

LOCATE. AVOID. TRACE. MEASURE DEPTH. MAP. BURIED PIPES & CABLES
BURIED CABLE & PIPE AVOIDANCE PRIOR EXCAVATION
CABLE ROUTE TRACING



## NEW C.SCOPE MXL2 AND MXT2 PRECISION PIPE AND CABLE LOCATION EQUIPMENT

The new MXL2 and MXT2 from C.Scope have been designed to set a **new benchmark in precision Buried Pipe & Cable locating** as well as still delivering **all the advantages** and **familiar operating** practices associated with the original MXL and MXT. The new products are loaded with new features which enable operators to find more buried utilities by delivering improved levels of performance and helping to reduce the effects of human error.

The MXL2 Pipe and Cable Locator is driven by Powerful Digital Signal Processor Technology.

Advanced software programming enables the MXL2 to provide high performance in cable route tracing & buried cable & pipe detection.

The MXL2 delivers "Improved Signal Detection Sensitivity" and Automatic Noise Rejection so the Locator is now capable of detecting and tracing the smallest of signals, even in areas of high service density and electrical noise.

The addition of the new simultaneous 33+133 KHz combined frequency will assist in the detection of smaller buried cables such as telecoms, sheathed fiber optics and street lighting spurs.

Human error can be a contributory factor associated with cable strikes. To address this issue, intelligent features such as an **Automatic Daily Self** Test function and a **Dynamic Swing Sensor** help ensure that the best working practices are adhered to and are being applied on-site.

The optional **Data Logging option** can also provide an invaluable insight into working practices and help to identify key training requirements.

Using the MXT2 Transmitter with the MXL2 Locator maximises the full performance capabilities of the new Locator. The MXT's Class leading One Watt 4-level adjustable Power Output makes it possible to apply a detectable signal onto Deeper and Harder to Detect Pipes and Cables for complex locate tasks.

The new MXL2 range is one of the most advanced yet easy to use high performance buried cable & pipe location equipments for telecom & construction project executives, to attain the task of medium to long distance cable route tracing & avoidance of risk of cable strikes.





#### **C.SCOPE MXL2 OVERVIEW**

- Power Mode.
- Radio Mode.
- Multifrequency Transmitter Mode.
  - Simultaneous 33+131kHz combined frequency (CF)
  - -8kHz Signal detection for tracing over longer distances
  - Ultra low 512Hz Signal detection for specialist tracing & Sonde mode.
- All Scan Mode.
- Accurate Depth Indication.
- Signal Current Measurement.
- **Automatic Noise Rejection.**
- Dynamic Swing Sensor.
- Automatic Daily Self Test (ADST).
- High Resolution Backlit Liquid Crystal Display.
- No periodic calibration required.

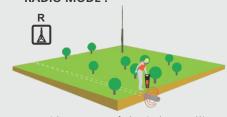
#### C.SCOPE MXT2 OVERVIEW

- One Watt 4-level adjustable Power Output.
- **Three Signal Outputs** 
  - New simultaneous 33+131kHz Combined Frequency (CF) Signal.
  - -8kHz Signal, -512Hz Signal.
- Pulsed or Continuous Output Signal.
- **Three Signal Application Techniques.** 
  - Direct Connection
  - Wraparound
  - Induction.
- High resolution Liquid Crystal Display.
- Accessory Tray.

**POWER MODE:** 

No periodic calibration required.

#### **RADIO MODE:**



Detect & trace buried energized metallic power cables Locate a wide range of buried metallic utilities/conductors, whether or not they are carrying current, using the locating receiver alone in Radio mode.

#### **GENERATOR/TRANSMITTER MODE:**

using the locating receiver alone in Power mode.

Trace the route of specific services such as Armored Telecom Cables, Power Cables and Metallic Pipes by connecting the MXT2 Signal Generator to the metallic cable or pipe utility and trace the signal using the locating receiver operating in the 'Generator/Transmitter' mode. In this mode the operator can also measure depth of the utility .There are two methods by which the signal of the signal generator / transmitter can be applied to buried services as illustrated below i.e a. Conductive Locating By Direct Connection or Using a Wraparound Induction Signal Clamp OR by using Inductive locating mode of the MXT2 Signal Generator.:

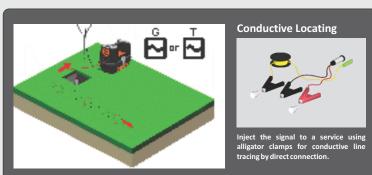
#### **MULTIFREQUENCY** 4 OPERATING MODES EPTH MEASUREMENT AUTOMATIC NOISE REJECTION



#### **ALL SCAN MODE:**



Innovative All Scan mode uniquely listens for all frequencies ranging from the lowest of the 50Hz Power signals right up to and including 33kHz. This all in-one mode detects unusual frequency signals present on pipes and cables often overlooked in the conventional Power, Radio or Transmitter Mode. All Scan Mode can often speed up the locating process with just one sweep of the site.





Induce a signal on to buried metal services remotely from the surface without physically connecting to that service. Significantly increases capability to locate buried services





### C.SCOPE MXL2 MULTI FREQUENCY PIPE & CABLE LOCATOR

#### Mode Selection Switch

- Power Mode.
- Radio Mode.
- Transmitter Mode.
- All Scan Mode.

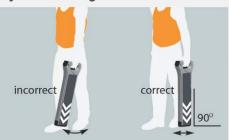
- SIMULTANEOUS 33 + 131KHZ COMBINED FREQUENCY
- 8KHz FREQUENCY FOR MEDIUM TO LONG DISTANCE TRACING
- 512Hz FOR SONDE USE IN PIPE DETECTION



#### LCD with Automatic Backlight.

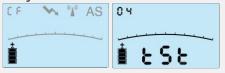


#### **Dynamic Swing Sensor.**



The Locator should always be held at 90°. If you are excessively swinging the Locator, it's dynamic swing sensor will alert you with a tone sound.

#### **Daily Self Test**



The 'Self Test' is performed the first time the locator is switched on each day and takes approximately 4 seconds. The self test checks the two internal aerials and all the operating modes mentioned to ensure that YOU know that your equipment is fit for Usage.

#### **Overload Indication**



The locating receiver will give you an overload indication signifying presence of very shallow utilities or excessive signals in depth mode and daily self test mode.

#### **Fingertip Controls**



#### **Detachable Loudspeaker**



#### **Built In Dual Battery Pack**



#### **USB Connectivity**



Battery Compartment Contains the USB Socket allowing the user to print out a system validation certificate when required.



## C.SCOPE MXT2 ONE WATT MULTI FREQUENCY TRANSMITTER



**LCD DISPLAY** 

#### Control Panel:

- On / Off
- Output Power Adjustment
- Frequency Selection
- Pulsed / Continuous
- Loud / Mute

#### Loudspeaker.

ConnectionSocket.

#### **4 POWER LEVELS**

LCD clear digital display indicating:

- Functions selected
- Power level
- Battery condition
- Connection quality



DUAL SIGNAL MODE: PULSE & CONTINUOUS FOR SURETY IN ROUTE TRACING

Impact Resistant Twin Wall Construction

Detachable Accessory Tray containing:

- Direct Connection Leads
- Earth Stake
- Connection Magnets
- 10m Auxiliary Earth Lead
- Instruction Manual
- Designed with space to also carry a Signal Clamp or other accessories.



#### **C.SCOPE MXL2 FEATURES**

#### **FOUR DETECTION MODES**

The MXL2 has four detection modes. Each mode provides specific advantages.

**POWER** mode identifies buried electricity cables by detecting the mains frequency signal travelling along the cable itself, when current is being drawn.

**RADIO** mode detects re-radiated 'radio' type signals that are often present on metal pipes and cables.

**TRANSMITTER** mode is used to detect the signal applied to a metal pipe or cable by a C.Scope MXT2 Transmitter. The ability to select from a **simultaneous 33kHz+131kHz** signal as well as **8kHz and 512Hz** signals gives the operator more versatility to detect and trace utilities. The Transmitter mode is also used for detecting the signal from a C.Scope Sonde or Stanlay traceable duct rodder when tracing in non metallic pipes such as sewers, drains or telecom cable ducts.

**ALL SCAN** mode detects **ALL frequencies** of signal from the **lowest of the Power signals** right up to and including **33kHz**. This mode can detect unusual signals appearing in the frequency gaps between conventional Power, Radio and Transmitter modes and is invaluable as a 'final check' before excavation work begins.

**Depth Measurement** When used with an MXT2 Transmitter, the depth of Buried Pipes, Cables and Sondes can be indicated at the push of a button.

#### Signal Current Measurement:

The MXL2 can monitor the true strength of the MXT2 Transmitter signal applied to a buried service irrespective of its depth. This is ideal for identifying the layout of a pipe or cable network.

#### **Dynamic Swing Sensor:**

The MXL2 will **sound a single tone** to alert the operator if it is being swung excessively when in use.

#### Automatic Daily Self Test (ADST)

The MXL2 has comprehensive self test circuitry. ADST fully examines the Locator, including the receiving aerials every day when it is first switched on. This gives the operator confidence that the equipment is working to its optimum before it is used. The test result is recorded and can be printed out as a System Validation Certificate when required.

#### **Optional:**

#### **DATA LOGGING OPTIONS**

The MXL2 Precision Pipe and Cable Locator is available with or without Data Logging. The Data Logging version will automatically record how and when the Locator is being used. Over 12months of data (in normal use) can be stored before being overwritten. A full audit trail is kept of all locating activity so that it is possible to see when the Locator passed Self Tests, which Modes have been used, when, and for how long. \*

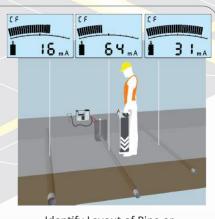
#### **DATA TRANSFER VIA USB**

Data from the Data Logging versions of the MXL2 can be transferred at any time to a PC for analysis via the data connection socket in the battery compartment.\*

#### DATA LOG TRANSFER VIA BLUETOOTH™

The Data Logging MXL2 has the additional option of **Bluetooth™**. C.Scope's free to download **RELAY App**, uses the **Bluetooth™** connection to **wirelessly transfer datalogs** from the Locator to smartphones and tablets and then email them **to a PC for analysis**. This provides a very practical method of instantly transferring data from the Locator while still on-site.\*\*

- \* Applicable to MXL2 DL & MXL2-DLB Models
- \*\* Only Applicable for MXL2 DLB Model.



Identify Layout of Pipe or Cable in Complex Networks





#### **C.SCOPE MXL2 FEATURES**

#### LCD CLEAR DIGITAL DISPLAY

The MXL2 has a large, clear and easy-to-read backlit LCD mounted behind a tough protective polycarbonate lens. The display indicates detection mode, signal peak level, depth, signal strength and battery condition. It also displays the Automatic Daily Self Test results.

#### **FINGERTIP CONTROLS**

The MXL2's ergonomic controls offer easy **singlehanded sensitivity adjustments** and mode selection.

#### **DETACHABLE LOUDSPEAKER**

The Loudspeaker can be easily detached for use in noisy work environments.

#### **DATA CONNECTION**

The MXL2 features a data connection socket for transferring data to a PC using the C.Scope XI2 Edition PC Toolkit.

#### **ROBUST & DURABLE CONSTRUCTION**

The MXL2's **twin wall construction** is robust and durable. It also provides **IP65 standard of protection** against dust and water ingress.

#### **CALIBRATION**

The **MXL2** does not require periodic re-calibration, significantly reducing running costs and downtime.

#### SYSTEM VALIDATION CERTIFICATION

The C.Scope XL2 Edition PC Toolkit allows owners to print a System Validation Certificate by connecting the MXL2 to a PC via USB. The results are generated from the ADST results that are stored on the Locator.

#### SERVICE:

A complete 'covers off' service and maintenance package is available for those customers who require it from Stanlay Authorised Service Center.

#### **GPS MAPPING\***

The MXL2 with Datalogging and Bluetooth™ can also be connected live to accurate professional GPS survey/mapping equipment allowing the accurate depth (z) of an underground pipe or cable to be linked to the x and y co-ordinates. This application enables 'single pass' mapping surveys.

#### **DATA LOG ANALYSIS:**

C.Scope's FREE to download XL2 Edition PC Toolkit allows manipulation of the stored data-logs into charts and graphs that illustrate all aspects of the use of the MXL2 Locator. The data can be utilised to show if the Locator has been used correctly, to assess actual operator behaviour and to identify any potential training requirements.

\* Only compatible GPS units can sync. Only applicable for use with MXL2-DLB model.



#### **C.SCOPE MXT2 FEATURES**



The MXT2 Transmitter is a multi frequency, high power Transmitter that is especially useful for the utility technician. Operating via either Direct Connection or Induction, and with FOUR signal frequencies to choose from, including a simultaneous 33+131kHz, 8kHz & 512Hz the MXT2 facilitates more versatile distance tracing than previously possible.

#### **SIGNAL APPLICATION TECHNIQUES:**

The MXT2 offers three alternative ways to apply a Transmitter signal:

#### **DIRECT CONNECTION**

Direct Connection allows specific pipes or cables to be individually traced, identified and their depths measured. The use of Signal Clamps, Signal Injectors and Direct Connection leads make this mode the most effective method for pinpointing pipes and cables.

#### SIGNAL CLAMP (OPTIONAL):

If it is difficult or inconvenient to use Direct Connection, then the signal clamp wrap around technique can be utilised to successfully energise an armored optical fiber cable, street lighting cable etc.

#### **INDUCTION:**

Induction allows the Signal Generator to induce a detectable and traceable signal to previously unknown, undetected or inaccessible underground metal pipes or cables without any direct connection. This is also referred to as a Blind Search and significantly increases capability to locate or trace buried services.



#### **POWER**

The MXT2 Transmitter has a 4-level adjustable One Watt Power Output to provide longer distance tracing and so that the user can control how much power to use and when.

#### LOUDSPEAKER

The MXT2 has a clear audible signal output to indicate when it is in operation. There is also the facility to mute the audio if required.

#### PULSED OR CONTINUOUS SIGNAL OUTPUT

The MXT2 offers the choice of a Pulsed or Continuous signal output enabling operators to switch to the Pulsed Mode in high interference situations and keep on tracing.

#### LCD CLEAR DIGITAL DISPLAY

The MXT2 has a large, clear and easy-to-read backlit LCD mounted behind a tough protective polycarbonate lens. The display indicates clear information about the functions selected, the power level being used, the battery condition and the quality of connection achieved.



#### **ACCESSORY TRAY**

The MXT2 Transmitter has a large detachable accessory tray as its base. It can house not only the standard accessories (Direct Connection Leads, Earth Stake, Connection Magnets, 10m Auxiliary Earth Lead) and the Instruction Manual but also many of the optional extras such as Signal Clamps, Sondes and Signal Injectors.

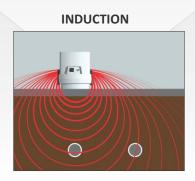
#### **ROBUST & DURABLE CONSTRUCTION**

The MXT2's twin wall construction is robust and durable. It also provides IP65 standard of protection against dust and water ingress.

#### **CALIBRATION**

The MXT2 does not require periodic re-calibration helping to significantly reduce running costs and downtime.

# DIRECT CONNECTION







MXL2 TECHNICAL SPECIFICATION :			
LOCATOR FEATURES	MXL2	MXL2-DL	MXL2-DLB
Power Mode	•	•	•
Radio Mode	•	•	•
Transmitter Mode	•	•	•
- 33+131kHz	•	•	•
- 8kHz	•	•	•
- 512 / 640 Hz	•	•	•
All Scan Mode	•	•	•
Depth Measurement	•	•	•
Signal Current Measurement	•	•	•
Automatic Noise Rejection	•	•	•
Dynamic Swing Sensor	•	•	•
No Periodic Calibration*	•	•	•
Automatic Daily Self Test	•	•	•
Data Logging	_	•	•
Data Transfer via USB	-	•	•
Data Transfer via Bluetooth™	_	-	•
GPS via Bluetooth™	-	-	•
Display (LCD)	•	•	•
Three Year Warranty	•	•	•
Batteries**	8 x AA (LR6)	8 x AA (LR6)	8 x AA (LR6)
IP 65 Environmental Rating	•	•	•
Size	720mm X 280mm X 65mm		
Weight	2.65kgs (Including Batteries)		

- No Periodic Calibration. The MXL2 does not require periodic calibration. If you have any questions regarding service and maintenance, contact STANLAY.
- Batteries. The MXL2 uses 8 x AA LR6 Alkaline or NiMH Rechargeable batteries sealed in a secure, fitted battery compartment. The battery pack will typically provide approximately 40 hours of  $service\ depending\ on\ use.\ The\ battery\ compartment\ also\ houses\ a\ spare\ battery\ holder.$

CABLE AVOIDANCE TOOL PERFORMANCE	FREQUENCY	SENSITIVITY @1m depth	DETECTION DEPTH (max)
Power	50-400Hz	5mA	3m
Radio	10kHz-30kHz	25μΑ	2m
Transmitter	33kHz+131kHz	5μΑ	5m
	8kHz	100μΑ	5m
	512/640Hz	500μΑ	5m
All Scan	50Hz-33kHz	100μΑ	3m
Sonde	512Hz/8kHz/33kHz		9.9m (Max)

MXT2 TECHNICAL SPECIFICATION:			
TRANSMITTER FEATURES	MXT2		
One Watt Power	4 LEVEL		
Transmitter Frequencies	•		
-33+131kHz	•		
-8kHz	•		
-512/640Hz	•		
Pulsed / Continuous Output Signal	•		
Signal Connection Modes	•		
- Direct Connection	•		
- Wraparound	•		
- Induction	•		
Display (LCD)	•		
Accessory Tray*	•		
No Periodic Calibration**	•		
Three Year Warranty	•		
Batteries***	4 x D (LR20)		
IP 65 Environmental Rating	•		
Size	360mm X 180mm X 230mm (with accessory compartment)		
Weight	3.4kgs (Including Batteries, connection leads & earth stake)		

- Accessory Tray includes Direct Connection Lead, Auxiliary 10m Earth Lead, Connection Magnets, Earth Stake and Instruction Manual.

  No Periodic Calibration. The MXT2 does not require periodic calibration. If you have any questions regarding service and maintenance, contact STANLAY.

  Batteries. The MXT2 use 4 x D LR20 Alkaline or NiMH rechargeable batteries housed in a secure battery compartment.



#### **ACCESSORIES:**

An extensive range of accessories to suit all pipe and cable locating requirements.

#### SIGNAL CLAMP:

Operators can apply the MXT2 signal effectively to any cable by using the Signal Clamp. It is an extremely practical way to allow individual cables to be traced even when amongst other cables. Signal clamp dia is 4" (100mm) with a 2m connecting lead & it can be operated 1m deep in water without deterioration (eg. in a flooded manhole)



Signal Clamp





Signal Injector



CTRAK- Traceable Maxi **Duct Rodder** 



MTRAK- Traceable Midi **Duct Rodder** 



**General Purpose Sonde** 



**Duct Sonde** 



User Manual

#### **SIGNAL INJECTOR:**

The MXT2 signal can be applied to an electrical cable, quickly and safely, by using a standard wall socket as the point of connection with the C.Scope Signal Injector.

#### CTRAK-TRACEABLE MAXI DUCT RODDER:

The CTRAK is a maxi traceable rodder based on a 9mm composite fiberglass rod with a 1mm built in tracer copper wire - available in length options of 200m & 300m for tracing route of buried/underground non metallic telecom HDPE ducts or plastic pipes of 36 mm dia or higher. The base of the frame contains a terminal box that provides a connection to the inbuilt copper tracer wire of the duct rod. After inserting the traceable rod into the duct which is to be route traced, apply signal from the direct connection lead of a transmitter to the terminal and connect the other lead of the transmitter to an earth stake, which then excites the full length of the rodder to enable trace the buried pipe. Use any Digital Pipe & cable locating receiver to trace the route of the buried pipe.

#### MTRAK-TRACEABLE MIDI DUCT RODDER:

The MTRAK is a midi traceable rodder for tracing route of buried/underground smaller diameter metallic & non metallic pipes (eg. - 20mm dia pipes or higher) such as Buried Telecom & Plumbing Pipes is based on a 5.5mm composite fiberglass rod with 3x0.5mm tracer copper wires. Available in a length option of 80m & 100m.

#### **GENERAL PURPOSE SONDE:**

The market leading Sonde allows the route of non-metallic pipes such as sewers, drains and large plastic gas and water mains to be traced. Ideal for finding the position of blockages in pipes and powerful enough to be detectable at 7metres depth.

#### **DUCT SONDE:**

The C.Scope Duct Sonde is built and shaped specifically for use in cable ducts that are already filled with cables.

#### **USER MANUAL:**

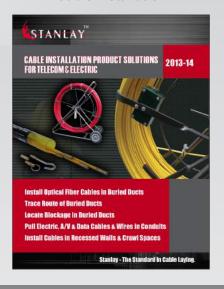
Multi Language Quick User Guide is available in English, Hindi, Tamil & Telugu. Also, Video & animated tutorials are available.

#### **Engineering Products & Solutions**

#### **Buried Pipe & Cable Locators**



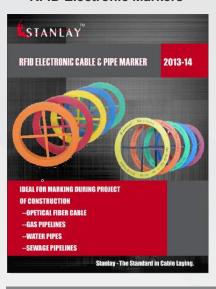
#### **Cable Installation**



#### **Ground Penetrating Radars**



#### **RFID Electronic Markers**



#### **Electronic Instrumentation**



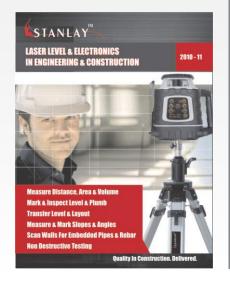
#### **Transportation Engineering**



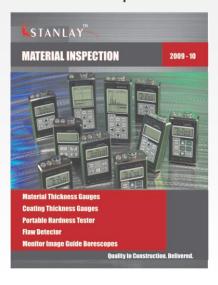
#### **NDT**



#### Laser Levels



#### **Material Inspection**





#### MXL<sup>2</sup> MXT<sub>2</sub>

# MULTI FREQUENCY PRECISION PIPE & CABLE LOCATION EQUIPMENT HIGHER PERFORMANCE & PRECISION





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