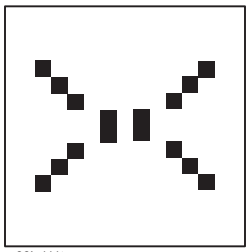
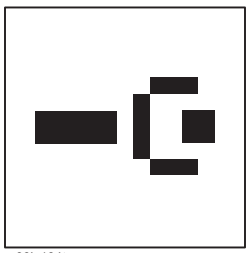
Power

- **Signal display**: 0-99
- **Gain control**: manual. If signal strength is above 80, decrease gain. If it is below 20, increase gain.
- **Location display**: single peak
- **Audio**: variable pitch with signal strength. Stronger signals produce higher pitch audio output.

Transmitter

The 830T receiver has two operating modes and two troubleshooting indicators.

Operating Mode	Description	Notes
Induction (broadcast)  c00ic102t.eps	Signal is broadcast onto target line using antenna.	
Direct Connect or Inductive Clamp  c00ic103t.eps	Signal is placed on target line through direct connect leads or inductive clamps. Indicates a closed circuit with good current flowing in the line.	

Troubleshooting Indicators	Description	Notes
Inductive (broadcast)  c00ic111t.eps	Indicates broadcast antenna is out of regulation.	This can be caused by placing the transmitter too near a large metal object, very low battery level, or a damaged antenna.
Direct Connect  c00ic104t.eps	Indicates an open circuit. Indicates little to no current is flowing in target line.	

Receiver Gain Level

In left/right mode, the receiver uses automatic gain control and requires no user adjustment.

In optional power mode, the user adjusts the receiver gain setting.

Action	Result	Effect
increasing gain	more sensitive to signal	allows location farther away from signal source
decreasing gain	less sensitive to signal	stabilizes signal

Frequency

The 830R/T system operates at a single active frequency: 83.0775 kHz.

Advantages/Disadvantages

- Excellent performance on ungrounded or poorly grounded cables.
- Couples onto cables easily for good broadcast performance.
- Couples onto cables other than the target cable easily.

Common Signal Problems

IMPORTANT: If target depth and location are critical, confirm by hand-digging or vacuum excavation.

Distortion

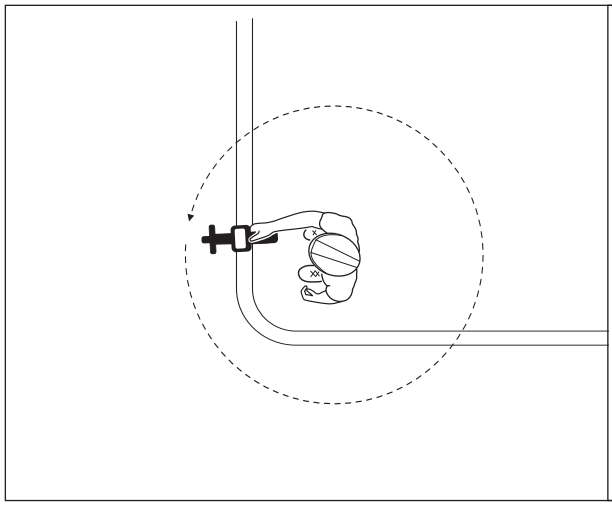
Distortion often happens when a metallic object partially distorts the signal, or a signal from a parallel cable interferes with target signal.

False Signals

False signals describe situations where the receiver indicates a cable location where there is no cable. False signals often happen when a cable tees or bends, or another cable runs parallel to or crosses the target cable.

Tees, Bends, and Dead Ends

To find signal in these situations, enable peak verify feature and sweep in a circle as shown.



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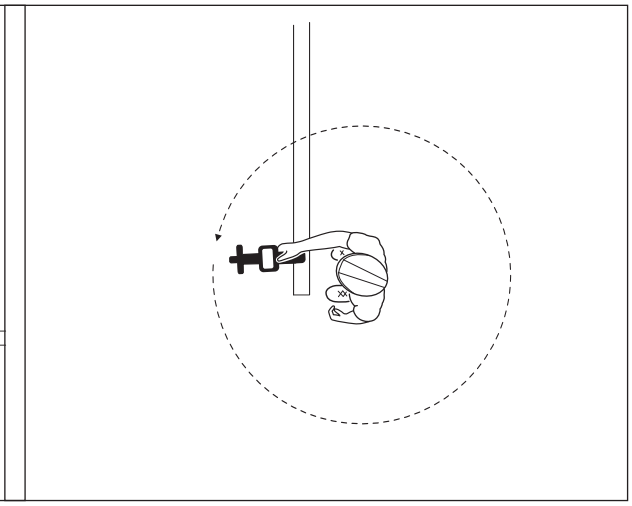

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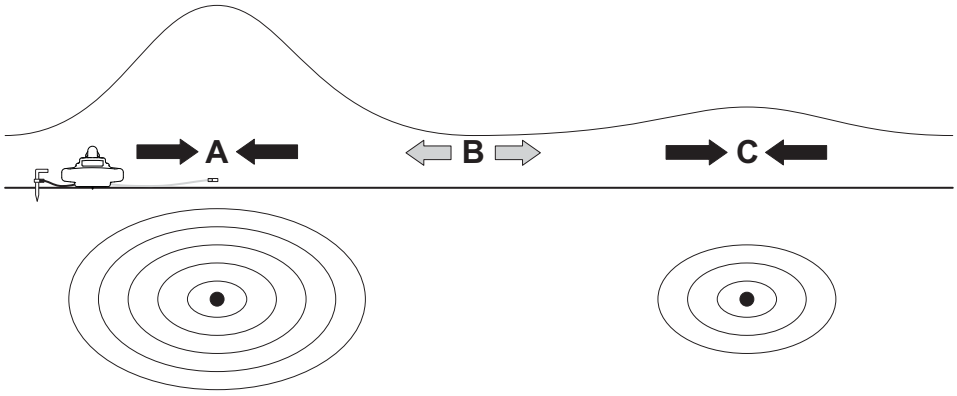
Parallel Cables (Diverging Arrows in Left/Right Mode)



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In situations where another cable (C) runs parallel to the target cable (A), the high frequency signal will couple to the other cable. This will allow the user to locate both cables in left/right mode and will create a false cable (B) between them. When locating the false cable, note that the arrows will not indicate the correct direction to the false cable. The false cable is simply the point where the left/right arrows switch direction while pointing to the other two cables.

Peak Verify Feature

When using left/right mode in areas where there are multiple lines near the general area of the target line, the peak verify feature can help identify the target line.

1. Center the receiver over the line using left/right arrows.
2. Press and hold Down Arrow key and sweep the area.
    - Signal strength non-target lines will be much lower (A) compared to the response when using left/right only (B).
    - Signal strength on false locates will drop to or near zero.

Service

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General Care

Under normal operating conditions, receiver and transmitter need only minor maintenance. Following these care instructions can ensure longer equipment life:

- Do not drop the equipment.
- Do not expose the equipment to high heat (such as in the rear window of a vehicle).
- Clean equipment with a damp cloth and mild soap. Never use scouring powder.
- Do not immerse in any liquid.
- Inspect housing daily for cracks or other damage. If housing is damaged, contact your equipment dealer for replacement.
- Do not mix new and used batteries.

As Needed

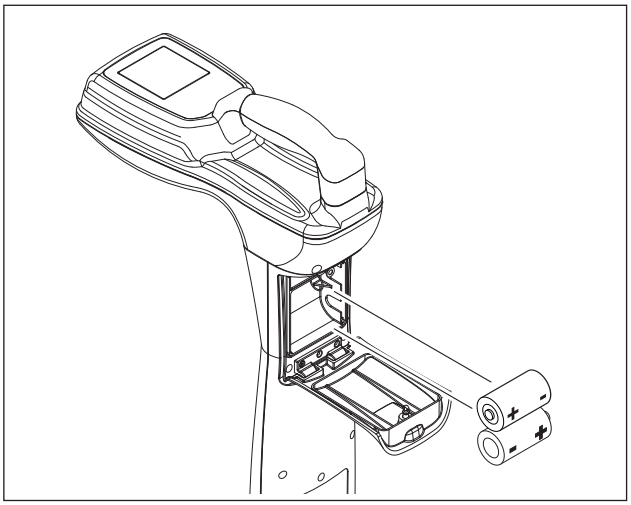
Location	Task	Notes
Receiver Unit	Change batteries	2 "D" alkaline
Transmitter Unit	Change batteries	6 "D" alkaline

Receiver Unit

Change Batteries

Use two D-cell alkaline batteries in receiver.

1. Turn quarter turn fastener to open battery cover.
2. Remove batteries.
3. Insert batteries as shown.
4. Close battery door and tighten quarter turn fastener.
5. Check operation. The unit will not come on if a battery is installed backwards.



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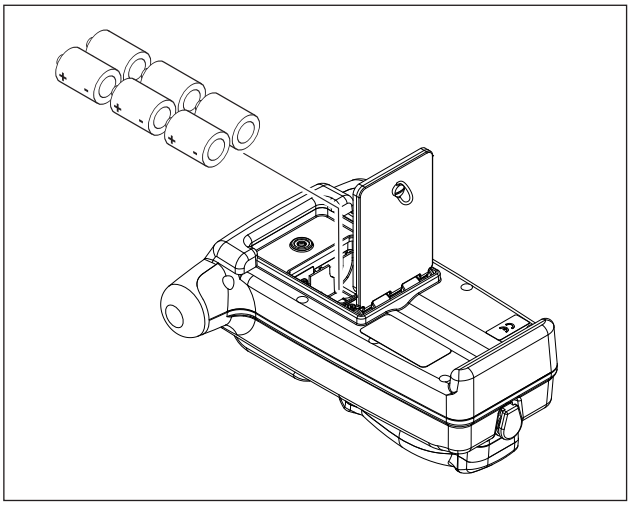
Transmitter Unit

Change Batteries

Use six D-cell alkaline batteries in transmitter.

1. Turn quarter turn fastener to open battery cover.
2. Remove batteries.
3. Insert batteries as shown.
4. Close battery door and tighten quarter turn fastener.
5. Check operation.
    - A battery error message will be displayed and unit will shut down if a battery is installed backwards.
    - Unit will not come on if all batteries are installed backwards.



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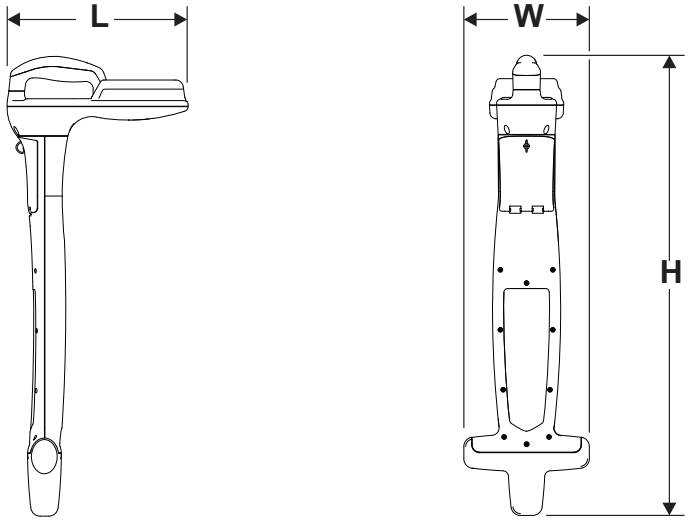
Specifications

830R Receiver



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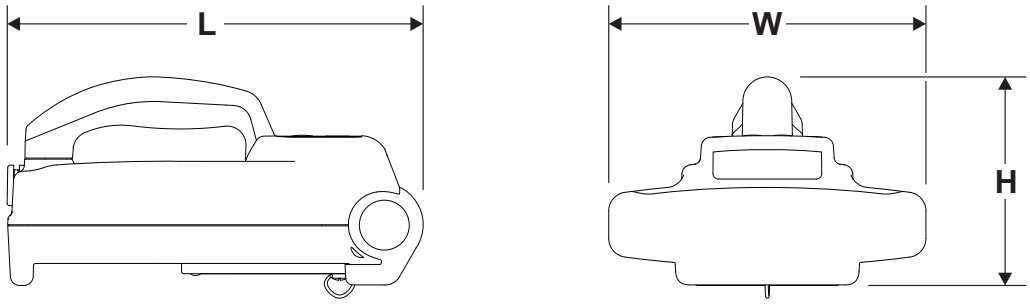
Dimensions		U.S.	Metric
H	Height	30.8”	78.1 cm
L	Length	12.1 ”	30.7 cm
W	Width	8.4”	21.3 cm
	Operating weight	5.1 lb	2.3 kg
Performance			
Active frequency: 83.0775 kHz			
Passive frequencies: 60/120/180 (North America), 50/100/150 (other locations)			
Gain: auto, manual in power frequencies			
Depth accuracy * : +/- 5% to 10’ (3 m)			
Batteries			
Type: 2 D-cell alkaline			
Life (continuous use at 70°F/21°C): 75 hours			
Battery saver: unit shuts off after 30 minutes of inactivity			

Environmental	U.S.	Metric
IP rating: IP65		
Operating temperature range	-4°F to 122°F	-20°C to 50°C
Regulatory Compliance		
FCC, IC, CE		
Features		
Graphical LCD with white LED backlight		
Distance sensitive left/right indication		
Dual tone left/right audio		
Peak Verify		
Auto depth reading		

* Locators are calibrated to these tolerances under ideal test conditions. Actual operating conditions may have signal distortions or noise sources which result in depth estimate errors.

830T Transmitter



e16om007t.eps

Dimensions		U.S.	Metric
H	Height	5.6”	14.2 cm
L	Length	11.1”	28.2 cm
W	Width	8.5”	21.6 cm
	Operating weight	4.6 lb	201 kg
Performance			
Output frequency: 83.0775 kHz			
Maximum power output: 1 watt			
Output power settings: 3			
Batteries			
Type: 6 D-cell alkaline			
Life (continuous use at 70°F/21°C): 150 hours			
Battery saver: unit shuts off after 2 hours of inactivity			
Environmental		**U.S.**	**Metric**
IP rating: IP65			
Operating temperature range		-4°F to 122°F	-20°C to 50°C
Regulatory Compliance			
FCC, IC, CE			
Features			
Graphical LCD with white LED backlight			

Support

Procedure

Notify your dealer immediately of any malfunction or failure of Subsite® Electrronics equipment.

Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase.

Return damaged unit to dealer for inspection and warranty consideration if in warranty time frame.

All repairs must be done by an authorized Subsite Electronics repair facility. Repairs done elsewhere will void warranty.

Resources

Publications

Contact your Ditch Witch® dealer for publications and videos covering safety, operation, service, and repair of your equipment.

Training

For information about on-site, individualized training, contact your Ditch Witch dealer.

Warranty

Electronics Limited Warranty Policy

Subject to the limitation and exclusions herein, free replacement parts and labor will be provided when a unit fails due to a defect in material or workmanship within one (1) year of first commercial use (See Exceptions below for specific products). Defects shall be determined through inspection by Manufacturer or authorized repair centers. An inspection must occur within thirty (30) days of the date of failure of the product or part by Manufacturer or its authorized repair facility. Manufacturer will provide the location of its inspection facilities or its nearest authorized dealer upon inquiry. Manufacturer reserves the right to supply remanufactured replacement parts under this warranty as it deems appropriate. Each warranty repair carries the remainder of the factory warranty or 90 days, whichever is longer, for all repaired components and labor.

Product Warranty Exceptions:

- All Directional Drilling Beacons, Locate Beacons and Accessories carry a six (6) month warranty.
- All Magnetic Locator Products carry an eighty four (84) month warranty.
- All Used (Cosmetic) Electronics products sold from Manufacturer carry a six (6) month warranty from date of sale to dealer.

EXCLUSIONS FROM PRODUCT WARRANTY

- All defects or damages caused by misuse, abuse, improper installation, alteration, neglect, modification, lack of maintenance, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All batteries, which are considered consumable and therefore not covered under this warranty.
- All damaged plastics are considered to be the result of misuse or neglect unless Manufacturer has determined otherwise.
- All repairs or attempted repairs by non-certified repair facilities or personnel will void the warranty.
- All incoming duties and freight charges.

(Continued)

*(**Exclusions from Product Warranty**, continued)*

- Manufacturer reserves the right to make changes in design and/or improvements to products from time to time, and user understands that Manufacturer shall have no obligation to upgrade any previously manufactured product to include any such changes.
- In no event shall Manufacturer or its agents, assigns or parent company be liable for any indirect, special, incidental, or consequential damages or for any cover, loss of information, profit, revenue or use based upon any claim by user for breach of warranty, breach of contract, negligence, strict liability or any other legal theory. In no event shall Manufacturer liability exceed the amount user has paid for the Manufacturer product.
- Manufacturer will not be responsible for loss of accessories or loss or erasure of data storage media.
- Should it be determined that applicable law prohibits enforcement of any provision of this Warranty Policy, then to the extent it is necessary to comply with the applicable law, this Warranty Policy shall be deemed amended.
- This Warranty Policy shall be the entire agreement between Manufacturer and the Purchaser. Any statements that purport to be different than or modify or expand the terms set forth in this written policy are not effective for any purpose. ANY IMPLIED WARRANTIES, INCLUDING WARRATIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE ARE EXPRESSLY DISCLAIMED. IN NO EVENT SHALL SUBSITE® ELECTRONICS, THE CHARLES MACHINE WORKS, INC., OR ANY AUTHORIZED SERVICING AUTHORITY BE RESPONSIBLE FOR ANY LOSSES, INCLUDING CONSEQUENTIAL AND INCIDENTAL DAMAGES, EXCEPT AS EXPRESSLY PROVIDED HEREIN.

SERVICE AND REPAIR

All units repaired at Manufacturer's location or an authorized service center will carry a 90 day warranty on all replaced components/parts and labor commencing on the date of repair.

EXTENDED WARRANTY

Consult your local Subsite Electronics dealer for extended warranty options.

WARRANTY DETAILS

For information regarding this limited warranty, contact Subsite Electronics Product Support Department, 1950 W. Fir, Perry, OK 73077, or your local dealer.