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Syscal Terra Data Sheet

The Syscal Terra is the new generation and redesigned model of the Syscal Electrical resistivity meters. Its lightweight, modern and robust design makes it ideal for use in the field for easy data acquisition and deployment. The high power (up to 10000 V) unit has a large built in colour touchscreen display along with the manual keypad, for easier menu navigation and data visualisation. There is an option to upload your sequence files generated in elecre pro via a USB pen drive or over WIFI which promotes simpler acquisition and reduces time spent setting up the acquisition parameters in the field.

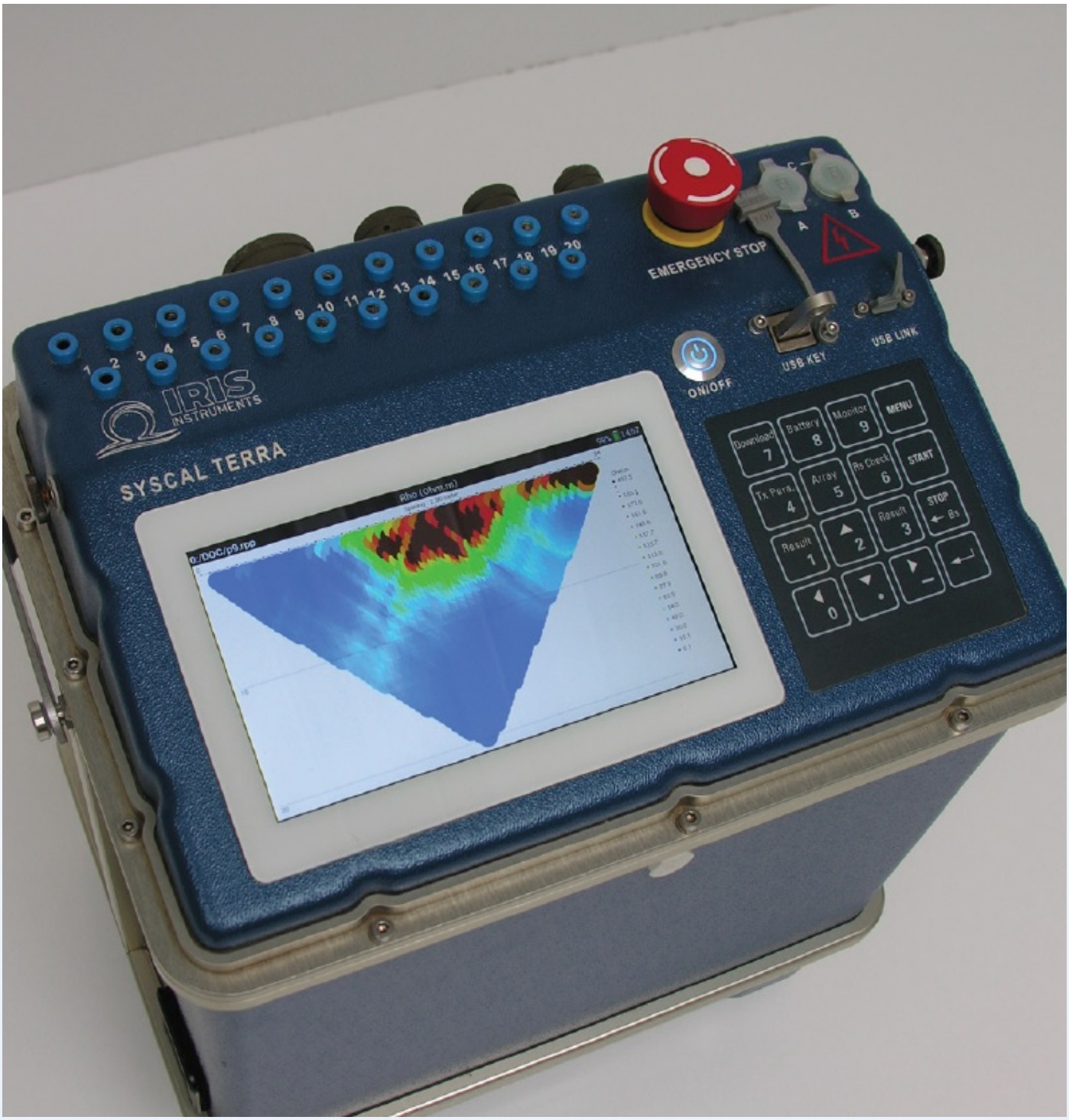

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Fig 1. Top View of the Syscal terra unit including the colour display, keypad and ports (Image courteously provided by Iris Instruments)

The system uses 20 measurement channels, enabling faster runtimes to acquire Resistivity and Induced Polarisation (IP) data with improved resolution at deeper penetration depths; Both the IP and the resistivity measurements are collected in the “On time” injection cycle reducing the sampling time. Multiple Wenner-Schlumberger reciprocal or dipole-dipole configurations can be measured with the unit, useful when acquiring 3D datasets.

The system also enables the user to run a full waveform analysis during the whole injection cycle which helps reduce noise and can enable time and frequency domain analysis, with the IP data (needs the Full waveform module enabled). The timeseries analysis also allows the user to record the voltage and current in order to determine the phase shift on important harmonic frequencies.

The unit runs on Li batteries which are stored in a lower compartment on the unit and can be easily removed, ideal for when transporting the goods internationally/ by courier. The LI batteries can then be stored in cabin baggage during transport, alternatively, both the Tx and Rx can be powered by external batteries in the field (12V car batteries).

The unit also enables the user to check system functionality with built in test procedures and test plugs to check the Rx, Tx, Switching boards and test the external battery.

The Terra can communicate/connect to other Terra units over WIFI, enabling the user to purchase/rent multiple units in to acquire data over vast distances. If there is an obstruction in your surveying area such as a road or river, each terra unit with their imaging cables can be laid out either side of the obstruction and set to record data under one unique sequence, one unit is injecting whilst the other units are measuring (connected via WIFI).

As with all Syscal systems the data can be quality checked and filtered using Prosys III before being post processed in a software package such as Res2DInv or Res3DInv.

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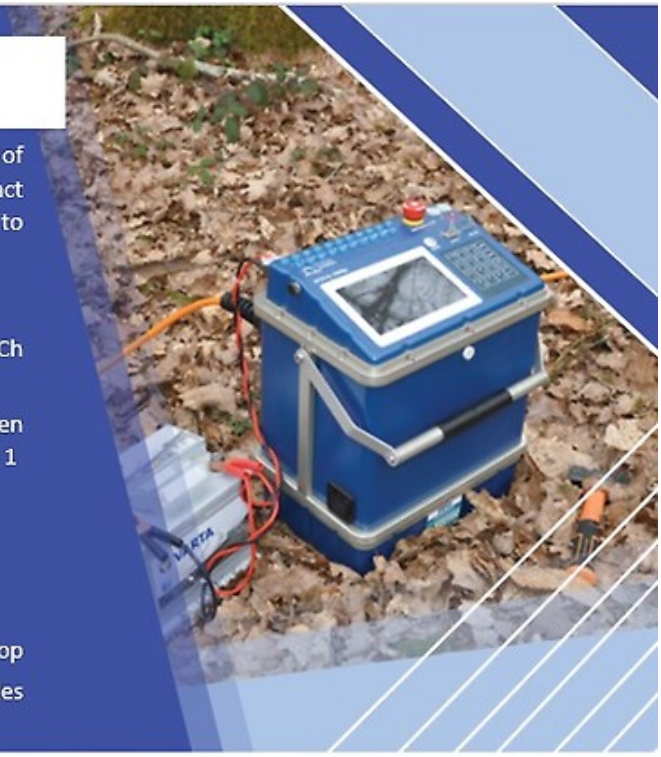
SyscalTerra

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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