

ELREC TERRA



IP RECEIVER
OF NEW GENERATION
FOR MINERAL EXPLORATION

The combination of recent electronics with 30 years of know-how

- **Rugged system made for the field:** This new generation of IP receiver mixes recent electronics advances with the standards of IP receivers designed by IRIS Instruments since more than 30 years such as robustness, compactness, light weight and large temperature range (-20°C to 60°C).

- **Exceptional data quality:** The Elrec Terra features 20 channels measured with a 24 bits converter giving 31 bits of dynamic range (at 100 Hz). This new generation of IP receiver allows to measure accurately very small IP signals.

- **Color touch screen:** The graphic color screen allows the user to clearly visualize the 20 IP decay curves at the same time and the pseudo-section of resistivity during the measurement. For a better experience of navigation in the menus and of text writing, the screen can be set as touchable.

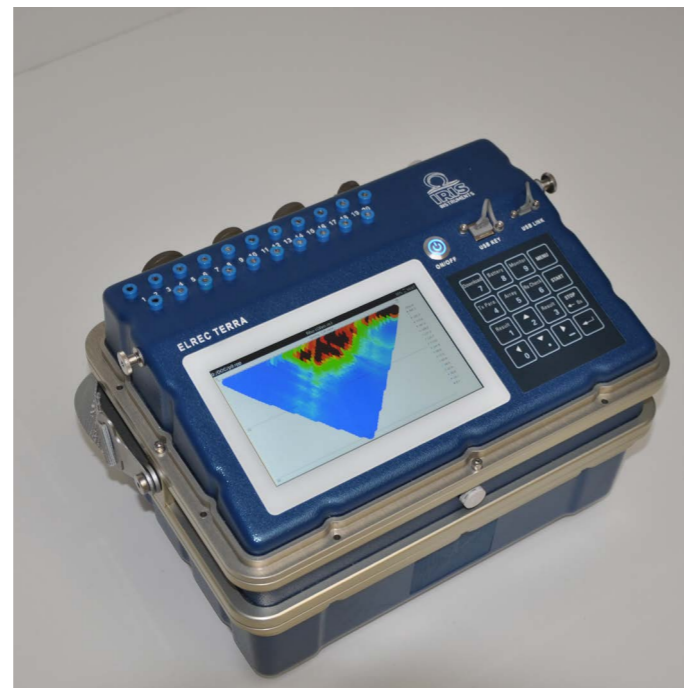
- **Automatic recording of full waveform data:** The Elrec Terra automatically records the 20 channel voltage timeseries in background . It allows if necessary to visualize and to reprocess your dataset a posteriori on a laptop with a free dedicated software (FullWave Viewer).

- **Scalability:** The Elrec Terra exists both in standard or switch mode (48 to 120 electrodes in a unique box). An Elrec Terra standard can also be connected to one or several Switch Terra unit(s) (48 to 240 electrodes in a unique box) to be used in switch configuration. Connect two Elrec Terra Switch in master-slave mode to increase the total number of electrodes (2 Elrec Terra Switch 48 become an Elrec Terra Switch 96)

- **Update and test the Elrec by yourself :** Perform self-test by yourself (calibration and switch board testing) using specific tools provided with the system. Update the Elrec Terra firmware by yourself for free during the entire lifetime of the system to benefit from new developments.

- **A multitude of interesting features:** such as removable Li-ion batteries for an easier shipping and replacement, external battery powering possibility, removable/adaptable signal filters, decay curves stored with one sample every 10 ms (full decay curve), datafiles download on a USB key or by WiFi from laptop or any smartphone or tablet, internal GPS included and automatic handle of local and global coordinates to visualize your profiles on Google Earth, and a lot of other options to discover

- **On-time IP acquisition mode :** Used together with the TIP6000 transmitter, allows to reduce by two the total measurement time of your survey and multiply by two the IP signal strength. Read more on next pages



GPS	Internal GPS for a simplified management of the global (UTM) coordinates
Memory	2 Gb + USB ports for external memory (1 Tb)
Temperature range	-20°C - +60°C
Sequence	Can be imported from a PC (Electre Pro) or created directly in the Syscal
Screen	7 inches 480 x 800 color touch screen (touch screen can be deactivated)
Fullwave mode recording	Possibility to record 100 Hz fullwave form timeseries of voltage in background while measuring. Possibility to record full waveform only up to 1 kHz
Monitoring	Possibility to use the system in monitoring mode
Mode Master-Slave	Connected to another Elrec Terra Switch, the Elrec Terra Switch behaves like a Switch Terra to make a system with 192 electrode from two 96 electrode systems
Mode diagnostic	The Elrec Terra is provided with different accessories and internal software that allow to test reception board and switches.
Rx Firmware update	Update the Elrec Terra firmware by yourself when a new version is available
Batteries	Removable internal Li-ion batteries (2 x 96 Wh). Possibility to connect external lead battery. Automatic recognition of ext. battery.
Data downloading	From USB key or via WiFi connection from a web browser.
Weight	7 Kg
Dimensions	35 cm x 25 cm x 23 cm
Quality control	Computation of the quality factor on resistivity and chargeability and storage of a stacked semi-period with 1 sample every 10ms (even when not recording the timeseries).
Full waveform processing	Possibility to perform advanced processing of full waveform data on Fullwave Viewer to increase the data processing accuracy.
Compatibility	Compatible with the Switch Pro (10 channels only)
Pseudo-section display	Real time display of pseudo-section on demand.
Number of measurement channels	20 channels galvanically isolated
AD Converter / Dynamic range	24 bits / 32 bits G.B.D. ⁽¹⁾
Input impedance	100 MΩ G.B.D.
Max voltage	15 V on channel 1 & 15 V on the sum of channel 2 to 20
Input protection	1000 V
Filter	<u>Selectable filters:</u> low pass 10 Hz + Notch 50 Hz, low pass 10 Hz + Notch 60 Hz, low pass 256 Hz, low pass 512 Hz
Gain	Automatic gain input voltage
Resolution on voltage	0.29 nV G.B.D. ⁽¹⁾
Accuracy on resistivity	0.05% ⁽²⁾
Induced polarization windows	20 windows with possibility to export the decay curve at 1 sample every 10ms
Induced polarization measurement mode	100% or 50% duty-cycle

(1) on resistivity measurement for 8s pulses, 3 stacks (2) Measured on a 1V voltage and calculated as mean accuracy on 1.5, 2.0 and 2.5A currents.

DECREASE YOUR ACQUISITION TIME AND INCREASE YOUR DATA QUALITY WITH THE ON-TIME IP ACQUISITION MODE

The On-time IP measurement is a new way to measure IP developed by IRIS Instruments. It can be used with the TIP transmitter combined with the Elrec Terra receiver. This new feature will revolutionize IP measurement productivity without changing your habits :

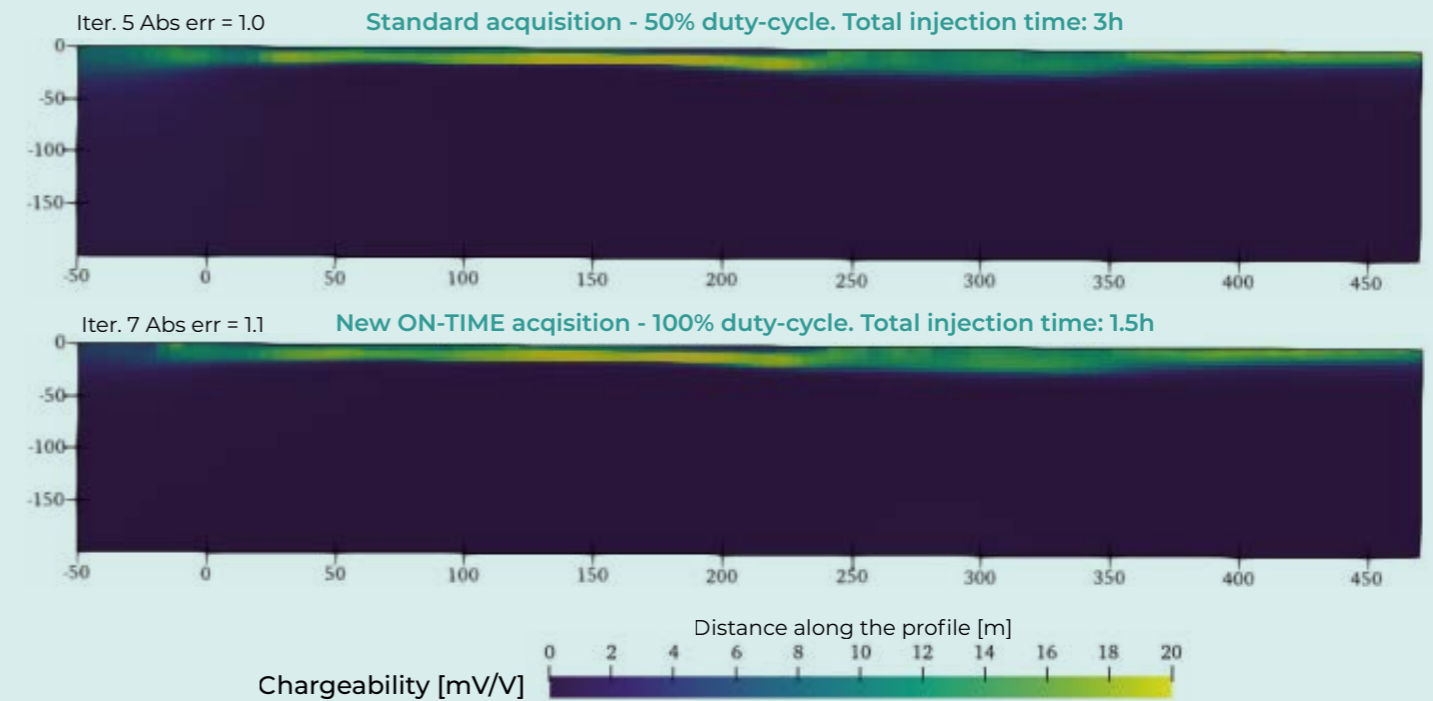
Divide by two the measurement time

Multiply by two the IP signal

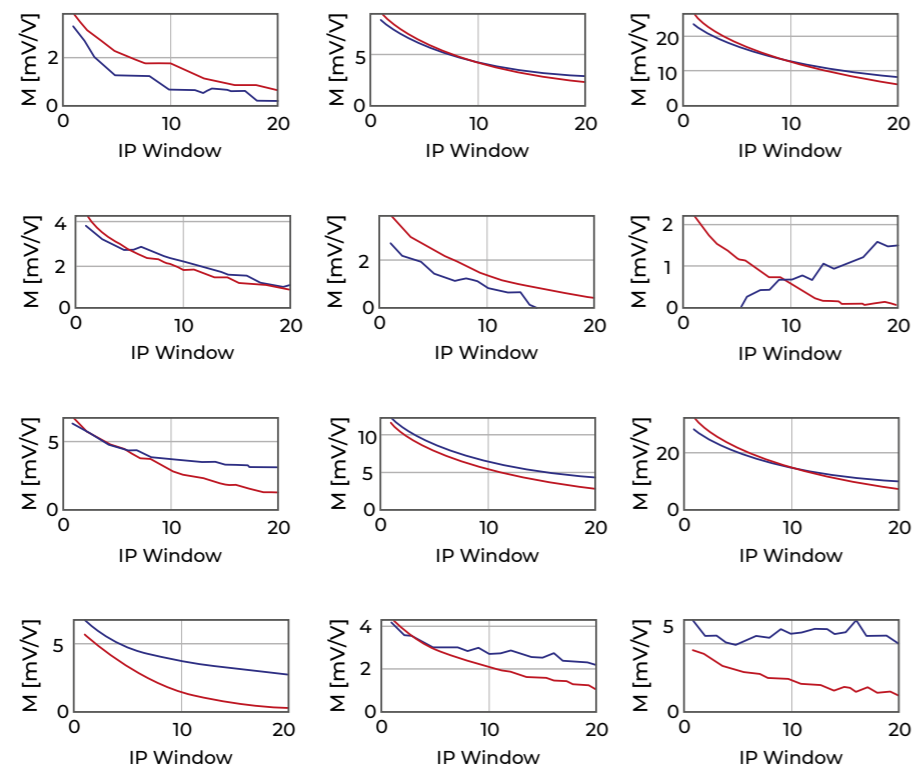
Suppress the motor generator's jerks due to the change of regime

Same procedure on the field as standard IP

The following figure shows two inversion results of an IP survey performed with a standard off-time acquisition (50% duty-cycle, top figure) and with the new the on-time acquisition (100% duty-cycle, bottom figure). The survey has been realized voluntarily on a conductive geology (max. 50 Ω .m) with low IP values (most < 3 mV/V) to prove the reliability of the method on difficult contexts.



IP CURVES COMPARISON



— ON-TIME (100% DUTY-CYCLE)

— OFF-TIME (50% DUTY-CYCLE)

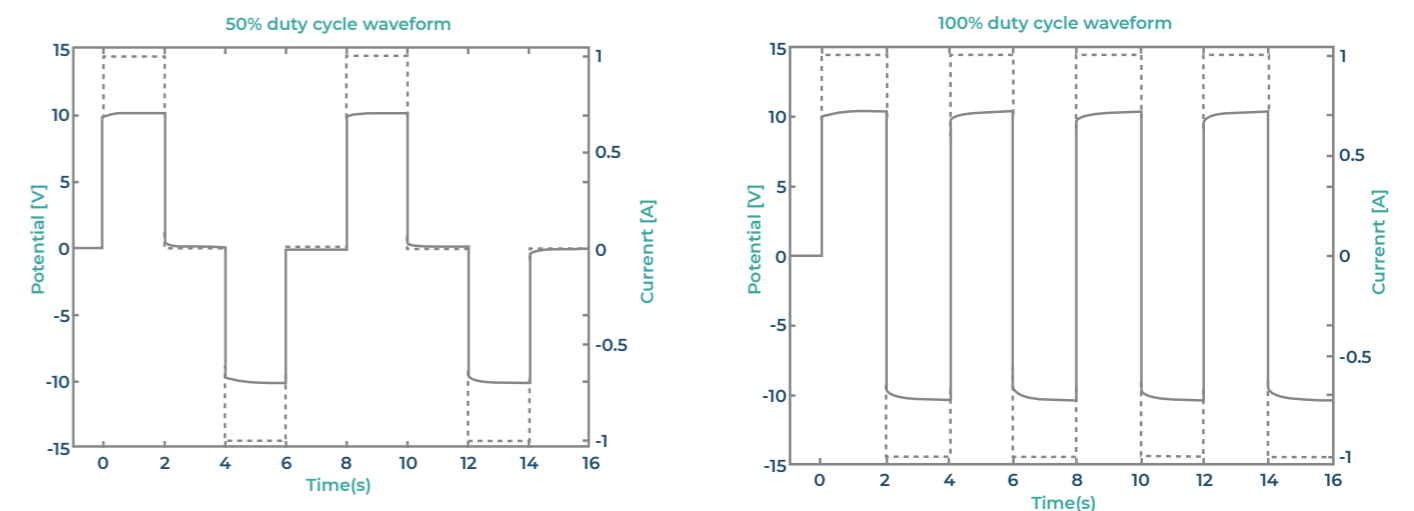
HOW DOES IT WORK ?

Standard IP is standardly measured with a 50% duty-cycle current. Each injection time is followed by an off-time of the same duration. The IP is measured during this off-time while the electric potential progressively goes back to zero. IP has traditionally been measured in this way for several decades.

It has been recently showed that IP could also be measured during the on-time (ie. during the injection, Olsson et al. 2015). This possibility allows to measure the IP with a 100% duty-cycle current, dividing by two the total time of measurement and multiplying by two the electric potential measured (as the current variation is 2 x I).

This type of measurement requires a very good current stability of the current injected. The TIPs (3.2 - 6 or 12 kW - IRIS Instruments) are the only high power systems in the world able to do that !

Used with the Elrec Terra, it is now easily possible for you to measure on-time IP.



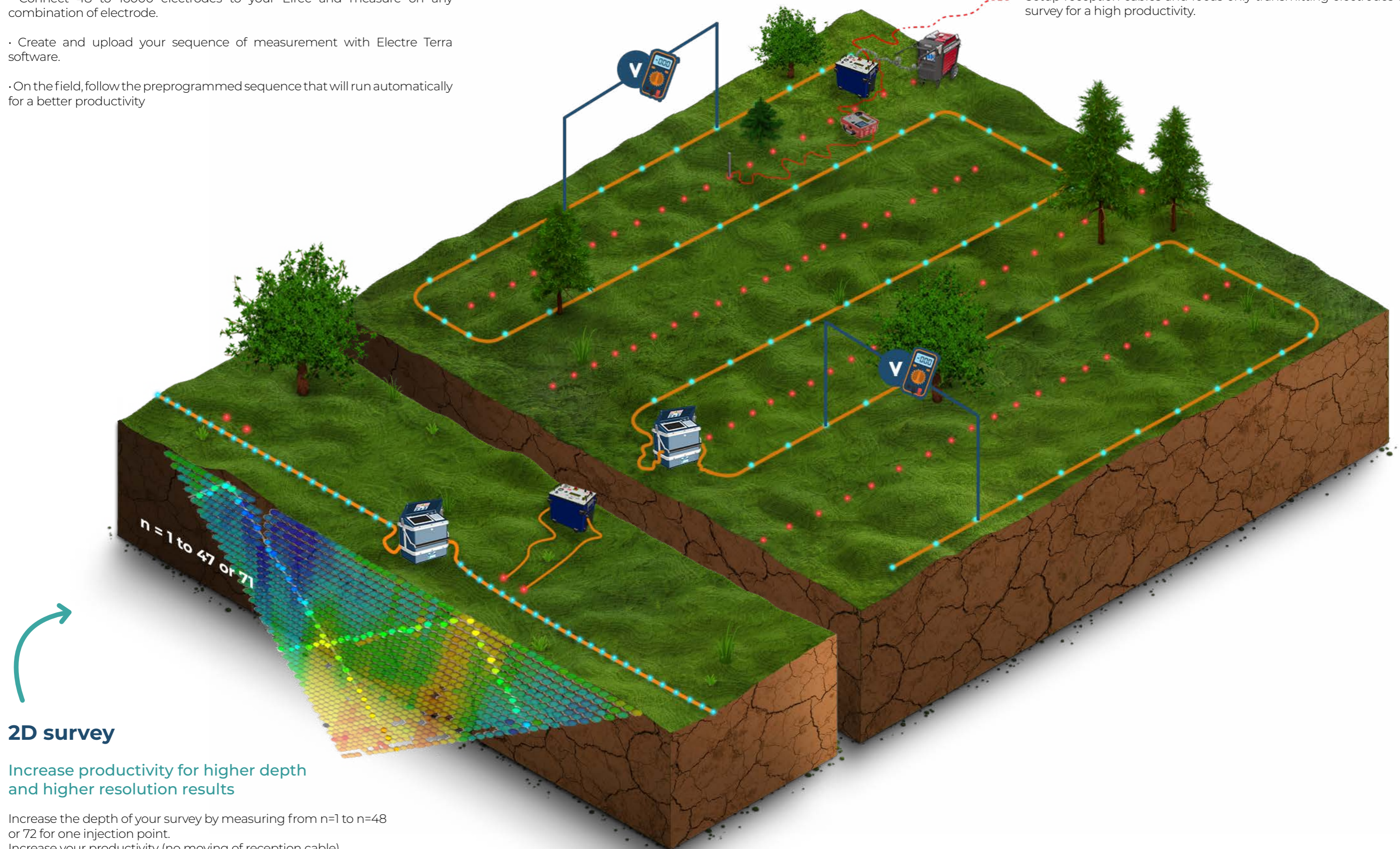
Adapt easily your surveys with the Elrec Terra Switch or Elrec Terra + Switch Terra (available for 48 to 240 electrodes per box)

- Connect 48 to 16000 electrodes to your Elrec and measure on any combination of electrode.
- Create and upload your sequence of measurement with Electre Terra software.
- On the field, follow the preprogrammed sequence that will run automatically for a better productivity

3D survey

Perform full 3D surveys instead of simple parallel lines

Perform easily full 3D surveys by combining injection and reception dipoles in all the directions (typ. dipole spacing : 5m to 50m). Setup reception cables and focus only transmitting electrodes during the survey for a high productivity.



2D survey

Increase productivity for higher depth and higher resolution results

Increase the depth of your survey by measuring from $n=1$ to $n=48$ or 72 for one injection point. Increase your productivity (no moving of reception cable), while keeping the resolution.

OUR PRINCIPAL CUSTOMERS

SERVICE WORK COMPANIES, ENGINEERING CONSULTANCIES, NATIONAL AND LOCAL
AUTHORITIES, UNIVERSITIES, GEOLOGICAL SURVEYS, ENVIRONMENTAL AGENCIES



Specifications subject to change without notice BR_ELR_TESRA_GB_V4

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