



DXL⁴ CABLE AVOIDANCE TOOL

**DEPTH MEASURING CABLE AVOIDANCE TOOL
DATA LOGGING BURIED PIPE & CABLE LOCATING EQUIPMENT**

2020 - 21



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

Quality in Construction. Delivered.

C.SCOPE DXL4 / CXL4 DIGITAL CABLE AVOIDANCE TOOL & SGV4 / SGA4 SIGNAL GENERATORS

The new DXL4 and Cable Avoidance Tools and SGV4/SGA4 Signal Generator from C.Scope is the latest product update of the DXL cable avoidance series which is the globally accepted benchmark safety equipment for detection of buried utilities prior any form of excavation. The XL4 updated cable avoidance tool series are **loaded with latest features** which **enable operators to find more buried metallic utilities** by delivering significantly improved levels of performance and helping to reduce the effects of human error.

The XL4 Cable Avoidance Tools are driven by **Powerful Digital Signal Processor Technology**. **Advanced software programming** enables the new products to provide **Outstanding Detection Performance** even when **locating in the most difficult areas**.

The XL4 Cable Avoidance Tools deliver **“Improved Signal Detection Sensitivity”** and **Automatic Noise Rejection** so that they are now capable of detecting the **smallest of signals**, even in areas of **high service density** and **electrical noise**.

The **Dual 33+131kHz Combined frequency** will assist in the **detection of smaller buried cables** such as Telecoms, sheathed fibre optics and street lighting spurs.

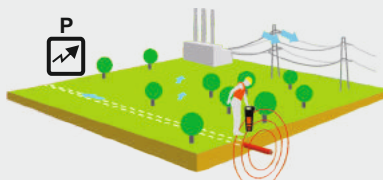
Human error can be a contributory factor associated with cable strikes. To address this issue, intelligent features such as an **Automatic Daily Self Test function**, Alarm for shallow cables detected and a **Dynamic Swing Sensor** help ensure that the best working practices are adhered to and are being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

The **Data Logging** feature now included as **standard** provides an invaluable insight into when and how the tool was utilised by the operator and helps to identify key training requirements.

Using the SGA4/SGV4 Signal Generator with the DXL4 Locating Receiver maximizes performance capabilities of the Cable Avoidance Tool. The Adjustable Power Output delivered by the SGV/A4 makes it possible to apply a detectable signal onto Deeper and Harder to Detect Pipes and Cables for Complex Locate Tasks.

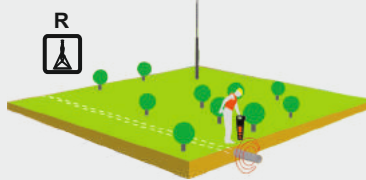
The **“CSCOPE Cable Avoidance tools”** already considered the standard safety equipment worldwide to detect buried utilities prior any form of excavation - With its new XL4 range provides a significant step forward for telecom, utilities & construction project executives in the quest to reduce the day-to-day risk of cable strikes.

POWER MODE :



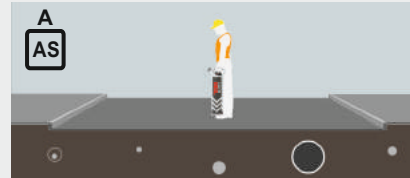
Detect & trace buried energized metallic power cables using the locating receiver alone in Power mode.

RADIO MODE :



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

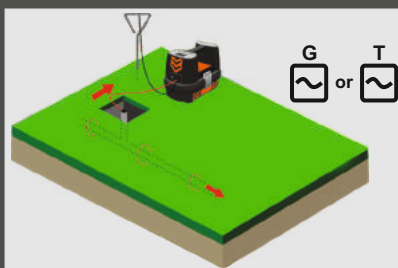
ALL SCAN MODE :



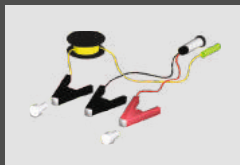
Innovative **All Scan** mode uniquely listens for all frequencies ranging from the lowest of the 50Hz Power signals right up to and including 33kHz. This all in-one mode detects unusual frequency signals present on pipes and cables often overlooked in the conventional Power, Radio or Transmitter Mode.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

GENERATOR/TRANSMITTER MODE :

Trace the route of specific services such as Armored Telecom Cables, Power Cables and Metallic Pipes by connecting the SGV/A4 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 SGV/A4 Signal Generator:



Conductive Locating



Inject the signal to a service using alligator clamps for conductive line tracing by direct connection.

Inductive Locating



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

Optional Extended Capability : Inductive Signal Clamp



Connect the signal to a service using Signal Clamp for conductive line tracing, where a direct connection to the service is not possible.

C.SCOPE DXL4 / CXL4 OVERVIEW

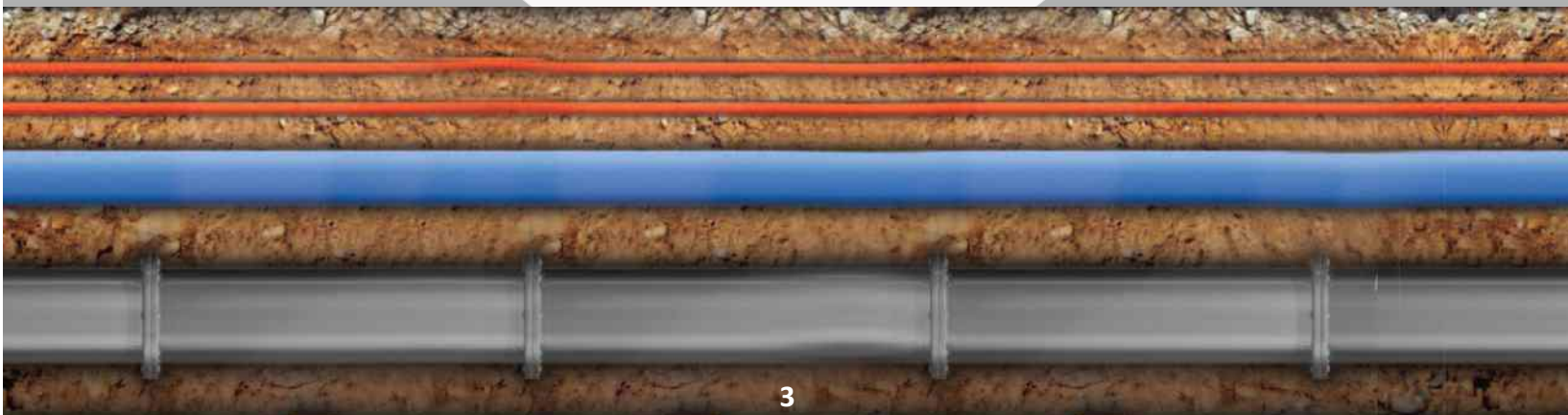
- Power Mode.
- Radio Mode.
- Generator Mode - Simultaneous 33+131kHz combined frequency Signal detection improves utility detection.
- All Scan Mode.
- Accurate Depth Indication (DXL4 only).
- Automatic Noise Rejection.
- Peak Hold- Confidently pin point the exact position of buried services
- Alarm zone™ Audio - Visual indication of shallow utilities.
- Dynamic Swing Sensor.
- Automatic Daily Self Test.
- High Resolution Liquid Crystal Display with backlight.
- Data Logging of all Locator activity - one year data can be stored.
- USB Data downloading - result of each ADST is recorded and can be used to produced a product validation certificate using PC tool kit when connected via USB to a computer.
- Optional Bluetooth™ high accuracy GPS (DXL4 DBG model only).
- No Periodic Calibration required.

4 OPERATING MODES
DXL4 **LIVE DEPTH** MEASUREMENT
AUTOMATIC NOISE REJECTION
 SHALLOW CABLE DETECTION
 STANDARD **DATA LOGGING**
GPS OPTIONAL



C.SCOPE SGV4 / SGA4 OVERVIEW

- One watt adjustable power output.
- 33+131kHz simultaneous signal output.
- Pulsed or Continuous Output Signal.
- Three Signal Application Techniques:
 - Direct Connection.
 - Wraparound.
 - Induction.
- Automatic Daily Self Test (SGV4 only)
- Data Logging of signal generator usage (SGV4 only)
- Accessory Tray.
- No Periodic Calibration required.



C.SCOPE DXL4 / CXL4 CABLE AVOIDANCE TOOLS

**SIMULTANEOUS
33 + 131 kHz
DUAL FREQUENCY**

Mode Selection Switch

- Power Mode.
- Radio Mode.
- Generator Mode.
- All Scan Mode.

On/Off Trigger.

Sensitivity Adjustment Control.

Control Panel :
Depth Measurement Button (DXL4 only)

LCD Backlit Digital Display

Detachable Loudspeaker.

IMPACT RESISTANT

**IP65
WATER & DUST
PROOF**

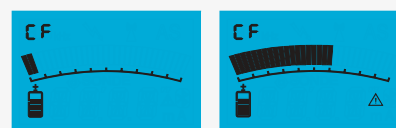
Impact Resistant Twin Wall Construction.

Impact Resistant Replaceable Wear Foot.

LCD with Automatic Backlight.

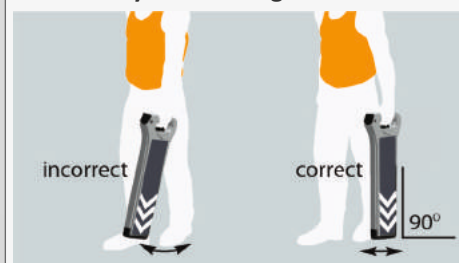


Daily Self Test



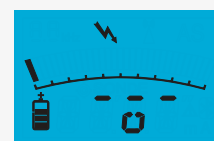
The 'Self Test' is performed the **first time** the locator is switched on **each day** and takes approximately **4 seconds**. The self test checks the two internal aerials and all the operating modes mentioned to ensure that YOU know that your equipment is fit for Usage.

Dynamic Swing Sensor.



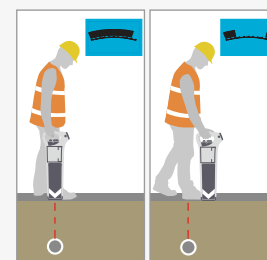
The **Locator** should **always** be held at **90**. If you are **excessively swinging** the Locator, it's **dynamic swing sensor** will alert you with a **tone sound**.

Alarm Zone™



The XL4 Locator has a programmable automatic depth measurement feature intended to alert the user to the presence of unusually shallow pipes or cables in depth range upto 0.3m.

Peak Hold



Each time the Locator response reaches its peak position, a single 'Peak Hold' line will continue to remain showing on the bar graph for two seconds to assist you to return to the correct peak position.

Fingertip Controls



Detachable Loudspeaker

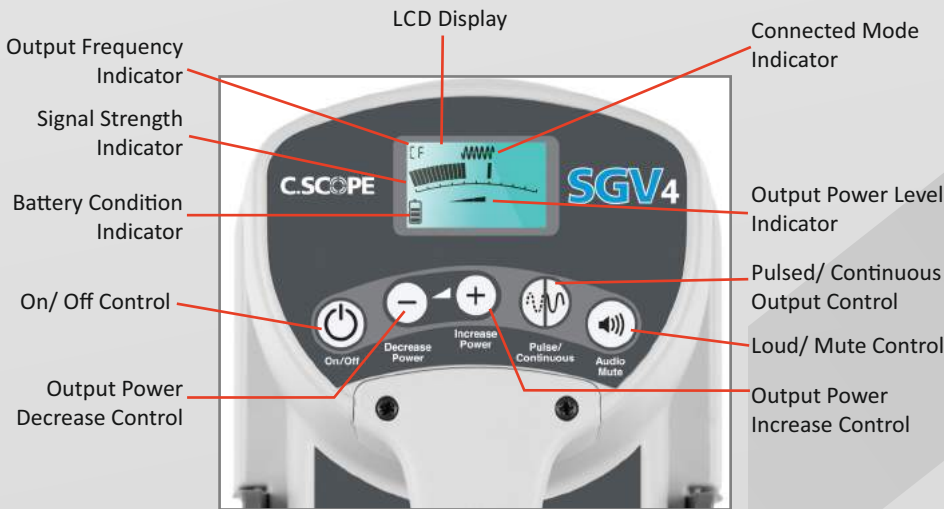


Built In Dual Battery Pack



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

C.SCOPE **SGV4** / **SGA4** SIGNAL GENERATOR OPTIONS



SGV4



SGA4

- Control Panel:
- On / Off
 - Output Power Adjustment
 - Pulsed / Continuous
 - Loud / Mute

Loudspeaker.

Connection Socket.



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



**IP65
WATER & DUST
PROOF IMPACT
RESISTANT**

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 DXL4 & CXL4

FOUR DETECTION MODES :

The DXL4 and CXL4 have four detection modes to select from. Each mode provides specific advantages.



POWER mode identifies buried electricity cables by detecting the main 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.



GENERATOR mode is used to detect the 33+131kHz signal applied to a metallic pipe or cable by a SGV4 Signal Generator. The combination of the high frequency 131kHz signal with the 33kHz signal enables small diameter cables to be located more easily. The Generator mode is also used for detecting the signal from a C.Scope Sonde or Stanley 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 Generator modes and is invaluable as a 'final check' before excavation work begins.



DEPTH MEASUREMENT (Available in DXL4 only) When used with an SGV4 Signal Generator, the depth of buried pipes, cables and Sondes can be indicated at the push of a button.



DATA LOGGING: The DXL4 and CXL4 have full data logging capability. A year of data (logged every second of use). This can be conveniently transfer at any time for analysis. The free to download C Scope PC tool kit & C Scope relay Smart Phone App analyses stored data allowing training requirement to be quickly identified.



AUTOMATIC DAILY SELF TEST (ADST)

The DXL4 and CXL4 have **comprehensive self test circuitry**. ADST fully examines the Cable Avoidance Tool, 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 by connecting the locating receiver via USB to the computer.



DATA LOG TRANSFER VIA USB

Data from the Data Logging versions of the CXL4 and DXL4 can be transferred at any time to a PC for analysis, all XL4 locating receiver have USB data connection socket.



DATA LOG TRANSFER VIA BLUETOOTH™

The DXL4 DBG model has the additional features of **bluetooth** to download data **wirelessly** onto C Scope relay Smart Phone App installed on any android Smart Phone.



DATA LOG TRANSFER VIA GPS

In-built GPS models also allow a record to be kept of exactly where the Cable Avoidance Tools have been used that can then be viewed in partnership with **Google Earth™** or **Google Maps™**. Additionally, the Cable Avoidance Tool may be paired to third-party GPS survey equipment, via the locators in-built Bluetooth™ facilitating 'one-pass' underground utility surveys to be undertaken.

DYNAMIC SWING SENSOR

The CXL4 and DXL4 will **sound a single tone** to alert the operator that the Cable Avoidance Tool is being **swung excessively** when in use to avoid erroneous detection.

RECEIVER TECHNICAL SPECIFICATION :

CABLE AVOIDANCE TOOL FEATURES	CXL4	DXL4	DXL4-DBG
Power Mode	●	●	●
Radio Mode	●	●	●
Generator Mode (33+131kHz)	●	●	●
All Scan Mode	●	●	●
Depth Measurement		●	●
Alarm Zone™	●	●	●
Peak Hold	●	●	●
Dynamic Swing Sensor	●	●	●
No Periodic Calibration	●	●	●
Automatic Daily Self Test	●	●	●
Data Logging (2GB Memory)	●	●	●
Data Transfer via USB Communication Port	●	●	●
Data Transfer via Bluetooth™			●
GPS			●
Display (LCD)	●	●	●
Batteries, Operating Time	8 X AA (LR6), 40 hours + spare battery holder		
IP65 Environmental Rating	●	●	●
Size	720mm X 280mm X 65mm		
Weight	2.65kg		
Locate Accuracy	Better than 10% of Depth		
Depth Accuracy	± 5% @ 1m		

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

C.SCOPE **SGV4** & **SGA4** FEATURES

C.Scope **SGV4/SGA4** Signal Generators are vital pieces of equipment used with C.Scope **DXL4** Cable Avoidance Tools that significantly improve operator safety and enable better location of pipes and cables even in challenging environments. The **33kHz+131kHz "CF" Combined** signal further increases the number of buried services that can be energised and then detected.

SIGNAL APPLICATION TECHNIQUES

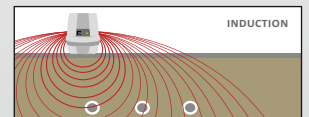
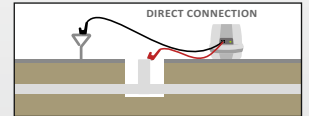
The **SGV4** offers three alternative ways to apply a Signal Generator signal:

DIRECT CONNECTION : allows specific pipes or cables to be individually traced, identified and their depths measured. This resources use of Direct Connection leads to inject the signals directly into the cable or pipes at a suitable access point. This mode is the most effective method for pinpointing pipes and cables. The direct connection leads also provided the options of built in magnets to apply signal where crocodile clamps are found difficult to use.

INDUCTIVE SIGNAL CLAMP (OPTIONAL) : If it is difficult or inconvenient to use Direct Connection, then the signal clamp can be utilised to successfully energise an armored optical fiber cable, street lighting cable etc.

WRAP AROUND TECHNIQUE

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 OUTPUT** : The **SGV4** has a **four position power level adjustment** & **SGA4** has a two level power output, so that the user can control **how much power to use and when**.
- **LOUDSPEAKER** : The **SGV4/A4** 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 **SGV4** offer 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 (Available on SGV4)** : The **SGV4** 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 and battery condition.
- **ACCESSORY TRAY** : The **SGV4** Signal Generator has a large detachable accessory tray as its base. It can house all of the standard accessories (Direct Connection Leads, Earth Stake, Connection Magnets, 10m Auxiliary Earth Lead) and the Instruction Manual and also many of the optional extras such as Signal Clamps, Sondes and Signal Injectors.
- **ROBUST & DURABLE CONSTRUCTION** : The **SGV4's** twin wall construction is robust and durable. It also provides IP65 standard protection against dust and water ingress.
- **CALIBRATION** : The **SGV4** does not require periodic re-calibration, helping to significantly reduce running costs and downtime.
- **DATA LOGGING** : The **SGV4** Signal Generator will automatically record and store how when and for how long the instrument has been operated, Twelve months of data can be stored before being overwritten. It is therefore possible to keep a full audit trail of the activity of the signal generator and its functionality. Data can be transferred to a PC using USB socket built in the signal generator.
- **AUTOMATIC DAILY SELF TEST (Available on SGV4)** : The signal generator will undertake automatic daily self test and prior first use of every single day of operation and will provide Pass / Fail Indication on the LCD display.

SIGNAL GENERATOR TECHNICAL SPECIFICATION :

SIGNAL GENERATOR FEATURES	SGV4	SGA4
Max Power Output	One Watt	One Watt
No. of Adjustable Power Output Levels	4	2
Generator Frequencies 33+131kHz	●	●
Pulsed / Continuous Output Signal	●	●
Signal Connection Modes	●	●
- Direct Connection 33+131kHz	●	●
- Wraparound	●	●
Display (LCD)	●	
Accessory Tray	●	●
No Periodic Calibration	●	●
Automatic Daily Self Test	●	
Data Logging of Signal Generator usage	●	
USB Port	●	
Batteries	4 x D (LR20)	4 x D (LR20)
IP65 Environmental Rating	●	●
Induced 33kHz		●
Induced 33kHz+131kHz	●	
Size	360mm X 180mm X 230mm	
Weight	3.4kg	



NOTE: Supply of Signal Clamp Is OPTIONAL

C SCOPE XL4 DBG SERIES OPTIONS

DATA LOGGING • BLUETOOTH • GPS

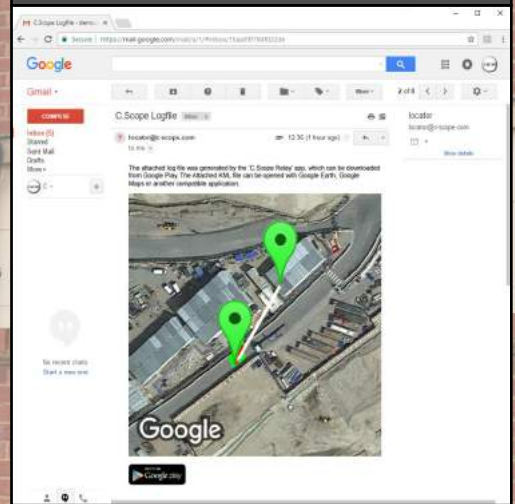
Acquire Utility Scan Data With GPS
Overlays Of Survey Conducted



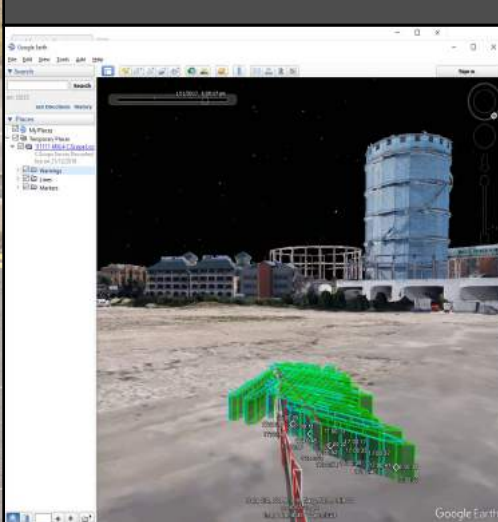
Transfer Data Via
Bluetooth To Smart Phone



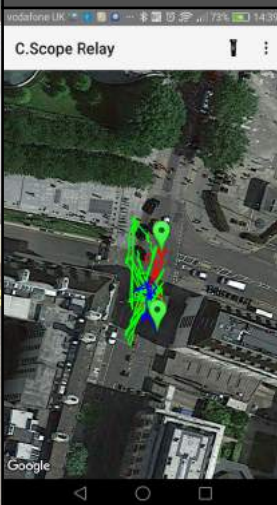
Transfer Data Via Email To PC
Automatically



View Data on PC



View Data in Google
Maps on Smart Phone



View Data in Google Earth on Smart
Phone



- * C Scope Relay App is downloadable on any latest Android Smart Phone from  Google play
- * C Scope PC Toolkit is downloadable from C Scope website cslocators.com/data-logging