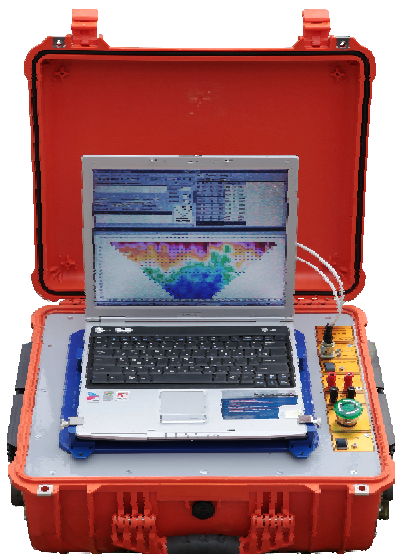


OMEGA-48 Resistivity System



OMEGA-48 is a multichannel Resistivity system designed for vertical electrical sounding (VES) and induced polarization (IP) methods on electrical resistivity tomography (ERT) technology.

RESISTIVITY SYSTEM OMEGA-48 CONSISTS OF

- Multi-electrode 10-channel Resistivity instrument which includes transmitter, receiver and switching unit connected to current and measuring lines in a single heavy duty cable with waterproof enclosure
- Two sections of multi-core cable with 24 electrode each
- Industrial laptop
- Software for system control, results acquisition, data processing and interpretation
 - ◆ developing field measuring protocol, SEQ files
 - ◆ managing measuring process, data collection and storage
 - ◆ visualization and editing field data
 - ◆ automatic data 2D inversion
 - ◆ visualization of inversion results

Resistivity instrument measures amplitude parameters of output current of the transmitter, electrical potential difference between measuring electrodes (apparent resistivity), time parameters of chargeability (apparent chargeability) determined on voltage decay curve at measuring electrodes after switching off the current:

SPECIFICATIONS

Number of measuring and current electrodes connected to the multi-core cable	48, the multi-core cable consist of two sections, 24 electrodes each, the unit is located in the center
Number of channels for simultaneous measuring operation	1 to 10. A pair of receiving electrodes for each channel is selected according to protocol
Number of current lines in simultaneous operation	1. Transmitting electrodes pair is selected according to protocol
Electrode spacing	1 to 10 m
Multi-core cable length	50 to 500 m (two sections with length from 25 to 250 m)
Signal form	direct current bipolar impulses of regulated duration with pauses
Power supply	24 V, external
Operating temperature	-20 to +50°C (option down to -40)

TRANSMITTER

Number of output channels	1 (or 2 lines) (commutation multi-core cable is possible)
Direct current bipolar impulses of regulated duration with pauses	
Impulses duration	0.2048, 0.4096, 0.8192, 1.6384, 3.2768, 6.5536, 13.1072, 26.2144, 52.4288 seconds
Duty ratio	0,2...0,5
Output voltage	30, 100, 300, 500 V
Instability of output voltage under variation of load resistance	1% at most
Output current	10 mA to 5 A
Maximum output capacity	0.5 kW (500 V – 1 A, 100 V – 2 A, 30 V – 5 A)
Time for complete current cut-off on active load	10 µs at most
Protection from short circuits on the output	

RECEIVER

Number of input channels	1 to 10 pairs of dipoles
Input resistance of each channel	at least 20 Mohm
Range of measured signals	10 µV to 12 V
Amplitude response of each channel	at least 2 to 3 µV
Instant dynamic range	at least 90 dB
Voltage of in phase signal on the input	12.5 V at most
Amplification rate of the prime amplifier	1, 10, 100, 1000
Bit length of Sigma-delta analog-digital converter (ADC)	24
Level of in phase interference suppression	at least 80 dB
Level of industrial interference suppression with frequencies 45 to 55 and 55 to 65 Hz	at least 80 dB
Operating temperature	from -20 to 50°C (option - down to -40°C)

SKILL Pro



Multinode resistivity meter for 2D and 3D resistivity tomography.
Transmitter, receiver and 48-nodes switch in one heavy duty case.
Working with two 24-nodes cables with 5 m spacing the data for geoelectric cross-section of 235 m length can be obtained in 10 minutes.

COMMON FEATURES

Electrodes, pcs	48 (2 x 24)
Temperature ranges	-20 ÷ +40°C
Dimensions	42 x 35 x 23 cm
Weight	11 kg
Internal memory	up to 4 Gb
Internal battery	12 V, 7 A·h
Outer power	12 V
Protection grade	IP 67
LCD	5", 240 x 128
Communication	USB

TRANSMITTER

Current max.	400 mA
Voltage max.	750 V
Power max.	100 W
Frequencies	2.44, 4.88 Hz
Accuracy	1%

RECEIVER

Input resistance	5 MOhm
Measurement	0.1 mV ÷ 200 V
ADC	24 b
Accuracy	1 %

ERA-MAX Electromagnetic Survey System



ERA-MAX is a general-purpose electromagnetic instrument designed for electrical survey on any surface

- ♦ eight types of input devices
- ♦ noncontact and magnetic methods of measurement

PURPOSE

- ♦ Engineering survey for construction and inspection of active pipelines, roads, hydraulic facilities
- ♦ Search and exploration of metallic and nonmetallic mineral deposits
- ♦ Ecology; archeology
- ♦ Inspection of house footing and urban underground utilities

SURVEY METHODS

- Electrical exploration - resistivity method (vertical electrical sounding, profiling)
 - Charge method
 - ♦ natural electric field method
 - ♦ inductive methods
- Geomagnetism – vector measuring of the earth magnetic field
- Noncontact probing of protective currents in pipelines
- Pipe and cable locator

SPECIFICATIONS

Climatic Performance	IP-65
Temperature Range	-30 to +65 °C

ERA-MAX RECEIVER

Operation Frequencies	DC, 0.61, 1.22, 2.44, 4.88, 50, 100, 625; 1250; 2500 Hz	
Input Voltage Range		
DC	100mkV±4 V (at Rinp 100 mOhms)	10 mkV±4 V (at Rinp 10mOhms)
0,61; 1,22; 2,44; 4,88, 50, 100, 625; 1250; 2500 Гц	0,1 mkV - 2,8 V	
Input Active Resistance	100 mOhms (DC) 100 mOhms (min) (AC)	
Input Capacitance	15 pF (max) (AC)	
Pass band (specified by operator)	(2-3) % / (4-6)% (4.88, 50, 100 Hz) 0,1 % / (0.2)% (625, 1250, 2500 Hz)	
Interference Suppression (50-60 Hz and radio frequencies)	100 dB (DC); 100 dB (0.61, 1.22, 2.44, 4.88, 625, 1250, 2500 Hz)	
Memory Capacity	5200 readings	
Extraneous DC Voltage Compensation	Automatic	
Interface	RS-232C	
Consumption Current	30 mA (max.)	
Supply Voltage	12 V, Built-in Accumulator Unit	
Weight; Overall Dimensions	1.2 kg 160x52x200 mm	
Connected Input Receivers	- Grounded Receiver Electrodes - Active Electrodes - Air Electric Antenna - Trail Receiving Line - Magnetic Antenna – Ferroprobe - Induction Magnetic Antenna	

ERA-MAX-LHF TRANSMITTER

Output Regulated Current	1, 2, 5, 10, 20, 100, 200 mA
Voltage	to 1000 V, (DC)
Operation Frequencies	0, 1.22, 2.44, 4.88, 625, 1250, 2500 Hz
Maximum Output Power	40 BA (max)
Weight; Overall Dimensions	2.3 kg (Including Internal Accumulator) 160x160x60 mm
Output Current Form	Meander
Output Generators	Grounded Electrodes; Closed Loop; Trail Lines ("625 Hz)
Rotating Field Mode	Available (if two generators used)

ERP-1

Digital Electrical Exploration System



Portable digital electrical exploration system ERP-1 is designed for geophysical survey performed by the following methods

- Electrical exploration by DC and AC resistivity method - vertical electric sounding (VES), electric profiling, signal generator, M3, as well as measuring of the full vector of an electric field: magnetomotive force, vector survey
- Natural electric field (self-potential, measuring of stray current field) method
- Induced polarization (IP) with INFAZ-VP version

APPLICATIONS

- ◆ geological mapping
- ◆ cryopedology
- ◆ search and exploration of mineral deposits
- ◆ geocology
- ◆ archeology
- ◆ geological engineering
- ◆ applied geophysics
- ◆ hydrogeology

The system ERP-1 provides a combination of analog and digital signal processing. To ensure accumulation in the signal processing measuring unit there are synchronized filters furnished on switched capacitors

FEATURES

- the system ERP-1 provides a complex of electrical exploration methods that extends the range of solvable problems and improves the quality and accuracy of obtained results
- the system has high noise immunity (good quality of measuring unit narrow-band analogue filter is 18), that is required for urban development, sites near electricity transmission lines, railways, etc.
- survey results, including the number of profile, survey stake, span, measurement date and time, are stored in memory
- the system ERP-1 is provided with software for data transfer from measuring unit to PC and storage of measurement results in formats compatible with software package IPI2WIN (VES and VES-IP data processing and interpretation, developed by Moscow State University)
- "digital" area of signal processing contains an additional method of hardware noise reduction
- transmitter ERP-1 is supplied with two outputs, a switch tumbler for operation with different supply lines (i.e., for double-differential profiling)
- receiver ERP-1 is supplied with two inputs, a switch tumbler for operation with different receiving lines (i.e., vertical electric sounding with "collars")
- the system is developed using technical decisions aimed at cost minimization
- ERP-1 is designed and developed as equipment with the state-of-art element base, available for a wide range of home consumers

SPECIFICATIONS

Temperature Range	-20 to +50°C
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RECEIVER

Operation Frequencies	DC, 1.22, 2.44, 4.88 Hz
Input Voltage Range:	
DC	100 mV \pm 5 V
1.22, 2.44, 4.88 Hz	10 mV \pm 5 V
Input Active Resistance	
DC	at least 30 mOhms
1.22 Hz	at least 19 mOhms
2.44 Hz	at least 14 mOhms
4.88 Hz	at least 10 mOhms
Interference Suppression	
DC	at least 60 dB
1.22, 2.44, 4.88 Hz	at least 80 dB
Memory Capacity	7000 readings
Interface	RS-232C
Weight	2.8 kg
Overall Dimensions	270 x 240 x 100 mm

TRANSMITTER

Operation Frequencies	DC, 1.22, 2.44, 4.88 Hz
Output Regulated Current	1, 2, 5, 10, 20, 100 mA
External Power Supply	10 - 15 V
Built-in Accumulator Unit	12 V, 4 AH
Maximum Output Power	30 BA (max.)
Output Current Form	Meander
Weight	4.3 kg
Overall Dimensions	270 x 240 x 100 mm

8-channel Receiver IMVP for Induced Polarization Method



SPECIFICATIONS

Number of independent receiver channels	8
ADC	24 bits
Sensor type	electrical MN dipoles
Input resistance	5 megohms, minimum
Operating frequency range	from 0.001 to 200 Hz
PC communication interface	USB 1.1

Multifunctional Electrical Exploration Receiver MERI-24



SPECIFICATIONS

ADC	24 bits
Maximum input supply	2 V, maximum
Input resistance	5 megohms
Built-in nonvolatile memory	8 Mb
PC synchronization interface	USB 1.1
Operating frequencies, Hz:	
First frequency range:	0.019, 0.038, 0.076, 0.153, 0.305, 0.610, 1.221, 2.441, 4.883, 9.766, 19.53, 39.06, 78.13, 156.3, 312.5, 625.0
Second frequency range:	0.021, 0.032, 0.042, 0.063, 0.083, 0.125, 0.167, 0.250, 0.333, 0.500, 0.667, 1.000, 1.333, 2.000, 2.667, 4.000, 5.333, 8.000, 10.67, 16.00, 21.33, 32.00, 42.67, 64.00, 85.33, 128.0, 170.7, 256.0, 341.3, 512.0

Electrical Exploration Transmitter ASTRA-100



SPECIFICATIONS

Maximum output power	100 W
Maximum output voltage	400 V
Output current form	"Meander" (bipolar rectangular pulses w/o interval)
Operating frequencies, Hz:	
First frequency range:	0.019, 0.038, 0.076, 0.153, 0.305, 0.610, 1.221, 2.441, 4.883, 9.766, 19.53, 39.06, 78.13, 156.3, 312.5, 625.0, 1250.0, 2500
Second frequency range:	0.021, 0.032, 0.042, 0.063, 0.083, 0.125, 0.167, 0.250, 0.333, 0.500, 0.667, 1.000, 1.333, 2.000, 2.667, 4.000, 5.333, 8.000, 10.67, 16.00, 21.33, 32.00, 42.67, 64.00, 85.33, 128.0, 170.7, 256.0, 341.3, 512.0, 683.0, 1024.0, 1365.0, 2048.0
Acceleration time at active load	2 sec

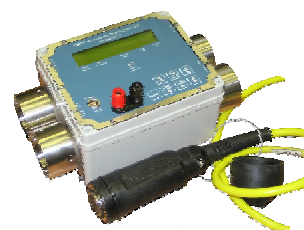
Electrical Exploration Transmitter VP-1000



SPECIFICATIONS

The set values of constant current amplitudes under a load are:	0.01, 0.015, 0.02, 0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0 A
Output voltage range	50-800 V
Duration of output current pulses in RPI-2 mode:	1; 2; 4; 8; 16; 32; 64 s
Frequencies of output current in RPI-1 mode:	19.6; 9.8; 4.88; 2.44; 1.22; 0.61; 0.3 Hz
Maximum output current peak power	1000 W
The transmitter is power supplied from	the external AC source of 220 V, 50 Hz
Load resistance range within which constant-current regulation is performed	25-80 kohms
Weight	10 kg

COMx64 - Switchboard for Electrotomography



It is controlled directly by an operator or through survey system (MERI-24, ERP-1). Relatively high survey speed: up to 150 VES points per day with 6-m spacing. It can be operated in rain.

The set includes:

- Switchboard COMx64 - 1 pc.
- Software x2ipi (IP) - 1 pc.
- Cable Switchboard - instrument - 1pc.
- Multicore cable 98 m, 16 terminals with 3 m spacing (K195 cable) - 2 pc
- Multicore cable 53 m, 16 terminals with 3 m spacing (K194 cable) - 2 pc
- Connection cable with RPT-21 electrical terminals and clips - 64 pc.
- Electrodes, stainless steel D=6 mm, L=300 mm - 64 pc