SPX®

CABLE AVOIDANCE TOOLS

C.A.T4™ and Genny4™

DETECT MORE, FASTER, SMARTER, SAFER



Radiodetection®

Radiodetection's range of Cable Avoidance Tools, C.A.T4 and Genny4, build on over 30 years of Cable Avoidance expertise to enable operators to find more buried utilities, faster.

An innovative range of tools, engineered to deliver a step change in capabilities with minimal change in work practices or training requirements.

DETECT MORE, DETECT FASTER

The C.A.T4 Avoidance Mode™ lets the operator check an intended excavation area for Power, Radio and Genny4 signals, and pinpoint located utilities, in a single scan. The bargraph 'tidemark' enables the user to quickly spot and zero-in on a buried conductor.

The Genny4 provides a simultaneous dual-frequency signal output. Alongside the familiar 33 kHz signal for general purpose locates, the Genny4 transmits a specialised Small Diameter Locate frequency which facilitates location of utilities such as telecoms and street lighting, including spurs. For difficult locates, the Signal Boost function enables the Genny4 signals to travel further and deeper, and couple onto utilities more easily.

C.A.T4's Dynamic Overload Protection feature automatically filters out high levels of interference, allowing operators to continue working even in electrically noisy areas such as substations and under high-voltage cables – and requires no input from the operator.

DIG MORE SAFELY

As a safety critical tool, C.A.T4 and Genny4 offer a number of features designed to support safe working and help to drive utility strike rates down.



Strike*Alert*™ warns the operator of shallow buried utilities, while the SWING™ warning alerts of incorrect usage patterns, encouraging corrective action.

eC.A.T4™ and gC.A.T4™ models feature on-board data acquisition, logging key locate parameters every second to aid in identifying training needs.

The gC.A.T4 range incorporates an internal GPS/GNSS receiver which adds positional data to log records showing not only how the operator was working, but also where the C.A.T was being used.

All C.A.T4 units are equipped with Radiodetection's proprietary eCert™ technology, which provides a comprehensive assessment of the unit's hardware and software using an internet connection to Radiodetection, and can be used to extend the validity of the C.A.T4's calibration certificate on-demand[1].

[1] Further purchase may be required.

STRAIGHTFORWARD OPERATION AND INTRODUCTION

C.A.T4 and Genny4 retain the familiar C.A.T operating interface first introduced by Radiodetection in the mid-1980s and have been designed to offer full reverse-compatibility. For example, all Genny3 accessories are compatible with Genny4.

Radiodetection offers comprehensive training options for operators, managers and trainers to promote best working practises and supports management of those responsible for Cable Avoidance. Contact your local office or representative for more details.

C.A.T4 Cable Avoidance Tool range

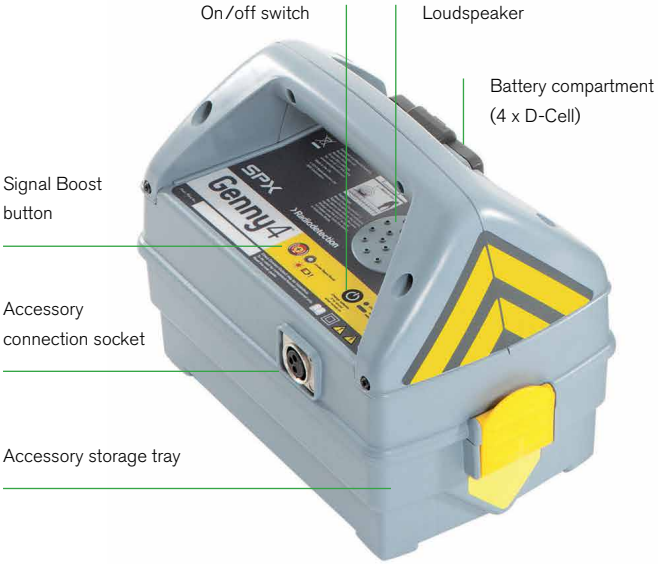
Advanced digital design with the classic Radiodetection C.A.T look and feel.





Genny4 signal generator

Locate more, and smaller, utilities with dual power and simultaneous dual frequency design.





Accessory storage tray

Conveniently store Genny4 accessories, including the supplied magnet, earth stake and direct connection leads.



High contrast display with auto-backlight

Bargraph 'tidemark' enables operators to quickly spot and zero-in on a buried conductor.



High speed USB 2.0 data connection

Connect to a PC to configure C.A.T settings, run an eCert, and to rapidly transfer usage data from eC.A.T4 and gC.A.T4 series locators.



DYNAMIC OVERLOAD PROTECTION

High levels of electrical interference, as found around substations and near high-voltage transmission cables, can overload sensitive electronics. Dynamic Overload Protection automatically filters this interference out, enabling C.A.T4 to continue locating where other units struggle.

INTERNAL GPS/GNSS

Automatically log the position of the C.A.T alongside key locate parameters each second to prove work history and analyse working practices.



SMART GPS INTEGRATION

The gC.A.T4 GPS implementation is designed to enable fast GPS fixes even if the C.A.T is used for only a few seconds at a time – and no operator interaction is needed.

DATA ACQUISITION / LOGGING

On-board memory allows over a year's worth of data[2] to be stored on eC.A.T4 and gC.A.T4 series products. This data can be backed-up to a PC at any time, giving virtually unlimited record keeping for the life of the product. Retrieved data can be analysed, either locally or remotely, to aid in ensuring compliance and identifying training requirements.

Factors logged include:

- Mode of use
- Date and time of survey
- Speed over ground[3]
- Bargraph readout
- Depth measurements made
- Last / next calibration date
- Angle of use
- Audio status
- Genny / Power / Radio signal strengths
- Strike*Alert* / SWING warning statuses
- Location of survey (Latitude/Longitude)[3]
- Sensitivity control setting
- Battery status
- Dynamic Overload Protection / signal overload status
- Number of Satellites Received[3]

[2] Based on 8 hours use per day, 5 days per week

[3] gC.A.T4 models

ECERT – REMOTE CALIBRATION VALIDATION

eCert remote calibration testing offers an innovative calibration option intended to form part of an annual service regime. Activated through the C.A.T Manager PC software, eCert provides a fast, thorough and convenient test of the key locating circuitry within C.A.T4, and validates the results against the original factory calibration using an internet connection to Radiodetection. Following an eCert test pass, a Radiodetection Calibration Certificate for that C.A.T4 can be printed or saved.

For a complete maintenance package, Radiodetection also offers exhaustive factory-backed service and recalibration options including full mechanical integrity inspection and function testing.

SMALL CABLE LOCATING



Simultaneous dual frequency and simple, intuitive, locating methods assist C.A.T4 and Genny4 users to locate Small Diameter cables such as telecom twisted pairs, CATV feeds, spurs and drop-offs which have historically been hard to find and a common strike risk.

SERVICE DUE INDICATOR AND CALSAFE™





Annual service and calibration is key to ensuring that C.A.T operators can work safely and with confidence in their equipment. To support this, eC.A.T4 and gC.A.T4 models provide a 31-day Service Due countdown warning on start-up.

CALSafe – enabled units can be set to automatically deactivate on expiry of the defined calibration interval, to help ensure compliance with individual company policies.

The interval required between services can be customised using the C.A.T Manager software to anything up to one year.

SWING WARNING

Radiodetection C.A.Ts are designed to respond exceptionally fast to even the smallest detectable underground signals. Radiodetection's research into underground signal detection has shown that the ability of an operator to identify these buried utilities is directly affected by careless working practices such as excessive or rapid swinging.

To further reduce utility strike risks, eC.A.T4 and gC.A.T4 models are equipped with sensors to detect such incorrect usage and warn the operator with an alert that is also stored in the data log.

AVOIDANCE MODE

Avoidance Mode speeds the process of pre-dig scanning by searching for Power, Radio and Genny signals simultaneously. C.A.T4 Avoidance Mode offers fully controllable responses, allowing operators to rapidly pinpoint a buried utility and trace it across an area. Real Sound audio enables operators to differentiate between individual signals and utilities to maximise locate speed whilst maintaining safety.



C.A.T MANAGER SOFTWARE

C.A.T4 locators are supported with the dedicated C.A.T Manager program. This Windows® PC application allows plant, fleet and site managers to quickly download usage data[4], perform an eCert test, upgrade C.A.T4 software or export data logs to map systems as KML, CSV or XLS format files.

To match working preferences, C.A.T Manager can deactivate or reactivate C.A.T4 features such as depth estimation and warnings.

User-editable fields enable plant / fleet codes and other details to be stored on the unit, simplifying records and traceability.

[4] eC.A.T4 and gC.A.T4 models only

REAL SOUND

The audio signals emitted by the C.A.T4 are derived from the signals detected. Radio, Power and both Genny signals can be easily distinguished from each other and from background noise, helping identification of target utilities and aiding differentiation of closely co-located utilities.

Operating modes

Avoidance Mode
Simultaneously search for and pinpoint Genny, Power and Radio signals for rapid surveying.



Genny mode
Detects the signals transmitted by Genny4, with on-demand estimation of the depth[5] of buried utilities.



Power mode
Detects the electromagnetic fields generated by loaded power cables.



Radio mode
Detects long-range radio signals as they travel along buried cables and pipes.



[5] C.A.T4+ ,eC.A.T4+ and gC.A.T4+ only

Strike*Alert* Warning
Warns of shallow buried utilities.



SWING Warning
Ground-breaking feature warns operators of incorrect usage to promote best working practices[6].



[6] eC.A.T4 and gC.A.T4 models only



GENNY4 SIGNAL BOOST

Alongside its familiar standard power mode, Genny4 provides a Signal Boost feature which increases the output signal by up to a factor of 10, enabling operators to locate utilities deeper and over greater distances.

OPTIONAL ACCESSORIES

Genny4 accessories are designed to transmit locate signals along most infrastructure types, including non-conductive targets such as plastic ducts and ceramic pipes, including:

Signal clamps

Place around a pipe or cable (up to 220 mm diameter) to couple Genny4 signals onto a cable or pipe without interrupting the supply.



Mouse

Self-contained signal transmitter which can be attached to a push-rod to allow detection and tracing of non-metallic pipes or ducts.



Live plug/cable connectors

Connect Genny4 signals directly onto power distribution systems without needing to isolate the supply first.





Signal clamping





Small diameter cable tracing techniques



Neodymium magnet



FlexiTrace™

Highly flexible 50 m and 80 m pushrods with integrated sonde, powered by the Genny4, designed to trace non-metallic pipes as narrow as 15 mm.

High strength Neodymium magnet[7]

Easily couple Genny4 signals onto buried utility cables via steel and iron street furniture such as lampposts, even many coated designs, with Genny4's new dual frequency design.

Genny4 accessories are reverse compatible with Genny3. For more information on the wide range of accessories available, contact your local Radiodetection office, or visit www.radiodetection.com



[7] Supplied as standard with a Genny4

	C.A.T4	C.A.T4+	eC.A.T4	eC.A.T4+	gC.A.T4	gC.A.T4+
Avoidance Mode (A)	●	●	●	●	●	●
Genny™ signal locate (G)	●	●	●	●	●	●
Power signal locate (P)	●	●	●	●	●	●
Radio signal locate (R)	●	●	●	●	●	●
Small Diameter Locate frequency	●	●	●	●	●	●
eCert	●	●	●	●	●	●
Dynamic Overload Protection	●	●	●	●	●	●
Depth		●		●		●
Strike*Alert*	❍	❍	❍	❍	●	●
Data acquisition			●	●	●	●
Service due indicator			●	●	●	●
SWING warning			●	●	●	●
CALSafe			❍	❍	●	●
Bluetooth® (for future use)					●	●
GPS/GNSS					●	●

● Standard ❍ Option

C.A.T4 TECHNICAL SPECIFICATIONS			Locating Depth Guide (m)	
Locate performance	**Frequency Range**	**Sensitivity @ 1 m**	**Good conditions**	**Poor conditions**
Power signals (P)	50 Hz – 1.5 kHz	3 mA	3	2
Radio signals (R)	15 kHz – 30 kHz	25 µA	2	1
Genny4 signals (G)	32.768 kHz ±20 Hz 131.072 kHz ±20 Hz	5 µA	4	2
Avoidance Mode (A)	P + R + G As above	As above	4	2

Dynamic range	120 dB @ 10 Hz
Dynamic Overload Protection	40 dB @ 50 Hz (automatic)
Locate accuracy	± 10% of depth
Depth accuracy (on undistorted signal and with no adjacent signals)	Line: 5% 0.1 m to 3 m (4 in to 10 ft), Sonde: 5% 0.1 m to 7 m (4in to 16 ft)
Horizontal GPS Position Accuracy[8]	3m CEP (Circular Error Probable)
Operating temperature range	-20°C to +50°C
Storage temperature range	-20°C to 70°C
Environmental protection	IP54
Batteries	2 x LR20 (D) 1.5 V alkaline Compatible with D type NiMH rechargeable batteries
Data interface	USB 2.0, Bluetooth® (future use)
Recommended service interval	1 year
Warranty	12 months from purchase
Data storage capacity[9] Calibration due warning[9]	2 GB Countdown from 31 days before due

GENNY4 TECHNICAL SPECIFICATIONS	
Signal output power	0.1 W
Signal boost output power	1.0 W
Induction mode signal characteristic	33 kHz
Direct connection/clamp signal characteristic	33 kHz & Small Diameter Locate frequency Automatic impedance matching on connection
Batteries:	4 x LR20 (D) 1.5 V alkaline
Warranty:	12 months from purchase

[8] GPS accuracy depends by many factors, such as: location, time of the day, weather conditions, number of satellites available and their geometry. [9] eC.A.T4 / gC.A.T4 range only



DATA ACQUISITION

Log and save key eC.A.T4 and gC.A.T4 usage parameters, recorded at 1-second intervals.



ECERT

On-demand, thorough test over the internet of the C.A.T4 locating circuitry, backed with a Radiodetection Certificate of Calibration.

C.A.T4 and Genny4

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