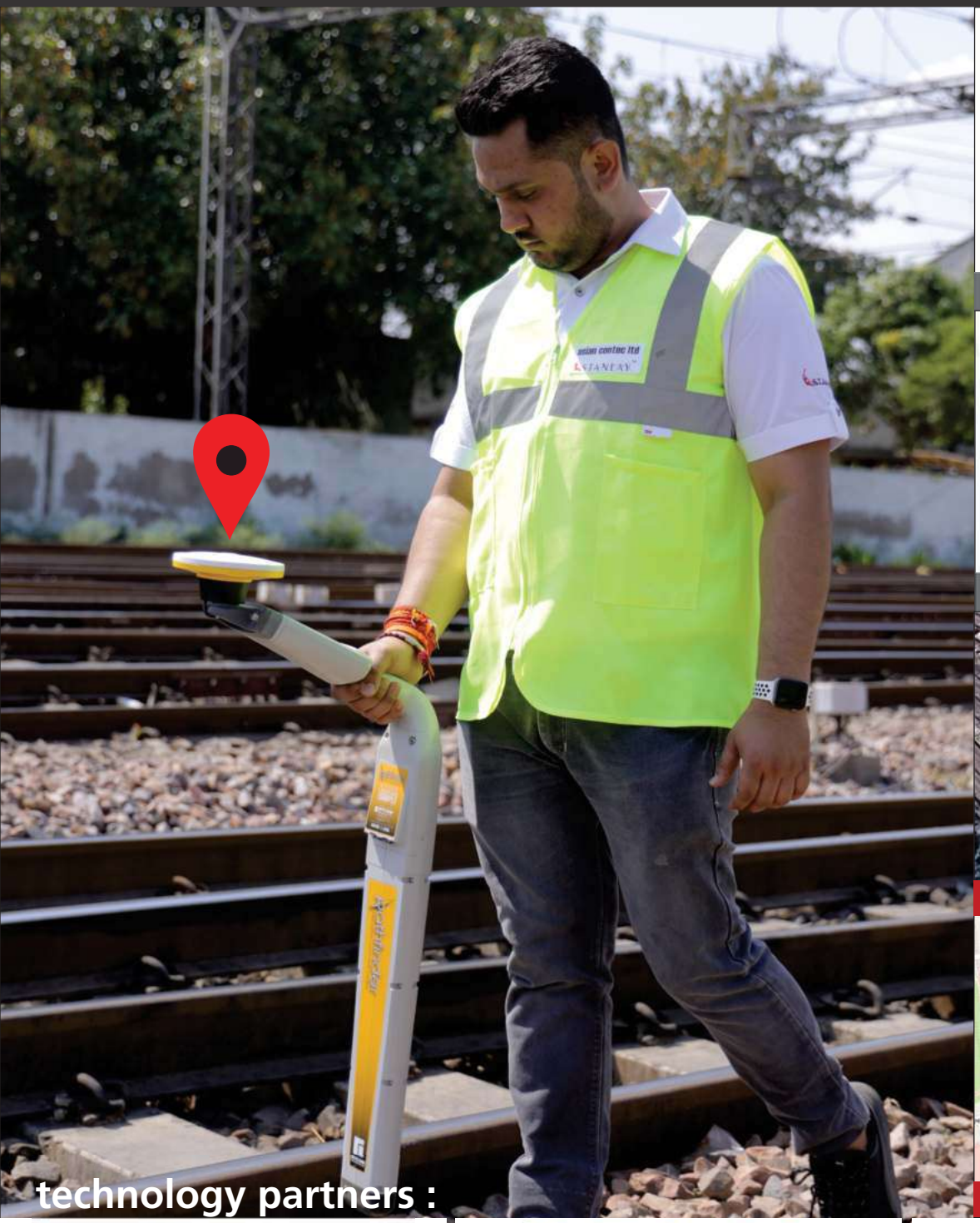
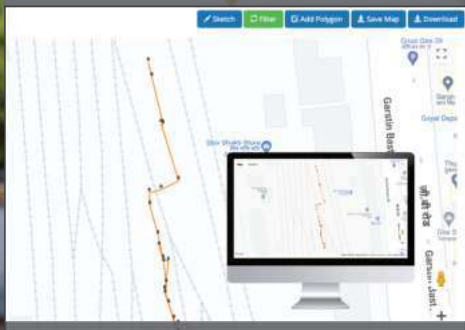
STANLAY™

PATHFINDER PLDL GNSS Pipe & Cable Route Tracer 2024 - 25

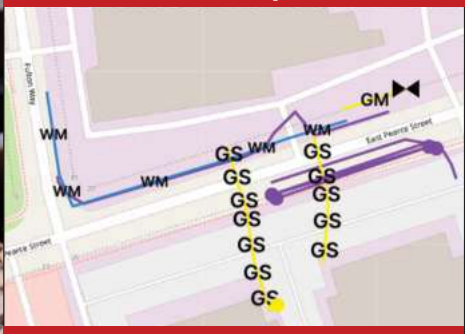


Collect Cable Path Data On-The-Go



View Or Download Maps in Office

Pictorial Map View



Add Sketches for Planning

technology partners :

RYCOM instruments, inc.

Trimble

TerraFlow Geomatics

Automatic Generation of Maps Of Buried Cables & Pipes with Depth Data

Accuracy Options : Upto 5cms Or Submeter

High Power 12 Watt

Quality in Buried Utility Locating. Delivered.

PATHFINDER PLDL High Power Multi Frequency Pipe & Cable Locating & GNSS Map Generating System

STANLAY™

The Most Accurate Combined Cable Pipe Route Locating & Mapping Equipment

Single Man Operation

Route tracing of Medium to Long distance Cable or Pipe Routes, with High Accuracy	GNSS Receiver directly mounted & powered by Locating receiver, to allow single person usage	GNSS receiver is RTK/RTX Capable providing accuracy upto 5cms accuracy with correction hub service
Measure depth of cables or pipes at high depth, typical of HDD installations	Detect buried energised power cables & un-energised cables or pipes	Navigational Aids include Compass, Left - Right Arrow to guide operator

System Comprises :

Hardware

1

Rycom Pathfinder PLDL Cable route locator with **36 frequencies**, Directional guidance with Left-Right Arrow & Compass, **12 watt High power transmitter** and provides **USB 5V power** output to **DA2 GNSS receiver**

2

Trimble DA2 Multifrequency (L1/L2/L5) GNSS receiver delivers survey-quality GPS positioning to location-enabled Android phone. **USB powered**.
GNSS Performance **RTK/RTX or DGPS** based on Catalyst correction service used.

Software

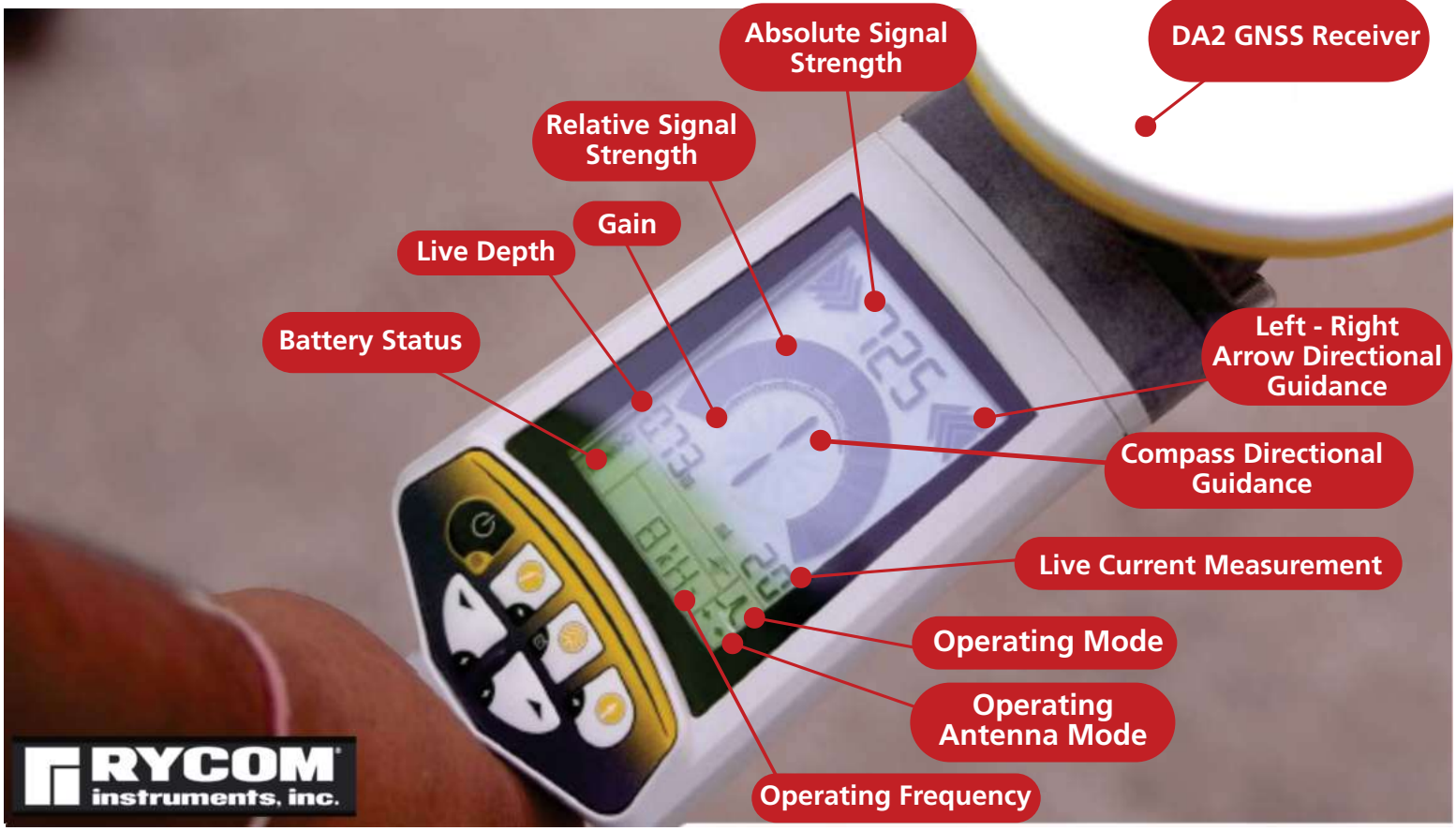
3

Catalyst correction service based on the Trimble Corrections Hub (TCH). The corrections hub provides RTX correction services— of upto 2cms Horizontal/5cms Vertical or submeter accuracy upto 60cms based on 3 Years subscription plan chosen.

4

Android Mobile application connects to GNSS receiver & Pathfinder PLDL locator; **Captures and displays the precise Route & Depth location** with **Map data output** of underground cable or pipe infrastructure. Map data also **stored on the cloud**.

PATHFINDER PLDL High Power Multi Frequency Pipe & Cable Locating & GNSS Map Generating System



Features:

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

The Pathfinder offers a number of low, medium & high frequencies, each with their own advantages.

Over 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, 8kHz, - -8kHz, 8.4kHz, 8.9kHz, 9.8kHz, 29kHz, 33kHz, -33kHz, 51kHz, 65kHz, 82kHz, -82kHz, 83kHz, 93kHz, 116kHz, 118kHz, 131kHz, 145kHz, 200kHz, 262kHz, 478kHz

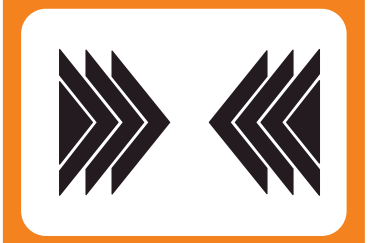
Low frequencies such as 512Hz , 640Hz or 815Hz are ideal for high precision longer distance route tracing and depth measurement with accuracy, especially in congested utility environments. Low frequency options range from 200Hz to 1.1kHz.

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 from upto 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.

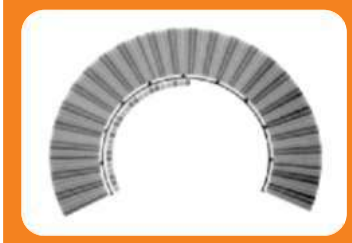
The option of a wide range of low, medium and high frequencies available at disposal allows the operator to choose optimum frequency based on utility type, utility environment and desired result. In case of utility environment with possible interference, the wide range of frequency allows the operator 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

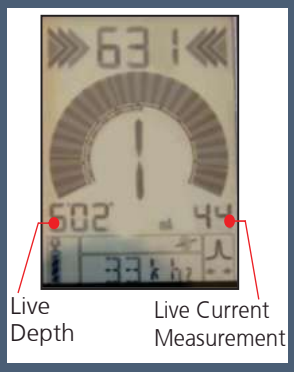
Compass: Keeps the operator in line with orientation of utility



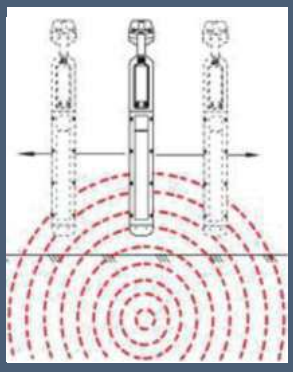
Relative Signal Strength: Bar graph for quick utility identification

Absolute Signal Strength: For determining relative position to utility location

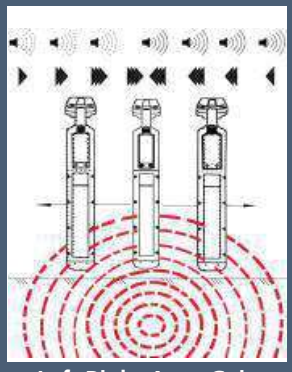
Upto 8 Operating Modes



Simultaneous Live Depth and Current Measurement



Pinpoint & Broad Peak Mode

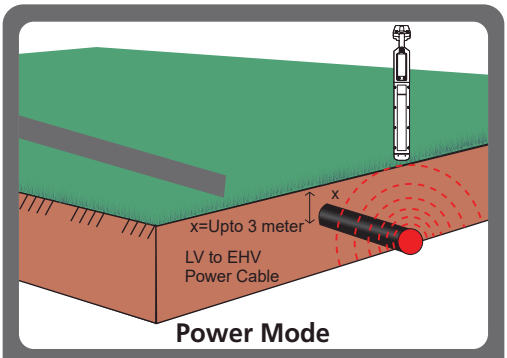


Left Right Auto Gain Directional Locating

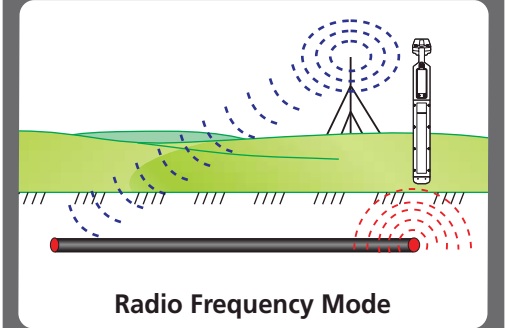
Current Direction Up-Down Arrows

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

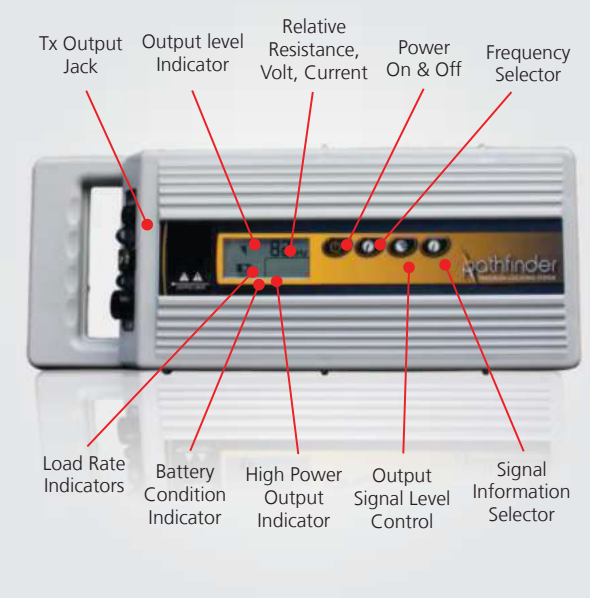


Radio Frequency Mode

Operating Modes

12 Watt Pathfinder Transmitter :

Pathfinder Transmitter provides upto **12 Watt Max Output power** 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 & Facilities measuring depth of utility.



High Power Output function (HPO): Power Boost in the HPO Setting, Max voltage can be increased **upto 130 Volts** , for high resistance circuits.

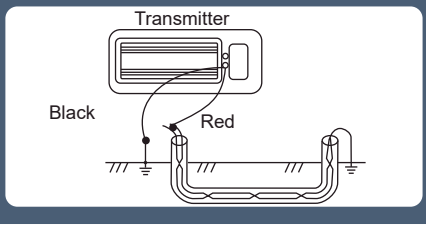
Visual & Audio Controls: The Pathfinder transmitter provides easy to use push buttons with a visual LCD Display and audio feedback to the operator to allow navigate functions such as Frequency selection, Load Indicator, Output Signal level control.

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

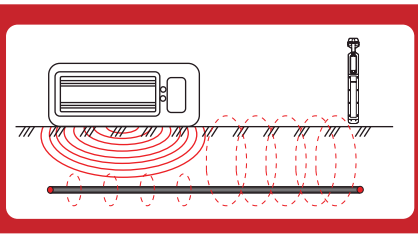
Cable Fault Locating Mode: The Pathfinder transmitter provides a DFF (Directional fault finding) mode as standard. Should an A Frame accessory (Optional) be used, it is possible to utilise the transmitter in DFF mode and A-Frame to determines position of sheath fault on a buried cable.

Signal Application Techniques:

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. Any of the transmitter frequencies can be injected into the cable or pipe using direct connection leads at an access point.



Induction: provides the capability to induce a detectable and traceable signal to a utility where direct connection is not possible 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.

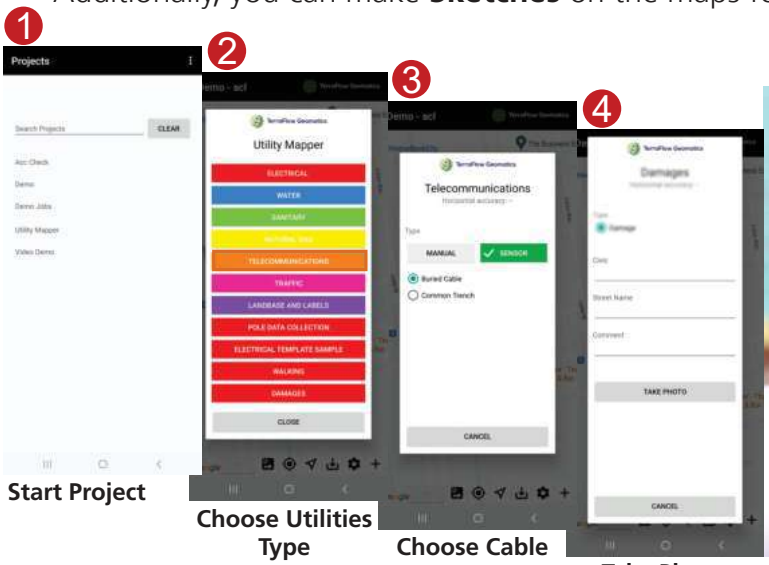


Induction Signal Clamp: Apply a signal to an armored cable such as armored optical fiber cable, JFTC when a direct connection to utility is inconvenient or when it is not possible to interrupt services. The signal clamp can be conveniently clamped around the cable ; Signal couplers are available in 2 options : 4" Universal Signal Clamp that allows coupling signal from transmitter at >=8kHz frequency . 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.

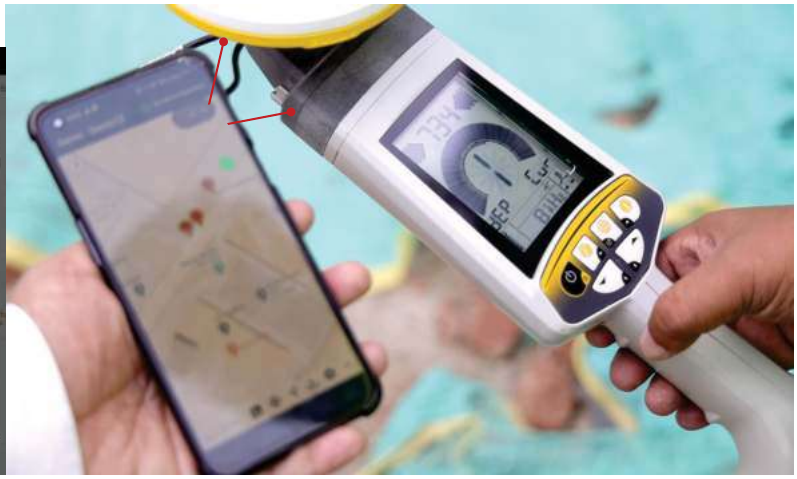
PATHFINDER PLDL High Power
Mobile App for Data Collection & Map Generation

The **Terra flow Utility mapper Mobile App** can be installed on any dual bluetooth android mobile phone & connects to both the Pathfinder PLDL Cable Pipe Route tracer & the DA2 GNSS Receiver for acquiring data. Once configured, only the "**LOG**" button on the PLDL route tracer is to be pressed for acquiring **logs of GNSS locations and depth data** during route tracing. It is also possible to **Take Photo & add** to **database**.

- Data collected in field is **Automatically synchronized** to be available **in real time on office PC** on the Data engine cloud for downloading maps in **various formats** including **.kml (Google Earth) ,Auto CAD, .shp , and .csv** (which includes Date/Time of route trace, GPS Lat/Lon, GPS error, Cable/Pipe Depth Data, etc.
- Maps are **Automatically generated** without need for further human intervention. Furthermore, multiple cable pipe route traces conducted can be "**Merged**" to create a **composite map.**
- Additionally, you can make **Sketches** on the maps for project planning.

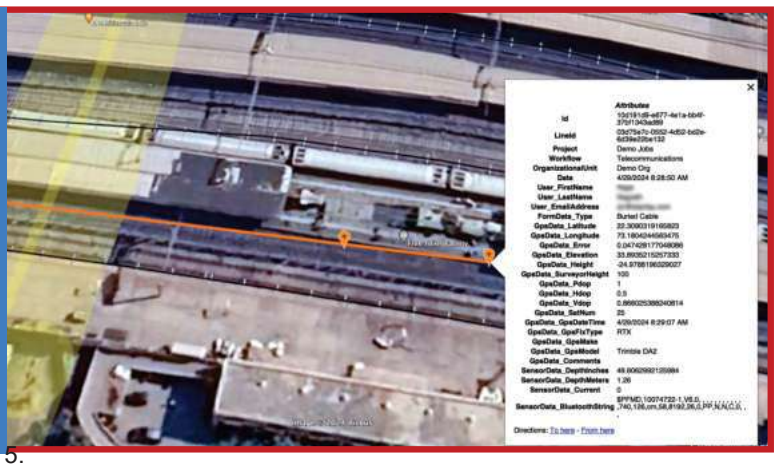


Start Project | Choose Utilities Type | Choose Cable Type | Take Photo



Satellite view

Map view



PATHFINDER PLDL Precision Pipe Cable Locating Receiver, Technical Specifications:

Parameters	Pathfinder PLDL
Active Mode Transmitter Mode Available Operating Frequencies	**>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
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
Current Direction	Up/ Down Current Direction with built in CD frequency
Push Button Selection	6 Buttons for Power, Frequency, Mode selection, Shift/Log/Depth/P-Link, Gain or Up & Down.
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 | Accuracy: ± 3% Depending on Frequency & Depth I Optional : Upto 20m
Units	Metric / Imperial, based on user selection
Live Measurement	Depth & Current, simultaneous at user option
Operating Temperature	-20° C to +55° C
Dimensions | Weight	77cm x 24cm | 1.9kg ± 0.1kg
Environmental	IP65 water & dust proof
Connectivity*	
Wireless Communication	Bluetooth
USB	5V Output for powering DA2 GNSS Receiver

Transmitter
Technical Specifications:

Model Options	Pathfinder PLDL
Max Output power	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	10 power settings Low & Medium Frequency Range: 0.2 to 12 Watt (<8kHz); 10 Watt (8 to 44kHz)
High Power Output Mode	Yes, Voltage Boost upto 130 Volts
DFF mode	Yes, DFF Mode can be used for sheath fault locating (Earth return probe / A frame is purchased separately)
Power source	Lithium-Ion Rechargeable battery , Li-ion battery charger included
Operating time	Continuous: 8 ~20 hours depending on load, frequency, power setting. Intermittent: 40 ~60 hours
Weight	2.7kG
Size	41 cm x 16 cm x 15 cm
Operating Temperature	-20°C to 55°C
Environmental rating	IP65

Supply includes : Pathfinder PLDL receiver, Pathfinder transmitter, Li-ion Batteries will be built in as specified, Li-ion battery charger, DA2 GNSS receiver with USB cable, Mobile App licence (5 Years), Trimble Catalyst service licence 3 Years (as ordered * refer page no. 9 for Accuracy options) & Dual bluetooth mobile phone (If ordered)**

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.

PATHFINDER PLDL Pipe & Cable Locating & GNSS Map Generating System DA2 Receiver

DA2 is the Next generation Trimble Catalyst™ GNSS receiver. Accuracy performance scales with your Trimble Catalyst service subscription (High accuracy RTX automatic correction service for PPP precise point positioning without need for a base station) to deliver realtime on the go accuracy upto from 1 cm to 60 cm accuracy (Depending on Catalyst Subscription selected, and provides support for any field device.

Features:

- **Scalable and flexible accuracy-based pricing**
- **Lightweight and rugged design**
- **Simple installation and setup**
- **Simple installation and setup**
- **Powered by Trimble ProPoint™ GNSS positioning technology**
- **Supports all global GNSS systems**
- **Flexible mounting options**
- **Connect wirelessly to iOS and Android™ devices**
- **Conveniently USB powered**

Catalyst RTX 3 Year Subscription Options*** :	
Catalyst 1 RTX	Catalyst RTX 60
Accuracy upto 2cms/5 cms*	Accuracy upto 60 cms*

Technical Specifications:

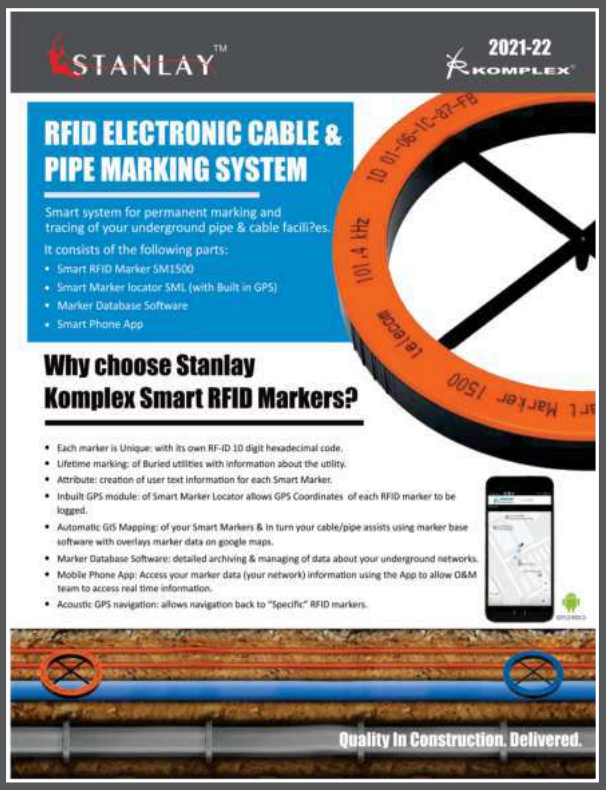
GNSS PERFORMANCE	
Code Differential (DGPS)	
Horizontal accuracy	0.3 m + 1 ppm RMS
Vertical accuracy	0.6 m + 1 ppm RMS
Single baseline (<30 km) RTK	
Horizontal accuracy	10 mm + 1 ppm RMS
Vertical accuracy	20 mm + 1 ppm RMS
Network RTK	
Horizontal accuracy	10 mm + 0.5 ppm RMS
Vertical accuracy	20 mm + 0.5 ppm RMS
Trimble RTX™ (using Trimble Corrections Hub)	
Horizontal accuracy	2 cm RMS
Vertical accuracy	5 cm RMS
Positioning rate	1 Hz, 5 Hz, 10 Hz

PATHFINDER PLDL Pipe & Cable Locating & GNSS Map Generating System DA2 Receiver

SIGNAL TRACKING	• Trimble ProPoint GNSS positioning technology for improved accuracy and productivity in challenging GNSS conditions1 • GPS: L1C/A, L2C, L5 • GLONASS: L1C/A, L2C/A • SBAS: L1C/A, L2C, L5 • Galileo: E1, E5A • BeiDou: B1, B2A • QZSS: L1C/A, L2C, L5 • NavIC (IRNSS): L5 • Digital channels: Software controlled by Catalyst dynamic signal tracking using mathematical channels
COMMUNICATIONS/CONNECTIVITY	
Bluetooth	4.2
Apple	Made for iOS certified
Ports	USB-A (Power only)
Data protocols	NTRIP, VRS, RTCM 3.x, CMRx , DCOL
Position output	NMEA (LLH), DCOL
Supported Platforms	
Android	Android 5.0 (Pie) and higher
iOS	iOS 13.0 and higher
BATTERY AND POWER	
External power input	USB-A (5 Vdc 1 A)
Power consumption	0.5–2.5 W
ENVIRONMENTAL	
Operating ambient temperature	–20 °C to 60 °C
Operating humidity	95% RH, non-condensing
Operating altitude	Tested to 9,000 m (29,500 ft)
MECHANICAL	
Dimensions	128 x 55 mm
Weight	330 g
Environmental | Drop protection	IP65 | 2m

* GNSS performance is dictated by the Catalyst subscription type in use. GNSS accuracy may be affected by anomalies such as multipath, satellitegeometry, atmospheric conditions, and proximity to obstructions such as trees, mountains, buildings and other structures. Accuracy specifications are valid in normal conditions with clear line of sight to the sky. Accuracy may degrade quickly and significantly under any of the aforementioned anomalous conditions

Engineering Products & Solutions



STANLAY™

GPS Enabled Route Tracer Options for Creation of Digitized Maps of Buried Utilities.

Pathfinder STLOC10-GPS
Accuracy Upto 2.5m CEP

Pathfinder PLDL
Accuracy Upto 5cm Or 60cm

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Catalogue Version : ST/PLDL/2024-25

Quality Management System
ISO 9001: 2015
1-QSC202101102

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