

Radiodetection®

RD400 FFL

RD400 FaultFinder/Locator



- Pinpoints damage or breaks in a buried cable sheath.
- Locates and traces buried cables.
- The FFL locates and traces the cable and pinpoints the fault as a single, simple operation.
- Simple to use tool for daily site use in all climates and weathers.
- Transmitter compatible for use with the RD400 Precision Locator.

RD400 FaultFinder/Locator



The RD400 FFL FaultFinder Locator comprises an A-frame receiver and a signal transmitter.

The transmitter applies a signal to the cable and the A-frame receiver traces the cable and pinpoints the damage or the break in the sheath.

The fault finding mode of the RD400 FFL has been developed from the original Bell Labs concept of measuring a ground potential signal and its polarity to locate cable sheath faults. The locating mode is a development of Radiodetection technology to provide a simplified method of cable tracing. The FFL transmitter can also be used with the RD400 standard and precision Locator.

RD400 FFL Receiver

The FFL A-frame receiver is a self-contained unit complete with ground spikes, circuitry and batteries. It has only two controls: a switch for battery test and a switch - FaultFind, Off, Locate.

The FaultFind mode and the Locate mode use the same signal from the FFL transmitter. The receiver can be switched to either mode so that the position of the cable can be pinpointed once the fault has been found.

FaultFinding

In the FaultFind mode, the receiver needs to be locked synchronous with the transmitter signal and this is indicated with positive meter and audio response.

When the spikes make good ground contact the meter always points in the direction of the fault and there is a sharp changeover in meter indication once the fault has been passed. Recent advances in circuit design avoid blind spots in meter indication; the FFL always gives positive indication.

Locating

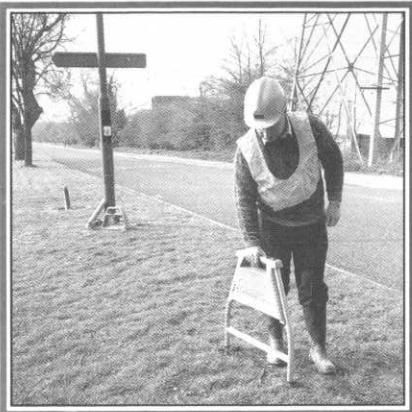
Switch the FFL receiver to locate and the receiver automatically adjusts its gain to provide a sharp null signal when the receiver is directly over the cable; the receiver sets itself to give a peak response to either side of the cable and a sharp null response when it is directly over it.

No ground contact is needed in the locate mode.

Depth can be estimated by leaning the locator at 45° and drawing it away from the line of the cable until the meter shows a null position. The cable depth is the same as the distance between the A-frame and the located cable position.

FaultFinding under paving

Sometimes the receiver will FaultFind with the spikes resting on the paving, especially if it is wet, but it is more likely that a sheath fault in a cable buried under paving can be found using the FFL receiver in the grass verge to the side. The meter changes over when the receiver overshoots the point of the fault, even though the cable may be several yds/m away. The position of the cable can then be located under pavement in the Locate mode.



RD400 FFL Transmitter

The transmitter signal is applied to the cable by connection. An 80ft/2m connection lead with a suitable clip, an 11yd/10m ground return lead on a spool and a ground stake are provided in the storage compartment. The transmitter loudspeaker gives a sharp tone change to indicate that the signal has been successfully applied to a cable.

The signal can be switched to standard or boost output. 'Standard' signal is suitable for most applications. Boost gives a 100V signal, useful for long distances or for use in dry soil.

As an alternative to direct connection, the transmitter signal can be induced onto the cable through up to 6ft of soil or applied with the signal clamp if the FFL receiver is being used for locating and not fault finding.

The FFL transmitter can also provide a suitable signal for the RD400 Locator or the RD400 Precision Locator. The transmitter signal can be applied by connection or induction and all the standard RD400 Locator options, such as the Clamp, Plug Connector and Live Cable Connector may be used.

FaultFinding features:

- ★ Location of sheath faults up to 2 M Ω .
- ★ Receiver meter indicates direction to fault without ambiguity.
- ★ Receiver indicates there is a detectable fault on the cable once the transmitter has been connected.
- ★ No false null positions or null indications once the FFL receiver is locked with the transmitter signal. Information is always available to the user throughout the fault finding procedure.
- ★ Meter and loudspeaker give positive indication that the FFL receiver is locked synchronous with the signal applied to the cable with the transmitter.
- ★ A-frame receiver includes meter and circuitry. There is no separate receiver box and no cables to snag or tangle. The receiver is designed for single handed operation.
- ★ The meter actually points towards the fault; no need to relate meter direction to coded patterns on the A-frame.

Cable Locating features

- ★ Null response locates the position of the cable.
- ★ Automatic gain adjustment. Receiver sensitivity adjusts to magnetic environment and to the signal on the cable. There is no manual gain control.
- ★ Transmitter applies a signal to the cable suitable for both fault finding and locating. Receiver can be switched to fault find or locate mode without changing transmitter settings. Cable can be located, traced and the fault pinpointed as one operation.
- ★ The FFL transmitter can be used in conjunction with the receiver of the RD400 Standard or Precision Locator. Adding the RD400 Precision Locator to the FFL adds the capability of the most advanced and comprehensive cable locator available. The Precision Locator combines the functions of Sweep, Search, Pinpoint and Trace with a second aerial array to confirm the accuracy of its pinpoints and depth measurement.
- ★ Depth estimation to a buried cable is made simply by sloping the A-frame receiver at 45 degrees to one side of the line. Depth can be checked by repeating the procedure to the other side.



Receiver

Batteries

Type: 12 x 1.5V Alkaline AA (IEC LR6)

Drain/Life: Locate 50mA/80hrs, FaultFind 50mA/80hrs

Battery Test: Momentary switch, status indicated on meter scale

Weight

3.6kg (7.9lb) with batteries

Controls

- On/Off latching toggle switch
- 3 position toggle switch
- Battery test (momentary)
- FaultFind
- Locate

Locate mode

Principle

Detection of magnetic field due to flow of applied current on cable.

Frequency

8kHz.

Directionality

Null response when directly over target cable. Instrument should be vertical but rotational orientation is unimportant.

Sense coil type

Vertical axis, ferrite-cored.

Sensitivity control

Fully Automatic.

Dynamic range

60dB.

Output

Meter

Zero reading when over target.

Sounder

Continuous tone when over target, otherwise, pulse tone.

Accuracy

5% of depth if signal is 'clean'.

Resolution

1% of depth.

Interference

120dB rejection of 50/60Hz.

Depth measurement

By triangulation. Effective to 3m/10ft with good signal.

FaultFind mode

Principle

Detection of direction of flow of applied current escaping into ground from an otherwise isolated conductor. Current detected by means of twin-probe ground contact frame.

Frequency

8kHz carrier & 8Hz.

Directionality

Sensitivity is best when frame is aligned between fault and point of application. Will respond at any angle - thus also giving a bearing to the fault.

Input Impedance

47k Ohm

Input sensitivity

2 μ V

Dynamic range

100dB

Output

Meter

Points forwards or backwards to indicate direction of fault.

Sounder

Regular pulsing tone gives indication that reference signal is detected and locked-on.

Accuracy

Resolves fault position to within 50mm/2".

Max fault impedance

2M Ohms.

Transmitter

Batteries

Type

8 x 1.5V alkaline D (IEC LR20)

Drain/life

Locate 180mA/35 hours
FaultFind (Std.) 250mA/25 hours
FaultFind (Boost) 400mA/16 hours

Battery test

Switch selected, continuous tone = good battery, no tone or pulse tone = poor battery.

Weight

5.2kg (11.5lb) with batteries.

Controls

- Function switch
- Off
- Battery test
- 33kHz (Locate only)
- 8kHz (FaultFind & Locate)
- Mode switch
- Locate only
- FaultFind (& Locate) standard
- FaultFind (& Locate) boost

Induction

Available for Location only.
Automatic selection.
Available at 8kHz or 33kHz.

Direct Connection

33kHz Locate, 10V max 27mA max
8kHz Locate, 10V max 30mA max
FaultFind standard 60V max
FaultFind boost, 105V max

Connection quality indication

Loudspeaker tone change indicates that current of at least 1mA is flowing.

Output protection

Locate mode

Protected against inadvertent connection to up to 500V DC or 250V RMS 50/60Hz.

FaultFind mode

Protected up to 90/180V DC or 30V RMS 50/60Hz.

Standard equipment

Storage compartment holds:
2m/80" connection lead
10m/11yd ground lead ground stake.

User handbook.

Ordering information

RD400 FFL locator complete, receiver and transmitter 10/RD4FFL
RD400 FFL A frame only 10/RD4FFLRX
RD400 FFL Transmitter (with standard equipment) only 10/RD4FFL
RD400 Precision Locator, receiver only
depth scale in metres 10/RRD400RXPNM
depth scale in feet 10/RD400RXPNT
Signal clamp 10/RD4CLMPD
Plug connector 10/RD4PLC3
Carry bag 10/FFRXBAG
Signal clamp extension rod 10/EXT

Housings

Housings are grey impact-proof polyethylene mouldings reinforced for mechanical rigidity. All access points are sealed against water ingress and control shafts have a double-lip rubber seal. Aerials are plastic encapsulated and circuit boards are coated. Plastic cone loudspeaker is weatherproof with protective stainless steel mesh cover. Receiver frame is epoxy coated aluminium extrusion. Ground contact spikes are stainless steel. Safety spike covers are included.

We are continually developing our products and the design of Radiodetection equipment is subject to change without notice.

Accessories

Signal clamp for use in Locate Mode only

Plug connector for energizing live domestic power cable. Locate Mode only.

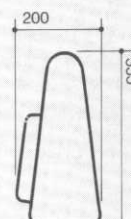
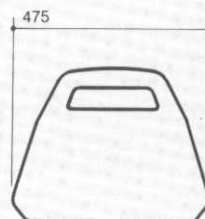
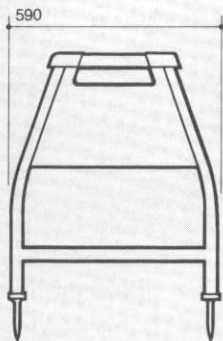
Compatibility

33kHz signal and 8kHz (Locate or FaultFind mode) can be detected by RD400 Standard or Precision Locator.

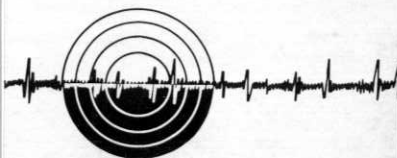
Uses same optional accessories as standard RD400 transmitter.

Weight

Net 5.2kg (11.5lb) with batteries.



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