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Syscal Terra Data Sheet

Introducing the Syscal Terra from Iris Instruments: The Next Generation Resistivity Meter. This redesigned model of the renowned Syscal series boasts a modern, and robust design, making it ideal for efficient field data acquisition and deployment. Featuring a high-power output (up to 1,000 V), the unit integrates a large, built-in colour touchscreen alongside a manual keypad, ensuring intuitive menu navigation and data visualization. Streamlining workflow, the system allows users to upload sequence files created in Elecre Pro via USB drive or Wi-Fi, significantly reducing setup time in the field.

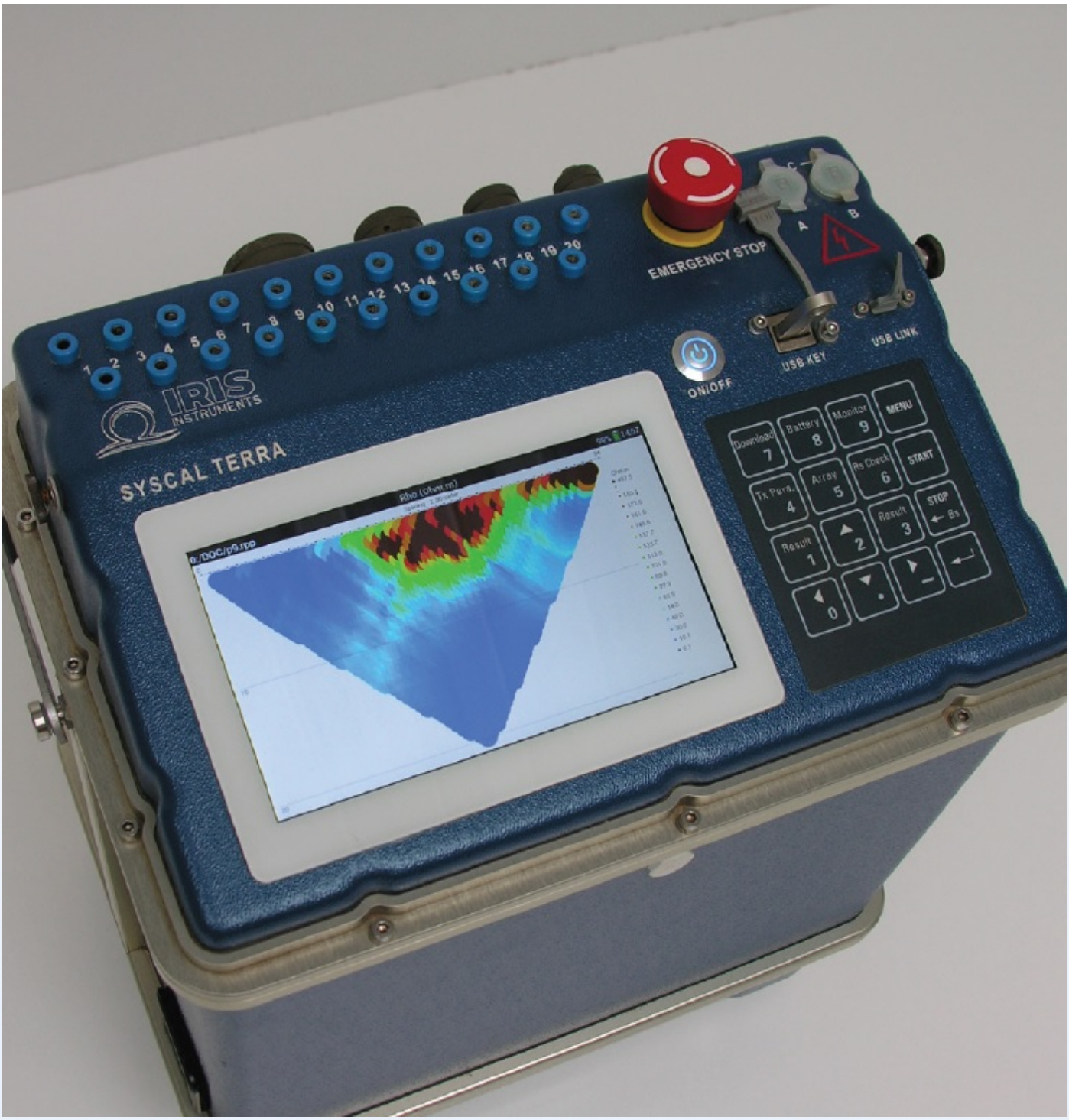

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Fig 1. Top View of the Syscal terra unit including the colour display, keypad and ports (Image courteously provided by Iris Instruments)

The Syscal Terra's 20 measurement channels enable rapid acquisition of high-resolution Resistivity and Induced Polarisation (IP) data. By collecting both IP and Resistivity measurements during the "On time" injection cycle, sampling time is minimized. Its versatility extends to supporting multiple Wenner-Schlumberger reciprocal and dipole-dipole configurations, crucial for efficient 3D dataset acquisition.

Enhancing data analysis, the system offers full waveform analysis throughout the entire injection cycle. This capability effectively reduces noise and unlocks time and frequency domain analysis for IP data (requires optional Full Waveform module). Furthermore, timeseries analysis allows for precise recording of voltage and current waveforms, enabling the determination of phase shifts at key harmonic frequencies.

Designed for operational convenience, the Syscal Terra utilizes easily removable Li batteries housed in a lower compartment, simplifying international transport. These batteries are suitable for cabin baggage, and for extended fieldwork, the transmitter (Tx) and receiver (Rx) can also be powered by external 12V car batteries.

Ensuring system reliability, the unit incorporates built-in test procedures and test plugs for easy verification of the Rx, Tx, switching boards, and external battery connections.

Expanding survey capabilities, the Syscal Terra can communicate and connect with other units via Wi-Fi, facilitating multi-unit deployments for large-scale data acquisition. This interconnected functionality proves invaluable when encountering obstacles such as roads or rivers. Individual Terra units with their imaging cables can be positioned on either side of the obstruction and configured to record data under a single, unified sequence, with one unit injecting current while the others measure seamlessly via Wi-Fi.

As with all Syscal systems from Iris Instruments, the acquired data benefits from quality control and filtering using Prosys III before advanced post-processing in industry-standard software packages like Res2DInv or Res3DInv.

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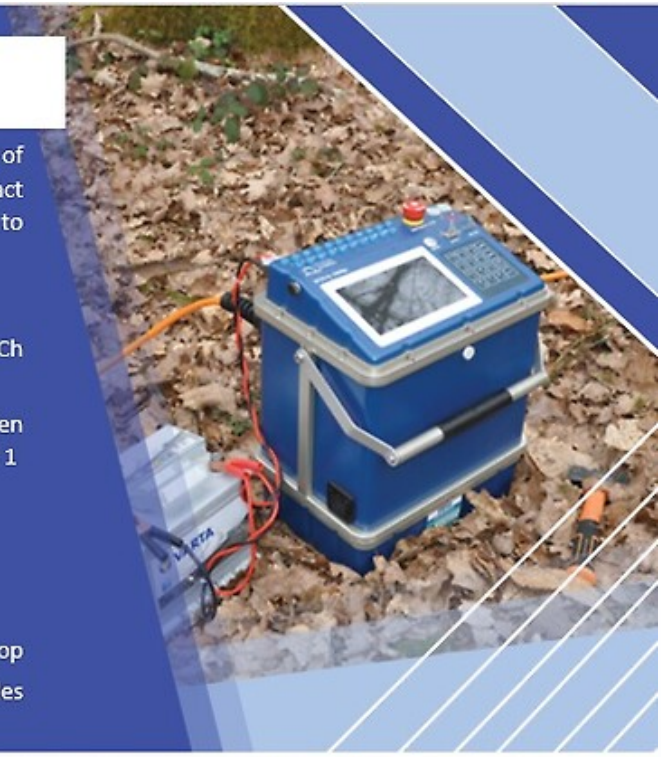
SyscalTerra

The SyscalTerra system has improved on the pre-existing technology of the Syscal Pro meters. This technology is enclosed in a modern, compact and sophisticated unit, which uses the most up to date electronics to provide exceptional data quality. It features:

- Robust design which is lightweight and ideal for field use
- Improved data quality accurately measures Resistivity and IP with 20 Ch measured with 24bit converter, providing 31 bits of dynamic range
- Can navigate system menus more easily with its new color touch screen
- Automatically records fullwaveform data (Full decay curves stored at 1 sample every 10ms) -post processed in Fullwave Viewer 2.
- Operator self-test function to conformity test the system with free firmware updates
- Can easily remove LI batteries to ease the shipping process
- Download data via USB / WIFI on any smart device phone/tablet/laptop
- Has its own internal GPS which will enable the user to view their profiles on Google Earth



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Product Dimensions

Physical	Dimensions (L x W x H)	Weight
(instrument only)	45 cm x 37 cm x 24 cm	14.7 kg

Technical Specifications

GPS:	UTM Coordinates, Internal GPS
Memory and Temperature Range:	2Gb and USB ports for external memory (1Tb) ; -20°C to +70°C
Sequence Files:	Imported directly to the Unit Via USB/ PC connection in Electre Pro or created in the Syscal

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Screen:	7 inches [480 x 800] colour touch screen (can be deactivated if required)
Fullwave mode recording and Monitoring:	Can record up to 100Hz fullwave form timeseries (voltage) in the background; Can use the system in monitoring mode and controlled by scripts in the FTP server
Rx Mode (Only):	It is possible to have the unit in the receiver mode for use with an External Transmitter
Dynamic Acquisition, Master/ Slave and Multi-Syscal mode:	Can use the system for terrestrial or Aquatic Environments (continuous resistivity and IP measurements); Multiple units can be connected together to make a 192 electrode system (2 x 96 electrode system) and they can measure synchronously on the same sequence based on their GPS clock
Rx Firmware Update:	New updates can be installed and run by the user
Batteries:	Li batteries (4 x 96 Wh), if an external battery is plugged in instead the unit automatically recognises it as an external unit.
Data Download:	WIFI connection via a web browser or via USB
Quality Control; Compatibility:	QC on resistivity and chargeablility (stacked 1 sample every 10ms); Can operate with a Syscal Switch Pro (10ch only)
Display:	Can View the real-time pseudosection of the data on demand
Tx Max Voltage, Power and Current:	800V in Switch mode and 1000 V in standard mode, 250W/1200W with an external AC/DC converter; 2.5 Amp
Tx Regulation and Type of Injection:	Current/Voltage regulation, Constant Vab,Iab and adapted to reception voltage
Rx Measurement channels:	20ch galvanically isolated
Rx AD converter/Dynamic Range and Imput Impedance:	24 bits/ 31 bits; 100MOhm
Rx Maximum voltage and Input Protection:	15V on Channel 1 & 15 V on the sum of channel 2 to 20; 1000V
Rx Filter and Gain:	Low pass -10Hz +Notch 50Hz, Low pass -10Hz + Notch 60Hz, Low pass 256H, Low Pass 512 Hz; Automatic gain input voltage
Rx resolution, accuracy and IP windows/ measurement:	1µV; 0.2%; 20 windows with the possibility to export the decay curve at 1 sample every 10ms; 100% or 50% duty

Videos

Cable care for Electrical Resistivity Systems
https://www.youtube.com/watch?v=46OsR49IQU4

Connecting Electrodes to an Electrical Resistivity Tomography system
https://www.youtube.com/watch?v=9C0Y2HF0xWU

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Contact Resistance checks before an ERT survey
https://www.youtube.com/watch?v=VC-mEJQr3uU

WennerSequence
https://www.youtube.com/watch?v=c5GgA2rk_ko

DipDipSequence
https://www.youtube.com/watch?v=LLmtb6hlo2k

RollSequence
https://www.youtube.com/watch?v=T24KKYRWPOM

UniqueElectrodes
https://www.youtube.com/watch?v=hieXclPq7yc

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