STANLAY™

Precision Pipe & Cable Locating Equipment

2024 - 25

PATHFINDER

5 Watt

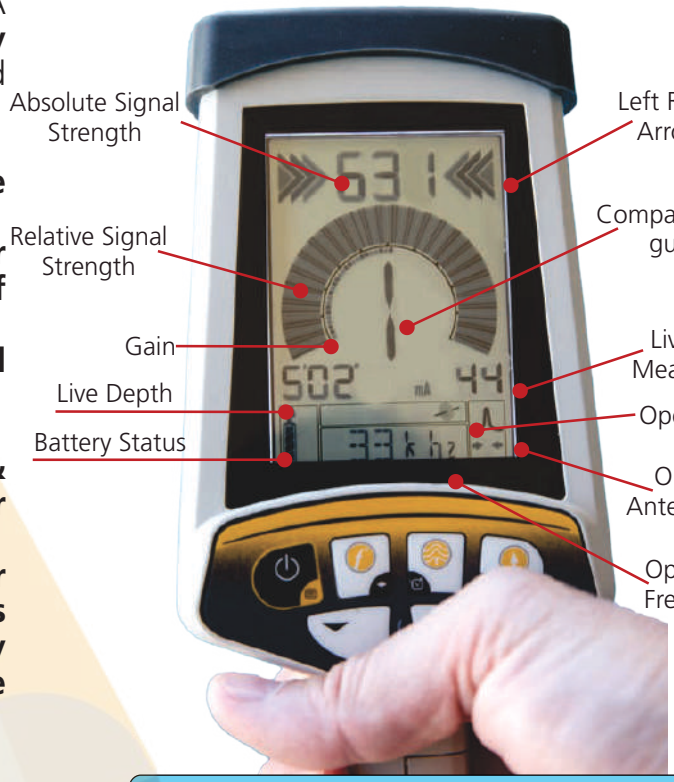
High Power 12 Watt

Quality in Buried Utility Locating. Delivered.

Pathfinder High Power
Multi Frequency Pipe & Cable Locating System

The latest Pathfinder from Rycom Instruments U.S.A based on SAF technology with a **3D Antenna array** is a **high precision pipe & cable locator** designed to provide the operators capability to perform:

- **Route tracing of medium to Long distance Cable or Pipe Routes, with high accuracy.**
- **Route tracing & measure depth of cables or pipes at relatively high depth, typical of HDD installations.**
- **Perform route tracing of armoured optical fiber cables – Fast !**
- **Detect buried energised power cables.**
- **Detect a variety of buried metallic pipes & unenergized power cables, prior excavation.**
- **Built in signal current measurement for identifying specific utility from utilities running parallel/ alongside. Optionally signal current direction frequencies can be configured.**



Features:

Multifrequency: The Pathfinder is a multi - frequency locator that provides the operators the option to add or delete **frequency options** based on field requirements ranging from 200Hz to 478kHz & higher to allow the operator choose low to high frequency most ideal for injecting into a specific utility locating environment. Currently, the user can configure **upto 36 available frequencies.**

200Hz, 256Hz, 273Hz, 340Hz, 400Hz, 460Hz, 512Hz, 560Hz, 570Hz, 577Hz, 640Hz, 760Hz, 797Hz, 815Hz, 870Hz, 920Hz, 940Hz,

Over 36 Frequencies User Configurable

1.01kHz, 1.02kHz, 1.10kHz, 1.45kHz, 4kHz, 8kHz, - - 8kHz, 8.4kHz, 8.9kHz, 9.8kHz, 29kHz, 33kHz, -33kHz, 51kHz, 65kHz, 82kHz, -82kHz, 83kHz, 93kHz, 116kHz, 118kHz, 131kHz, 145kHz, 200kHz, 262kHz, 478kHz,

Why multiple operating frequencies are important in route tracing: The Pathfinder offers a number of low, medium & high frequencies, each with their own advantages.

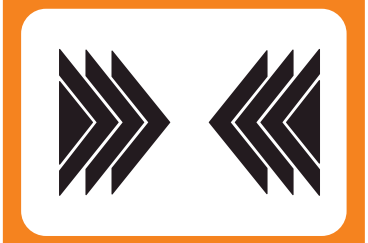
Low frequencies such as 512Hz are ideal for high precision longer distance route tracing and depth measurement with accuracy. Low frequency options range from 200Hz to 1.1kHz.

Medium frequencies such as 8 or 33kHz are more ideal for faster route tracing with acceptable accuracy and are easier for an operator to follow owing to a stronger signal vis a vis the finer signals of a lower frequency. This frequency range also provides good performance in induction mode. Medium frequency options range 1.2kHz to 44kHz.

High frequencies are especially important for application on difficult metallic utilities such as pipes with welded joints. Higher frequencies tend to bleed onto adjoining utilities & should be used in lower density utility environments, dry sandy soil conditions & short lengths of cable. Higher frequency range from 45kHz to 200kHz or higher.

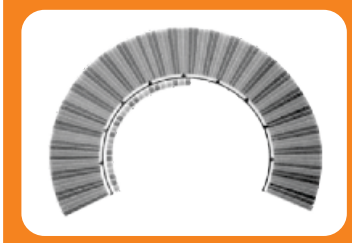
The option of a wide range of low, medium and high frequencies available at disposal allows the operator to choose optimum frequency based on utility type, utility environment and desired result. In case of utility environment with possible interference, the wide range of frequency allows the operator to shift the frequency within a range to ensure that utility tracing can be conducted with efficiency.

Navigational Aids



Left Right Arrow: Guides Operator to distance of utility

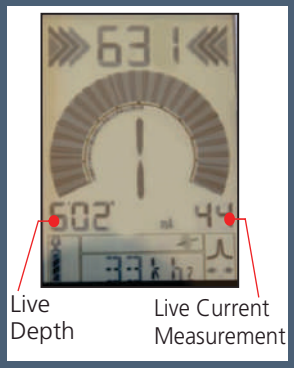
Compass: Keeps the operator in line with orientation of utility



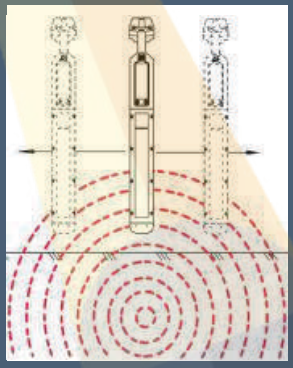
Relative Signal Strength: Bar graph for quick utility identification

Absolute Signal Strength: For determining relative position to utility location

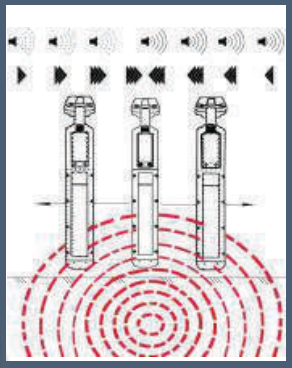
Upto 8 Operating Modes



Simultaneous Live Depth and Current Measurement



PinPoint & Broad Peak Mode

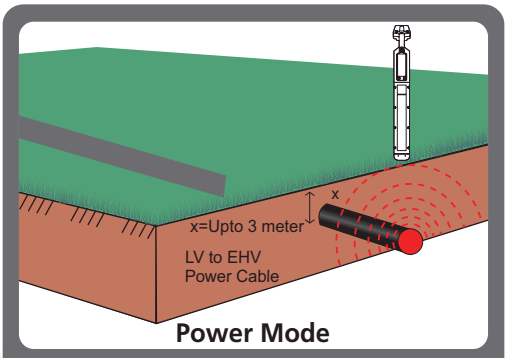


Left Right Auto Gain Directional Locating

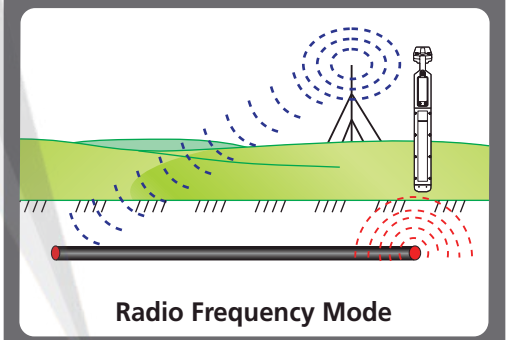
Current Direction Up-Down Arrows

Standard Operating Modes & Key Features

Power Mode 50Hz Mode	**Will locate primary and secondary power cable utilities or other utilities operating at 50Hz or 60Hz in this mode Depth measurement is possible directly in power mode & RF mode.**
RF Mode	**In RF mode, metallic utilities such as pipes and cables whether carrying current or not, can be located**
CP Mode	**In this mode, the receiver locates rectified signal of cathodically protected utilities at 120Hz & 100Hz.**
Alerts	**Vibrating handle, Audio alert, Visual Guidance while locating & route tracing metallic utilities**
Transmitter Mode	**Active Route tracing by direct connection applying frequency range 200Hz to 476.2 kHz or signal induction of 33kHz to 476.2 kHz**
Transmitter Built in Multimeter Function & Automatic Impedance matching	**Automatic impedance matching Maximizes transmission range while minimizing power consumption (5 to 25000 ohms). Multimeter function allows knowing the circuit resistance , injected voltage & current to decide frequency to use & select High power output, if necessary.**



Power Mode



Radio Frequency Mode

Operating Modes

Pathfinder Datalogging & GPS Option for Cable Pipe Route GIS Survey

The Pathfinder is available with another model option which include **Built-In GPS** & Datalogging.
GPS Data can be automatically acquired during the route tracing process & can be selectively logged, based on user option, as follows:

- **Breadcrumb logs of GPS data:** GPS data can be captured automatically during the route tracing process, **GPS is logged every 7 seconds or 1 seconds based on programming.**
- **GPS LOG Specific locations:** The **user** can at their option, log **specific locations for GPS data acquisition.**

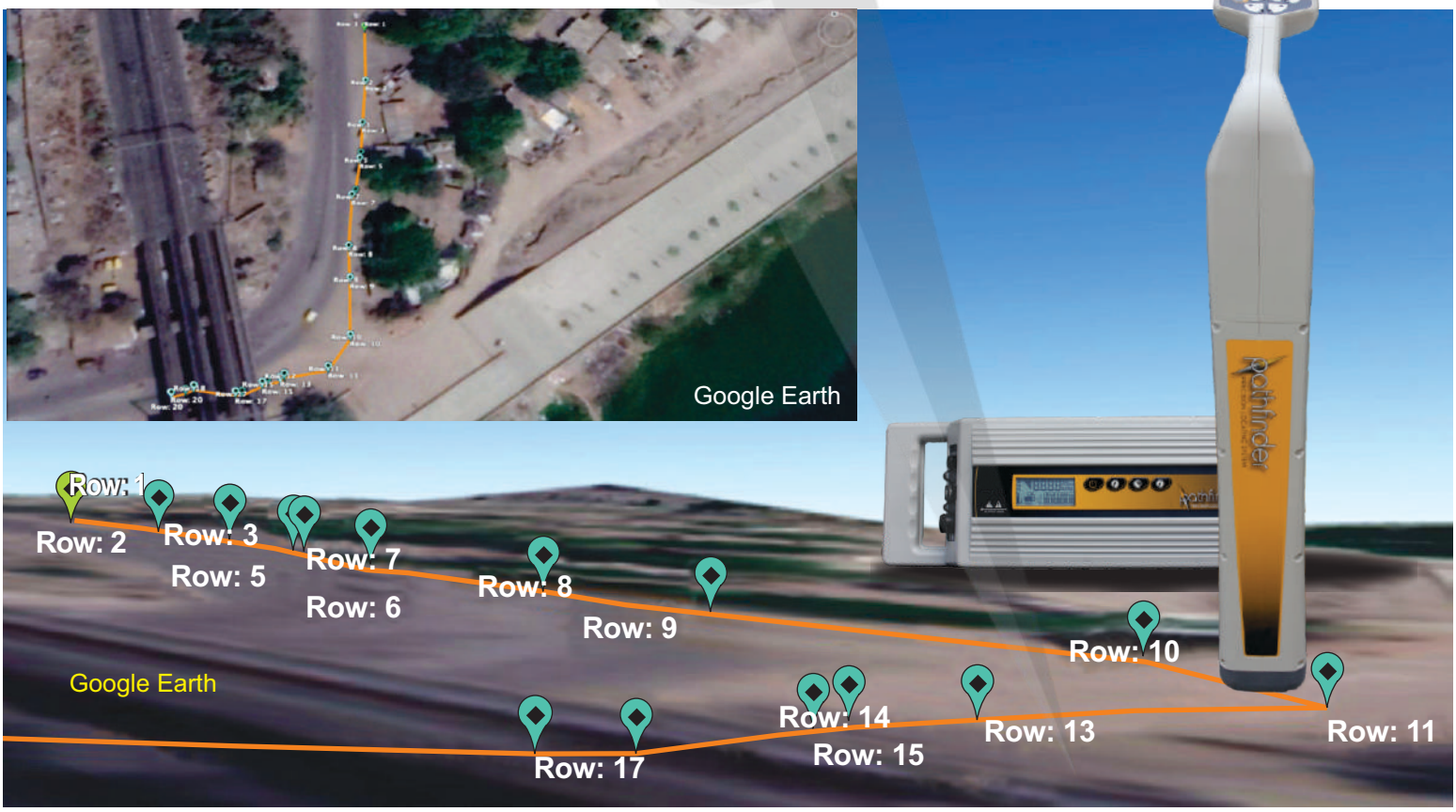
10000 data points or higher can be logged. Data when retrieved via SD Card or Bluetooth is downloaded to a .csv file with field identification of Breadcrumb & Specific logs which can be uploaded to freely available Google Earth application for viewing GIS trace of utility route surveyed. These can be further filtered or color coded per user option.

Upto 10000 Points Data Logged

Bread Crumb GPS Data Logged every 7 seconds

Additionally Log Specific Points of Interest

GPS and Usage Data Logging



12 Watt & 5 Watt Pathfinder Transmitter :

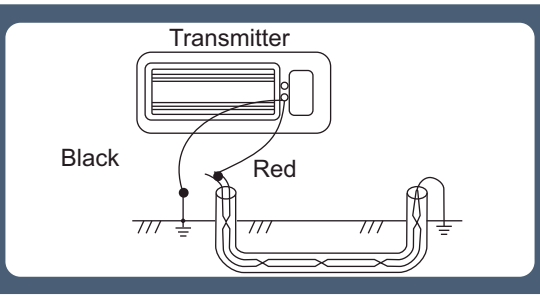
Pathfinder Transmitter is available as 2 model Options: **12 Watt Max Output power & 5 Watt Max Output Power. Choose 12 Watt for Long distance tracing Or choose 5 Watt transmitter for medium distance tracing.** The Pathfinder Transmitter when used with the Pathfinder Receiver provides the operator with the capability to perform medium to long distance tracing ranging upto 20 kms or even higher depending on cable type (attenuation) and transmitter option chosen and measure depth of utility. A higher power transmitter should ideally be opted in case utilities being traced are at depths of 5 meters or higher.

High Power Output function (HPO): Power Boost in the HPO Setting, Max voltage can be increased to 130 Volts (Feature applicable only to 12W model).

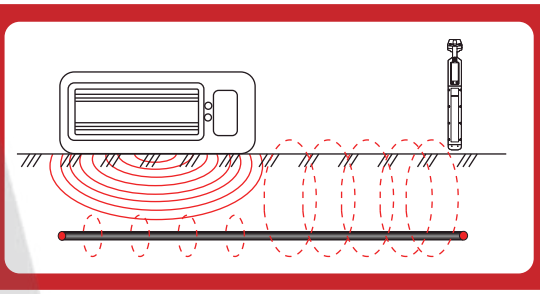
10 Level Output Signal control: The transmitter allows the operator to cycle the Output Signal through 5 selections on the standard power setting and 5 selections on the HPO setting (5W model provides only 5 selections on power setting).

Signal Application Techniques: The Pathfinder Transmitters can be used to apply signature frequency to utility through following methods:

Direct connection: is the most efficient method to trace utilities. Direct connection method allows specific cables or pipes to be individually traced, identified and their depth measured with accuracy. Signal from the Transmitter is applied using direct connection leads at an access point. Direct connection method allows any of the transmitter frequencies to be injected into the metallic utility for pipe or cable route tracing.



Induction: provides the capability to induce a detectable and traceable signal to a utility where direct connection is not possible and to apply signal to previously unknown or inaccessible metallic utility, by placing the transmitter on the ground at a possible location of utility. This allows Blind search of utilities and significantly increases capability to locate or trace buried metallic utilities.



Induction Signal Clamp: is used to apply a signal to an armored cable such as armored optical fiber cable, JFTC when a direct connection to utility is inconvenient or when it is not possible to interrupt services. The signal clamp can be conveniently clamped around the cable to induce a signal into the utility – Signal couplers are available in 2 options : 4" Universal Hard Signal Clamp (Coupler) offered as default that allows coupling signal from transmitter at any chosen frequency to most utilities. Also available is the 7"Flexi Coupler that allows looping the flexible clamp onto larger utilities – the 7"flexi coupler is frequency specific and allows 85Hz & 82kHz signal to be applied.

12 Watt & 5 Watt Pathfinder Transmitter :

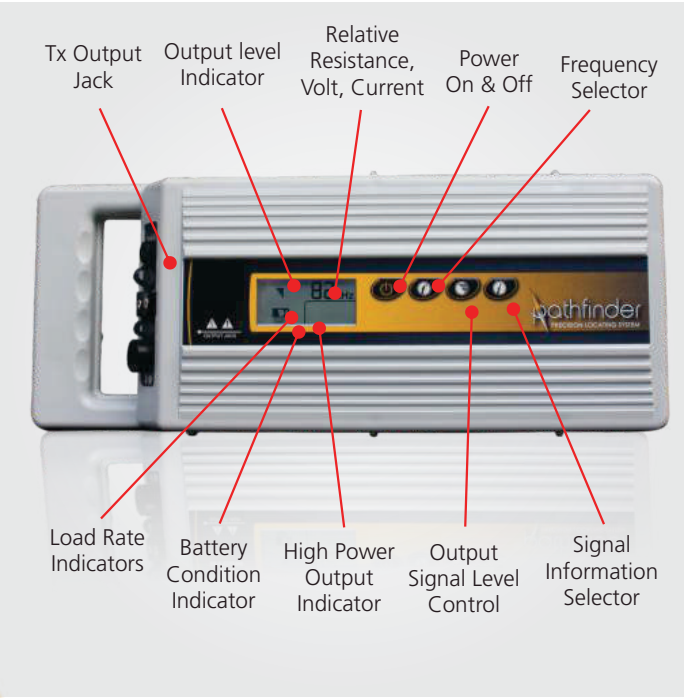
Frequency Options: The pathfinder transmitter provides the operator the capability to apply **upto 36 user configurable frequency** options ranging from **200Hz to 478kHz & 3 Dual frequency options.**

Visual & Audio Controls: The Pathfinder transmitter provides easy to use push buttons with a visual LCD Display and audio feedback to the operator to allow navigate functions such as Frequency selection, Load Indicator, Output Signal level control.

Multimeter functions: The transmitter provides information on Relative resistance, Volts, Current etc, an important feature to check condition of circuit for ensuring precision locating.

Cable Fault Locating Mode: The Pathfinder transmitter provides a DFF (Directional fault finding) mode as standard. Should an A Frame accessory (Optional) be used, it is possible to utilise the transmitter in DFF mode and A-Frame to determines position of sheath fault on a buried cable.

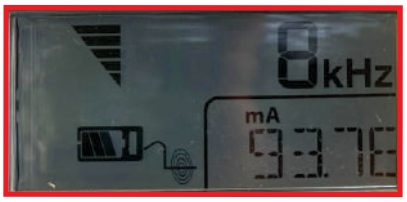
Power supply: The Pathfinder transmitter is provided with built in rechargeable Lithium ion batteries as standard and an external charger to eliminate the need for replacement of batteries, saving cost and increasing operator efficiency.



Why the multimeter function of Transmitter is "Absolutely essential" for efficient route tracing

Checking the earthing of cable being route traced prior initiating survey "directly" on your Transmitter is necessary to ensure an efficient route trace is performed.
On connecting the transmitter to the cable, will allow you to directly view :

- Load / Resistance , in ohms, of utility that you will be tracing
- Current, in mA , being injected into utility
- Voltage



Should the resistance be low at around 300 ohms, as example, would allow the operator initiate efficient route tracing immediately. Lower the resistance - higher the current injected into the utility.
However, should the resistance be shown as high, as example 1800 ohms denotes a high resistance circuit , and will require corrective measures for establishing a good earth at near end (or additional earth on far end) prior initiating route trace or require additional measures such as using the High Power Output function of the transmitter upto 130V, for ensuring an efficient route trace.

The transmitter has a built in Automatic impedance load matching function from 5 to 20000 ohms.

The multi-meter function therefore serves as an essential guide to the operator to ensuring that the buried utility is route traced efficiently and accurately.

Optional Pathlink feature** :
Pathlink provides capability to the operator for Remotely Controlling the transmitter operation from upto 300m distance allowing single person usage. This feature enhances productivity for operators conducting GIS Cable route surveys.

Pathfinder Precision Pipe Cable Locating Receiver, Technical Specifications:

Parameters I Model Options	Pathfinder: STLOC5	Pathfinder: STLOC10	Pathfinder: STLOC10 GPS
Transmitter Mode Available Operating Frequencies (Active)	>36 User configurable frequencies: 200Hz, 256Hz, 273Hz, 340Hz, 400Hz, 460Hz, 512Hz, 560Hz, 570Hz, 577Hz, 640Hz, 760Hz, 797Hz, 815Hz, 870Hz, 920Hz, 940Hz, 1.01kHz, 1.02kHz, 1.10kHz, 1.45kHz, 4kHz, 8.192kHz, 8.4kHz, 8.9kHz, 9.8kHz, 29kHz, 33kHz, 51kHz, 65kHz, 82kHz, 83kHz, 93kHz, 116kHz, 118kHz, 131kHz, 145kHz, 200kHz, 262kHz, 478kHz,		
Passive Modes	Power Mode : 50Hz & 60Hz Live Sound , Radio Mode (RF) , Rectified CP		
Power Filters	Built in		
Power harmonics	50Hz, 60Hz, 150Hz,180Hz, 250Hz, 300Hz, 350Hz, 420Hz, 450Hz, 540Hz		
Current Direction	Up/ Down Current Direction with built in CD frequency		
Antenna	3D Antenna Array		
Antenna Mode	Simultaneous peak/null (dual horizontal antennas & vertical antenna), pin-point peak (dual horizontal antennas), directional guidance, peak (single horizontal antenna) & null (single vertical antenna)		
Display Indicators	Backlit segmented LCD bar graph, battery condition, continuous mode signal strength, depth measurement, line orientation, left /right line guidance, operating mode, volume level & function indicators		
Navigation features	Left Right Arrow, Compass Mode for Orientation, for Cable Route & Identification		
Push Button Selection	6 Buttons for Power, Frequency, Mode selection, Shift/Log/Depth/P-Link, Gain or Up & Down. Shift button allows for selection of "Optional**" functions such as Remote transmitter control connectivity, GPS On/Off		
Audio Indication	Variable pitch & Tone change (solid / pulsed) on either side of target utility, 4 volume selections including mute		
Vibration	Vibrating handle		
Current Measurement	Display indicates relative current		
Display	Large LCD Display, Backlit, (4" Diagonal, 2.5" x 3.1")		
Power Source	Lithium-Ion Rechargeable battery		
Battery Life	Continuous: 30 hours Intermittent: 82 hours		
Signal Strength	LCD bar graph, absolute signal strength 0-999		
Gain Control	Manual gain adjustment & automatic centering		
Dynamic Range	126 dB		
Interference protection from high tension lines	Automatic Overload Protection		
Depth Measurement	DIGITAL: 3-digit LCD readout .02m-10.6m | Optional: 20m | Accuracy: ± 3% (Dependening on Frequency & depth)		
Units	Metric / Imperial, based on user selection		
Live Measurement	Depth & Current, simultaneous at user option		
Operating Temperature	-20° C to +55° C		
Weight	1.79kg +/- 0.1kg		
Dimensions	77cm x 24cm (nominal)		77cm x 27.5cm (nominal)
Environmental	IP65 water & dust proof		
Optional features*			
Datalogging	No	No	10000 datalogs (2GB SD Card) or higher
Built-in GPS	No	No	Breadcrumb data + Specific locations logs.
Communication	No	No	2GB Or higher SD Card, Mini USB Port*
Wireless Communication	No	No	Bluetooth*
Optional feature**	Pathlink: enables the user to remotely control the transmitter using the receiver. The frequency and power output of the transmitted signal can be controlled up to 800 meters.		

Optional features:

***** will result in model change to STLOC10 GPS (or STLOC5 GPS).

****** Pathlink or ***Cable identification kit system: are non-standard optional features which should be specified as custom requirement.

Transmitter Technical Specifications:

Model Options	Pathfinder: STLOC5	Pathfinder: STLOC10	Pathfinder: STLOC10 GPS
Max Output power	5W	12W	
Active line frequencies	Upto 36 user configurable frequencies: 200 Hz, 256 Hz, 273 Hz,400 Hz, 512 Hz, 560 Hz, 570 Hz, 577 Hz, 640 Hz, 760 Hz, 797 Hz,815 Hz, 870 Hz, 920 Hz, 940 Hz, 1.01 kHz, 1.02 kHz, 1.1 kHz,1.45 kHz, 4 kHz, 8.192 kHz, 8.4 kHz, 8.9 kHz, 9.2 kHz, 32.768 kHz,65.53 kHz, 82.70 kHz, 83.00 kHz, 93 kHz, 116 kHz, 117.850 kHz,1131 kHz, 145 kHz, 200 kHz, 262 kHz, 476.2 kHz + 3 Dual frequencies: 815Hz /82kHz, 82kHz/33kHz, 8Hz/82kHz		
Load matching	Automatic 5 to 25000 ohms		
Display	LCD		
Indicators	AC load assistance measurement, relative ohms, voltage, live voltage output, current output, frequency, mode, battery indication alert, low battery indicator audio/visual with modulated low battery warning transmitted to the receiver		
Output power setting	5 power settings, 0.2 to 5 Watt (<8kHz)	10 power settings Low & Medium Frequency Range: 0.2 to 12 Watt (<8kHz); 10 Watt (8 to 44kHz)	
High Power Output Mode	No	Yes, Voltage Boost upto 130 Volts	
DFF mode	Yes, DFF Mode can be used for sheath fault locating if earth return probe (A frame is purchased separately)		
Power source	Rechargeable Li-ion Batteries, 10.8V Li-ion battery charger included		
Operating time	Continuous: 8 ~20 hours depending on load, frequency, power setting. Intermittent: 40 ~60 hours		
Weight	2.49kg		
Size	41 cm x 16 cm x 12 cm		
Operating Temperature	-20°C to 55°C		
Environmental rating	IP65		

Standard Supply includes : Pathfinder Receiver (as per model ordered), Transmitter (as per model ordered)with Direct connection lead set & Earth stake, Li-ion Battery charger, Carry bag, User manual. Note: Both Rx & Tx are provided with built in Li-ion rechargeable battery

Pathfinder Product Selection Guide

Ordering Code	STLOC5DL	STLOC5GPS	STLOC10	STLOC10GPS
Power Mode	•	•	•	•
Radio Mode	•	•	•	•
Transmitter Mode	•	•	•	•
User Configurable Active Line frequencies (Number)	36	36	36	36
Simultaneous Live Depth & Current	•	•	•	•
Built in GPS Logging		•		•
Datalogging	•	•		•
Data transfer	•	•		•
Pathlink				
Transmitter Max Power	5W	5W	12W	12W
DFF Mode	•	•	•	•
Power supply (For Tx & Rx)	Li-ion rechargeable			
A Frame accessory	Optional			
Cable Identification Clamps	Customized kit offered based on requirement			

Accessory Options for capability enhancement:
SIGNAL INDUCTION CLAMPS

Signal Induction clamps also referred to as Induction couplers are used to apply a signal by clamping or wrapping the coupler around a utility where a direct connection is not possible.

4 inch Signal coupler: (Provided as standard with Pathfinder equipment, unless specified otherwise) is a universal induction signal clamp working on the Rogowski coil principle . It is possible to apply frequency options from 8kHz to 82kHz using the 4" signal coupler.

7 inch Flexi coupler: The optional Flexible coupler can be wrapped around larger diameter utilities for route tracing of power cables or metallic pipes by applying 815Hz or 82kHz signal.

Cable Identification Kit*** (Optional Configuration) :

Pathfinder is a optionally available with a customized configuration including a cable identification system designed to simplify the process of pinpointing and identifying a specific cable from within a bunch of buried cables in an congested underground utility network. This option is utilised by telecoms, power and industry.

While the transmitter is utilized to inject a signal into a buried cable. In the case of a congested buried utility network, The Pathfinder receiver can be customised to be equipped with an additional receiver clamp (Snooper antenna) which can be used to identify the specific cable being route traced from a bunch of cables.

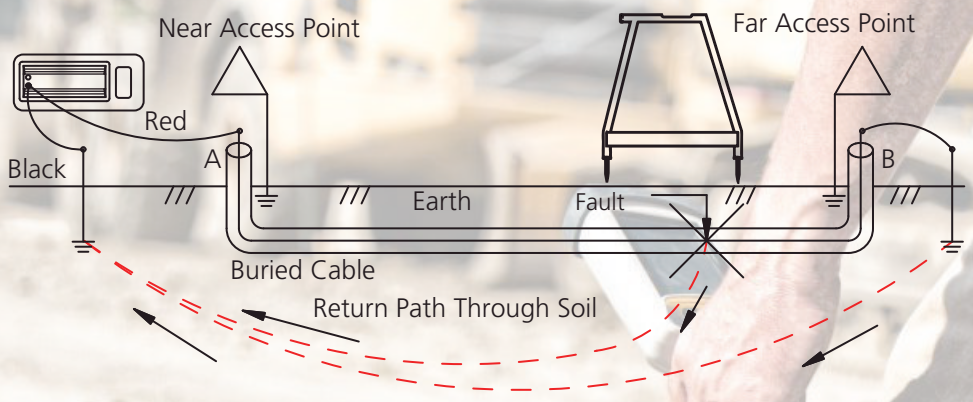
When using the Pathfinder in its cable identification mode, the receiver will show a maximum signal when connected to the targeted specific cable, while will show a lower or no signal in case connected to any other adjoining cable in the same cable trench.

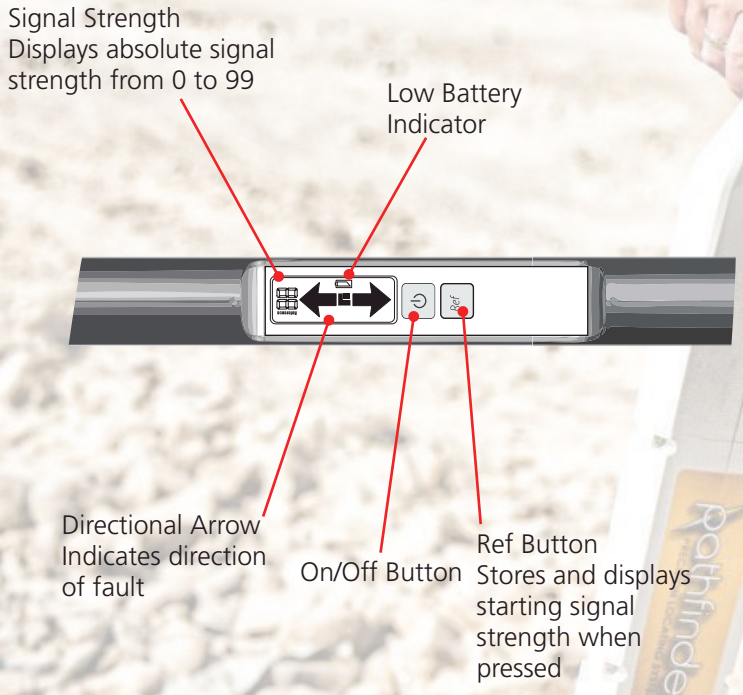
You can choose either Option 1 or Option 2, depending on the method based on which Cable identification is required to be performed. If the cables are buried and being excavated to perform identification the Option 1 CI snooper antenna is the recommended option. if however the cables are available in a manhole or accessible trench, Option 2 CI receiver clamp is recommended.

Fault Locating using Pathfinder

Staff A Frame (Optional Accessory):

STAFF is an **A frame directional fault finder** that is utilised with the Pathfinder transmitter allowing a single man operation to determine position of **Buried Cable Sheath faults** (insulation break on an underground conductor) on buried cables and **earth return faults**. The STAFF provides **directional arrow guidance** with signal strength indicator to guide the operator determine location of fault.





ENHANCE PATHFINDER ROUTE TRACER CAPABILITY TO SHEATH CABLE FAULT LOCATOR WITH A FRAME

Features:

- Stand-alone Directional Fault Finder
- Directional indications to fault's location
- Reference indication for fault identification
- Rigid A-frame for strength
- Durable design for field use
- Locates up to 2 Mega ohm faults

Technical Specifications:

Display Indicators	LCD directional arrow, low battery, current strength & reference indicators
Audio Indication	Pezio response
Power Source	9V, 6"AA" cell batteries
Battery Life	Continuous: 40 hours Intermittent: 82 hours
Operating Temperature	-20°C to +55°C
Size	30.3" x 30.4" (77cm x 24cm)
Weight	3 lbs (1.3kg)

STANLAY™

Engineering Products & Solutions

STANLAY™

STLOC-3

STLOC-5/ DL/ GPS

STLOC-10/ GPS/ GPSP

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Catalogue Version : ST/Loc10/R5/2024-25

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Quality Management System

ISO 9001: 2015

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BQC ASSESSMENT

IAS