



X624EM

24 bit Integrated monitor

Touch screen display Wireless New

VHR MULTICHANNEL GEORESISTIVIMETER 48-72- 96 ELECTRODES

X624EM is the brand new standalone instrumentation that integrates the **multi-channel acquisition** section, a high-power current generator, the management computer and the new intuitive ETNET software with integrated sequencer. Its extreme versatility makes it the ideal solution for resistivity and induced polarization investigations with a vast range of applications including groundwater exploration, mineral exploration, geological mapping, geotechnical prospecting or archaeological research. The possibility of **parallel measurements**, the **all in one solution** with on-board CPU and the combination of advanced algorithms and powerful hardware makes X624EM capable of obtaining accurate measurements in record time. The instrumentation is characterized by extreme versatility and the very high speed of execution of 2D and 3D surveys, made possible by the adoption of an innovative data acquisition platform. The X624EM allows you to view the pseudosection in real time, this function allows the operator to immediately verify the recorded data. The instrumentation carries out the single measurement or the measurement cycle set by the user in automatic mode. Data recording takes place on internal Disk on Module memory, on external USB memory, or the data can be saved on the cloud. The instrumentation is managed via the new ETNET software which includes numerous new features.

Points of strenght

- All in one solution
- 1D / 2D / 3D / 4D measurements
- 10" touch screen
- New ETNET software
- Up to 94 simultaneous measurement channels
- 24 bit ADC converter
- Internal generator 600 watts
- Up to 800V power
- 2D/3D pseudosection in real time
- 2D/3D sequencer directly on the machine
- Built-in Wi-Fi (remote control)
- Built-in GPS
- Cloud data management

Modern techniques of 2D and 3D geoelectrical tomography at high resolution require a quantity of measures which is twice the one required by traditional techniques.

Unlike instruments used till now and characterized at most by some tens of measuring channels, X624EM can perform simultaneously measures of potential between any two of connected electrodes (except couple used for current input). Generally in a configuration with N electrodes, instrument has N-2 acquisition channels. For instance, with a configuration of 48 electrodes and having 46 independent channels, you can simultaneously perform up to 1035 measures, with only one input of current!

Advantages of X624EM architecture :

- **Multichannel parallel strategy** : X624EM multi-channel strategy represents a turning point in the acquisition of electrical data. With our electric instruments, the measurement speed reaches unprecedented levels, especially when it comes to 3D configurations. This means you can get accurate and detailed results quickly, saving hours of fieldwork and reducing operating costs. With our multi-channel strategy, we make sequence design more efficient and accurate. We eliminate the need to spend valuable time manually identifying quadrupoles or significant lines, as our technology takes care of this automatically. Thanks to parallel measurements, we obtain a huge amount of data without increasing acquisition times. In other words, we get more information without sacrificing measurement speed.
- **Sequencer**: The management software offers a wide range of options for measuring sequence design. You can configure the number of electrodes, spacing and 3D geometry, as well as preview the designed sequence. The **Sequencer** offers a number of unique and powerful benefits that greatly simplify the geoelectric measurement design process. Here are three key strengths of this feature: **Versatility directly in the field and on board the instrument**: Thanks to our innovative sequence design, you no longer have to spend valuable time designing configurations on an external device. Everything you need is available right in the field, making the setup process quick and hassle-free. You can easily adapt sequences to your specific survey needs without the need for external tools. **Immediate visualization of the expected configuration and estimate of the depth of investigation**: The software gives you a real-time view of the configuration of the designed sequence, allowing you to immediately see how the measurement points are arranged and what the expected depth of investigation will be. This feature allows you to optimize the sequence to get the best possible results and ensure that each measurement is meaningful and useful for your geoelectric survey. **Save time and increase efficiency**: Designing sequences directly on board the instrument saves you valuable time by eliminating the need to return to the lab for complex configurations. With the ability to preview sequences and make changes on-site, you can complete design tasks quickly and be ready to start measurements in a timely manner. With our built-in Sequencer, we give you a powerful tool to simplify the process of configuring geoelectric measurements, improve efficiency in the field and achieve the desired results quickly and reliably. Our range of electrical tools is designed to meet the needs of geoelectrical professionals and provide cutting-edge solutions for your survey projects.
- **Methodology** : ETNET suite offers a wide range of measurement methodologies to choose from, allowing you to fully customize your geoelectrical data acquisition process. Here are three strengths of the Methodology feature: **Flexibility in measurement methodologies**: Thanks to our technology, you can select between different measurement methodologies, including spontaneous potentials, resistivity, and induced polarization. This flexibility allows you to tailor your survey to the specific terrain

characteristics and survey objectives, ensuring that you can obtain the most relevant and meaningful data for your research. **Customization of measurement parameters:** you have full control over the measurement parameters. You can set the number of iterations and quality parameter to optimize your measurements to meet your specific needs. In addition, you have the possibility to adjust the current and voltage and energization times to adapt your investigation to different soil conditions and obtain accurate and reliable results. **Increased accuracy and control:** The ability to select measurement methodology and customize parameters gives you a greater degree of accuracy and control over your geoelectric survey. You can adapt the measurement process to the unique characteristics of the terrain and improve the quality of the data collected. This precision and control allow you to get more accurate results and make informed decisions based on reliable data. With this methodology choice feature you can explore and experiment with different geoelectric measurement techniques, fully customizing your data acquisition process. This flexibility and control will help you achieve more meaningful results and maximize the value of your geoelectric surveys. We are here to support you every step of the way, providing cutting-edge solutions and high-quality tools for your success

- **Windows Induced polarization :** The software supports advanced features for induced polarization. You can define time windows with sample interval starting at 10ms. These advanced features allow you to achieve greater accuracy and control in IP measurements. Our induced polarization capability offers unprecedented flexibility in selecting measurement windows, allowing you to tailor the data acquisition process to your specific needs. Here are some key points of this powerful feature: **Custom measurement windows:** You have complete control over the choice of measurement windows for induced polarization. You can select windows from 10ms of sampling, offering the ability to capture subtle, short-lived details in terrain responses. Flexibility in the choice of windows allows you to adapt the measurement process according to the complexity of the terrain and the objectives of the survey. **Wide range of options:** Depending on the instrument model you are using; you have a wide range of options for measurement windows. With the ET300, you can choose up to 20 measurement windows, while the X624EM gives you unlimited windows. This wide choice gives you greater freedom of exploration and allows you to capture detailed and complete data for your analysis. **Full IP Functionality:** Our full IP feature allows you to get the full discharge curve for induced polarization. This means you can get a complete representation of the terrain's response over time, capturing every detail and variation. This advanced feature gives you greater precision and depth in your analysis and helps you get more accurate and meaningful results. Our induced polarization feature gives you the ability to make the most of the potential of this measurement technique, allowing you to tailor the data acquisition process to your specific needs and get detailed and reliable results. We pride ourselves on offering you high-quality tools and state-of-the-art solutions to meet your geoelectrical survey needs.
- **2D pseudosection :** The software offers different modes of live visualization of the acquired data. It allows you to customize and display the 2D pseudosection for both resistivity and induced polarization. The simultaneous display of the pseudosections provides a clear and intuitive representation of the investigation. **Real-Time Visualization:** The 2D Pseudosection offers the possibility to immediately visualize the data acquired during the measurement, allowing operators to have an instant view of the characteristics of the terrain in the investigated areas. **Detailed Information:** By representing both resistivity and chargeability (IP) in a single pseudosection, users can obtain detailed information about the distribution of electrical properties of the soil. This helps to identify possible geological structures, anomalies, or other features of interest. **Parameter Customization:** The 2D Pseudosection allows you to customize the appearance of the visualization, for example by choosing between different chart options (contour or smooth) to obtain the format that best suits the user's needs. In addition, you can

adjust color scales and display extremes to highlight specific ranges of values. Thanks to these features, the 2D Pseudosection offers an important resource for geophysical operators during geoelectric surveys, allowing them to perform detailed analysis and make informed decisions based on the acquired data.

- 3D pseudosection** : The 3D pseudosection functionality of the software allows intuitive and fast insertion of electrode geometry. You can easily define the position of the electrodes in the field of investigation and view a representation of the acquired data. **Three-dimensional visualization**: The 3D Pseudosection offers an immersive, three-dimensional experience to visualize data acquired during geoelectric surveys. Operators can explore the data as a virtual representation of the subsurface, enabling deeper analysis of geological structures. **3D Geometry Customization**: The 3D Pseudosection allows users to enter the electrode geometry used during measurement and to view three-dimensional measuring points directly in real time. This feature provides instant feedback on data acquisition, making it easy to evaluate measurement point positions. **Choice of Parameters**: As in the 2D Pseudosection, also in the 3D version it is possible to customize the display parameters to adapt the graph to the specific needs of the user. This includes options for color scales, chart options (contour or smooth), and other settings to get a clear and detailed representation of your data. With 3D Pseudosection, geophysical operators can gain a deeper understanding of subsurface structure, spot anomalies or other features of interest, and make informed decisions based on a three-dimensional representation of acquired data.
- Quality control** : The software also includes a feature for measurement verification and low-quality data management. Two indicators highlight lowquality data or any measures not taken. In addition, the software allows quick correction of problematic data. **Standard Deviation**: The instrumentation offers the possibility to calculate the standard deviation for both the measurement of Induced Polarization (IP) and for resistivity. This measure of statistical dispersion allows operators to assess the consistency and reliability of the data collected. **Quality Control**: You can set a desired quality threshold for standard deviation. In this way, operators can focus only on measurements with standard deviation values that are within pre-established quality limits, eliminating measurements with excessive deviation values. **Warning for Problematic Measures**: The attention function automatically alerts you to measurements that have had problems, such as measurements not performed correctly, or currents read too low. This alert allows operators to quickly identify potentially incorrect or unreliable measurements, allowing them to intervene promptly and correct any anomalies. The measurement verification and warning function guarantee a high level of control over the quality of the data acquired, allowing operators to obtain accurate and reliable results during geoelectric surveys. This capability is critical to ensuring the effectiveness of geophysical studies and making informed decisions based on high-quality data
- Remote control** : With the remote-control feature of MAE tools, you can get complete control from anywhere and at any time. This allows you to maximize the efficiency of your operations, saving valuable time and responding quickly to the needs of your projects. **Tablet/smartphone control**: using the on-board CPU, you can easily manage your instruments directly from your smartphone or tablet. Change settings, start captures or monitor device status wherever you are, giving you unprecedented flexibility. **Remote monitoring**: You have the ability to follow the progress of your investigations directly from the comfort of your home or office. Design surveys from home, initiate acquisitions, and track progress without leaving your workplace. **Data on MAE service in the cloud**: your data is among the most valuable assets of your work. Thanks to the MAE service, you can easily archive and retrieve your data. This secure platform gives you instant access to your data wherever you are, simplifying project

management. With MAE remote control, you have the power to take your geoelectric surveys to a new level of efficiency and control, ensuring the success of your projects with maximum convenience!

Methodologies

Multi-electrode geoelectrical prospecting

V.E.S. Vertical Electrical Survey

Induced Polarization measurement

Spontaneous Potential Measurement

General

ADC technology	24bit Delta-Sigma ADC
Number of electrodes	48-72-96 (up to 94 channels)
Array configuration	1D, 2D, 3D and time-lapse
Preinstalled array configuration	Wenner, Schlumberger, Dipole dipole, Pole Dipole, Pole Pole, Gradient – custom sequences on board
Measurements	Self potential, Resistivity, Induced Polarization
Dimensions	49x39x23 cm
Weight	18kg
Display	10" touch screen
GPS	Yes
Export compatibility	RESinv, ERTlab, ZondRES, MAE
Roll-along function	Software controlled
Real-time pseudosection	1D, 2D and 3D
Sequence generator	1D, 2D and 3D
Case	IP67
Environmental condition	-20°C / 80°C
Power supply	External 12V battery, suggested 100Ah

General

Average consumption	2.5A, up to 50A peak
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Output

Power output	600W
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Voltage output	$\pm 50V$, $\pm 100V$, $\pm 200V$, $\pm 400V$, $\pm 800V$
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Output current	up to 12A at 50V, up to 0.750A at 800V
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Energization diagram	Custom from 250ms
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Precision	$\pm 0.2 \mu A$
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Accuracy	$< 0.2 \%$
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Input

Measurements strategy	Parallel
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Input voltage	$\pm 25V$
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Resolution	1 μV vs fullscale
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Accuracy	$< 0.2 \%$
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Input impedance	100M Ω
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Stacking and noise reduction	Up to 255
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Input notch filter	50Hz
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Self potential adjustment	Automatic
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IP's windows	unlimited
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MAE

