Grounding Traffic Control Signal Equipment Simplified

GROUND AND INSULATION RESISTANCE TESTERS

EASY-TO-USE, DURABLE, AND HIGHLY ACCURATE TESTERS THAT HELP KEEP YOU SAFE!

- Test grounds and insulation to verify safe operation and reduce down time
- Effortlessly ensure ground systems meet all local electrical code, manufacturer specifications and standards
- Verify the integrity of protective insulation on communication and power conductors
- Efficient ground test solutions for any type of system
- Large graphic displays viewable in any lighting condition
- Store and report test results

Our products are backed by over 130 years of experience in test and measurement equipment, and encompass the latest international standards for quality and safety.

Technical Hotline: (800) 343-1391
www.aemc.com

AEMC® INSTRUMENTS
CHAUVIN ARNOUX GROUP

Understanding Ground Resistance Testing

The term ***system ground*** is defined as a conducting connection by which a circuit is connected to the earth. The connection is used to limit and control, as closely as possible, unwanted voltages by establishing a low resistance connection to the earth for damaging stray currents.

The typical grounding system consists of a ground electrode conductor, a mechanical, compression or welded bond, and its ground electrodes in direct contact with the earth.

Maintenance and inspection activities for infrastructure systems are simplified with ground, bond and insulation testers.

Model 6255 is a 10 A low resistance Micro-ohmmeter designed for both plant maintenance and field use. It is uniquely designed to conduct tests on bonds, contacts, joints and switches, and is an ideal device when conducting bond verification on a grounding system.

Grounding Systems Have Several Protection Applications:

For natural phenomena, such as lightning, grounds are used to limit voltages and conduct currents away from system components to reduce the risk of possible damage of critical infrastructure.

For faults in electric power systems, equipment grounds help ensure rapid operation of the protective breakers by providing low impedance fault current paths. The ground electrodes should reduce the risk of step potentials before people are injured and the power or communications system is damaged.

Low resistance ground systems also help **protect against the risk of electrostatic discharge** by controlling charge generation and providing a path to earth should discharge occur.

Lastly, measuring the resistance of grounding system components for each installation is **the only effective method for ensuring manufacturer and DOT specifications are met.** Measurements should be completed at the time of installation, as well as periodically to track the performance of a ground system over time.

Resistance to ground of electrodes varies based on the soil resistivity, which is highly dynamic by both location and atmospheric (temperature and rainfall) conditions. While resistivity can be measured, it's imperative to account for seasonal changes when installing and maintaining ground electrodes for critical equipment.

TO MEASURE	INSTRUMENT TO USE
Soil Resistivity	4-Point ground resistance meter
Resistance to Ground of Electrodes	3-Point ground resistance meter, clamp-on tester or instrument using clamp-on features
Bonding Resistance	Micro-Ohmmeter
Equipment and Electrode Ground Conductors	Continuity or ground test instrument with lead compensation feature

Ground Tester Selection Guide

Ground resistance measurements play a vital role in maintaining electrical safety, protecting equipment, and ensuring reliable operation in a wide range of applications and industries. It's important to understand the differences and choose the right test instrument for your application.

APPLICATIONS

- Measure resistance to ground of electrodes using the Fall-of-Potential (FoP) test method
- Use in multi-grounded systems without disconnecting the ground under test
- Measure resistance of ground electrode conductors and verify ground loop integrity around cabinets and other installations
- Measure leakage current flowing to ground or circulating in ground loops
- Conduct quick field checks of ground resistance performance without the need to de-energize
- Conduct field surveys and retrieve and analyze readings from stored data
- Measure resistance of the type of single rod or small ground grids often found in remote telecommunication switching stations
- Measure ground electrode resistance on lightning protection equipment
- Measure the electrode resistance of equipment in recreational areas, especially public swimming pools
- Test electrode resistance of installed ground rods and grids at new construction sites before utility power is supplied
- Test earth electrode resistance of grounded towers and counterpoises at cellular phone remote installations and power transmission towers
- 3- and 4-Pole measurements of large grounding grids, counterpoises, ground mats, and grounded equipment
- Measure soil resistivity to approximate resistance to ground of an electrode system or for engineering more complex designs

Clamp-On Ground Resistance Testers

Clamp-On Ground Resistance Testers measure ground rod and grid resistance without the use of auxiliary ground rods. They offer accurate readings from (0.01 to 1500) Ω, as well as ground leakage current from 0.2 mA to 40 A, without disconnecting the ground system under test.

3-Point Ground Resistance Testers

Our new 3-Point Ground Resistance Testers, Models 6422 and 6424, are affordable and feature-rich. Their innovative design simplifies the process and provides reliable results. A single button operation allows users to easily connect, press, and read measurements. The Model 6424 stores and calculates measurements using the simplified 62% test method, displaying average and % deviation for accurate pole spacing determination.

Complete kits available.

4-Point Ground Resistance Testers

The 4-Point Ground Resistance Testers are ideal for both soil resistivity and Fall-of-Potential testing. Instruments primarily operate on battery power but can perform measurements while simultaneously charging. All models are available in complete kits including all necessary accessories to complete most ground resistance measurements.

Bond and Contact Resistance

Micro-Ohmmeter Models 6240 and 6255 perform reliable low resistance measurements with test current to 10 A and resolution to 1 μΩ. Both models also use a four-wire Kelvin Bridge method, which eliminates test lead resistance for best measurement accuracy.

Digital Ground Resistance Tester
Models 6422 & 6424

IP 65 | 600 V CAT IV | CE | ▣

MODELS	6422	6424
Voltage Range	–	(0.1 to 600) VAC/DC
Voltage Resolution	–	0.1 V
Current Range	–	(0.5 to 60) AAC (requires optional MN72 probe)
Measurement Range *(2P Mode)*	(0.05 to 50,000) Ω	
Resolution *(2P Mode)*	(0.01, 0.1, 1, 10) Ω	
Measurement Range *(3P Mode)*	(0.05 to 2,000) Ω	(0.05 to 50,000) Ω
Range *(3P Mode)*	(0.01 to 1.0) Ω (varies by range)	(.01 to 10) Ω (varies by range)
Power Source	(6) AA Alkaline batteries	(6) NiMH rechargeable batteries, charging time approx. 6 hrs
Display	Backlit LCD	
Dimensions	(8.78 x 4.96 x 2.7) in (223 x 126 x 70) mm	
Weight	2.2 lb (1 kg)	
CAT. #	2135.55	2135.57

Also available as complete Test Kits

Digital Ground Resistance Tester
Models 4620 & 4630

IP 53 | 30 V CAT III | CE | ▣

cover closed

MODELS	4620	4630
2-Point Test	✓	
3-Point Test	✓	
4-Point Test	✓	
Measurement Range	(0.00 to 1999) Ω	
Ranging	Automatic	
Test Current	Auto up to 10 mA	
Noise Protection	Enhanced filtering with LED indication	
Power Source	(8) C cell Rechargeable 9.6 V	Alkaline batteries NiMH battery pack
Display	Digital/backlight	
Dimensions	(10.7 x 9.76 x 5.12) in	
Weight	7.75 lb	
CAT. #	2130.43	2130.44

Also available as complete Test Kits

Digital 10 A Micro-Ohmmeter
Model 6255

IP 64 | 50 V CAT IV | CE | ▣

AUTOMATIC REPORT GENERATION

DataView®

MODEL	6255
4-Point, Kelvin Bridge	✓
Measurement Range	1 µΩ to 2500.0 Ω
Test Current	1 mA to 10 A selectable
Measurement Mode	Inductive/Resistive/Auto
Metal Alpha	Adjustable to 99.9
Temperature Correction	Manual or Auto
Power Source	Rechargeable 6 V NiMH battery pack
Display	Digital/backlight
Dimensions	(10.7 x 9.76 x 7.17) in
Weight	8 lb
CAT. #	2129.84

Accessory: 1 A and 10 A Kelvin Probes available

Digital 10 A Micro-Ohmmeter
Model 6240

IP 64 | 50 V CAT III | CE | ▣

cover closed

MODEL	6240
4-Point, Kelvin Bridge	✓
Measurement Range	5 µΩ to 400 Ω
Test Current	10 mA to 10 A selectable
Resolution	1 µΩ to 100 mΩ
Temperature Correction	Manual
Power Source	Rechargeable 6 V NiMH battery pack
Display	Digital/backlight
Dimensions	(10.7 x 9.76 x 7.17) in
Weight	9.9 lb
CAT. #	2129.80

Accessory: 1 A and 10 A Kelvin Probes available

Clamp-on Ground Resistance Tester Models 6416 & 6417

IP 40 | 600 V CAT IV | CE | ⧈ | * | *

*Model 6417 only

AUTOMATIC REPORT GENERATION

DataView®

MODELS	6416	6417
Clamp-On Test	✓	
Measurement Range	(0.01 to 1500) Ω	
Ranging	Automatic	
Current Ranging	0.2 mA to 40 Arms	
Test Current	Automatic	
Selective Test Frequency	✓	
Voltage Detection	✓	
Data Storage	✓	
Report Generation	–	✓
Noise Protection	Enhanced filtering	
Other Features	Hold function	Alarm & memory
Power Source	(4) 1.5 V LR6 (AA) Alkaline batteries or (4) NiMH batteries	
Display	Digital	
Dimensions	(10.31 x 3.74 x 2.17) in	
Weight	2.06 lb	
CAT. #	2141.01	2141.02

Ground Resistance Tester Model 6471

IP 53 | 50 V CAT IV | CE | ⧈

cover closed

MODEL	6471
2 Clamp Measurement	✓
3-Point Test	✓
4-Point Test	Direct soil resistivity measurement
Bond Test (2- and 4-wire)	✓
External Voltage Measurement	(0.1 to 65.0) V
Measurement Range	99,000 Ω
Ranging	Auto-Ranging
Test Current	Up to 250 mA
Test Frequency	Selectable from (41 to 513) Hz
Power Source	Rechargeable 9.6 V NiMH battery pack
Display	Digital/backlight
Dimensions	(10.7 x 9.76 x 5.12) in
Weight	7.5 lb
CAT. #	2135.49

Also available as complete Test Kits
AC Current Probes Model SR182 included

Ground Resistance Tester Kit 150 ft

Test Kit for 3-Point testing includes 4620 meter, (2) 150 ft color-coded leads on spools (red and blue), (1) 30 ft lead (green), (2) 14.5 in T-shaped auxiliary ground electrodes, (1) set of five spaded lugs, 100 ft tape measure and carrying bag.

CAT. #2135.35

Model 3640 Kit:	CAT. #2135.13
Model 4620 Kit:	CAT. #2135.19
Model 4630 Kit:	CAT. #2135.22

Ground Resistance Tester Kit 300 ft

Test Kit for 4-Point testing includes 4620 meter, (2) 300 ft color-coded leads on spools (red and blue), (2) 100 ft color-coded leads (green and black), (4) 14.5 in T-shaped auxiliary ground electrodes, (1) set of five spaded lugs, 100 ft tape measure and carrying bag.

CAT. #2135.36

Model 3640 Kit:	CAT. #2135.14
Model 4620 Kit:	CAT. #2135.20
Model 4630 Kit:	CAT. #2135.23

Ground Resistance Tester Kit 500 ft

Test Kit for 4-Point testing includes 4620 meter, (2) 500 ft color-coded leads on spools (red and blue), (2) 100 ft color-coded leads (green and black), (1) 30 ft lead (green), (4) 14.5 in T-shaped auxiliary ground electrodes, (1) set of five spaded lugs, 100 ft tape measure and carrying bag.

CAT. #2135.37

Model 4620 Kit:	CAT. #2135.21
Model 4630 Kit:	CAT. #2135.24

1000 V Digital & Multi-Function Megohmmeter

MODEL 6529

Model 6529, one of our True Megohmmeters® in the 1kV class, is IEC 61010 compliant, designed for field use with a lightweight, compact, rugged, and glove-friendly design. Its interface simplifies use, serving as both an insulation tester and a basic multimeter. It offers intuitive pass/fail indication with blue/red backlight to quickly identify defective or failing insulation. A relative measurement function provides the capability to compare values to a known reference quickly recognizing potential problems. Multimeter functions include AC/DC voltage, resistance and continuity.

SPECIFICATIONS

MODEL		6529
AC/DC VOLTAGE MEASUREMENT		
Range		700 VAC, 700 VAC+DC
Accuracy	DC AC+DC	±(1% R + 1 ct) ±(1.2% R + 1 ct)
Resolution		1 V
Frequency Range		DC & 30 to 440 Hz
Input Impedance		25 MΩ
INSULATION MEASUREMENT		
Test Voltage/ Resistance Range	50 V 100 V 250 V 500 V 1000 V	0.010 MΩ to 420.0 MΩ 0.020 MΩ to 420.0 MΩ 0.050 MΩ to 420 MΩ 0.100 MΩ to 4200 MΩ 0.20 MΩ to 11.00 GΩ
Measurement Accuracy 40 Ω • 40 MΩ • 400 MΩ 4.2 GΩ 11 GΩ		 ±(1.5% R + 10 ct) ±(4% R + 10 ct) ±(10% R + 10 ct) (1000 V range)
CONTINUITY MEASUREMENT		
Range		0 to 40 Ω (200 mA test current ≤2 Ω)
Accuracy		1.2% R +3 ct
Resolution Max		0.01 Ω
Leads Compensation		Up to 5 Ω
Audible Signal		Selectable ≤1 or 2 Ω
RESISTANCE MEASUREMENT		
Range		0 to 420 kΩ
Accuracy		±(1.2 R + 3 ct)
Resolution Max		0.1 Ω
DMR Mode		Compares successive measurements to a reference value with alarm indication and red backlit display if deviation changes by the programmed %. The difference beyond the new reading and the reference measurement, along with the % deviation are displayed.
GENERAL		
Time Test		1 s to 39.59 min selectable
Display		LCD with backlight
Power Supply		(6) AA Alkaline batteries (NEDA 15 A or IEC LR6)
Battery Life (5 s ON, 25 s OFF)		>2000 measurement in MΩ, >300 h in VAC/DC, >6000 measurement in Continuity Test
Dimensions		(8.54 x 3.54 x 2.44) in (217 x 90 x 62 mm)
Weight		1.68 lbs (760 g)
Operating Temperature		14 °F to 122 °F (-10 °C to +50 °C), 90% RH
SAFETY		
Safety Rating		IEC / EN 61010-1 / 600 V CAT IV
CAT. #		2126.55

FEATURES

- Selectable test voltages (50, 100, 250, 500 and 1000) V
- Basic DMM functions; Volts, Continuity, Resistance
- Dual line display to view the inulation value and real-time test voltage simultaneously in an easy-to-read format
- DMR mode - relative resistance comparison to a reference value
- 2-color backlighting easily shows alarm conditions
- Shockproof covering for excellent handling
- Adjustable supports for improved viewing when used on a bench or other flat surface
- Automatic power-off function to optimize the battery life
- Programmable alarm thresholds
- Quickly verify insulation quality to ensure safety and reduce down time
- Perform basic Digital Multimeter functions: Volts, Continuity, and Resistance
- Test voltages for insulation testing a variety of low-voltage cables and devices
- Measure leakage current flowing to ground or circulating in ground loops
- Hands-free timed test function
- Large test button for easy to use even with a glove

APPLICATIONS

- Quickly verify insulation quality to ensure safety and reduce down time
- Perform basic Digital Multimeter measurements: Volts, Continuity, and Resistance
- Test voltages for insulation testing a variety of low-voltage cables and devices
- Hands-free timed test function

Front Panel & Functional Display

IP 40 | 600 V CAT IV | CE | ETL

MODEL 6529

Dual Line LCD Display

Timer Set-up Key

Hold Up Navigation Key

AC/DC Volts Buzzer On/Off Right Navigation Key

Rotary Selection Switch

Red Backlit Display Alarm (Fail) Condition

Backlight/ Lead Compensation Key

Test Button

Fused Input Terminals

TRUE MegOhmmeter®

SCREEN DISPLAYS

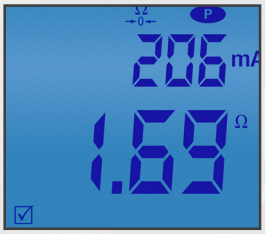
Megohmmeter and Resistance Modes

Insulation Resistance Measurement with Test Voltage

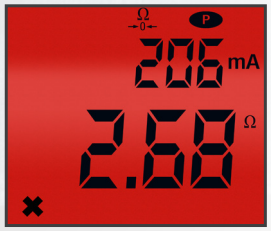
Resistance Measurement

Continuity Mode

Continuity Measurement and ☑ Indicates Pass Condition



Continuity Measurement and test current Red Backlight and **X** indicates Alarm (Fail) Condition



PRODUCT INCLUDES

A set of (2) 5 ft color-coded silicone leads, (2) color-coded alligator clips and (2) color-coded test probes (red/black) (Rated 1000 V CAT IV, UL V2), soft carrying case, (6) 1.5 V AA batteries and user manual.

ACCESSORIES

CAT. #2138.54 — Continuity probe

REPLACEMENT PARTS

CAT. #2117.73 — Replacement pouch

CAT. #2971.04 — Set of (2) Fuses FF, 200 mA, 1000 V, 10 kA, 6x32 mm

CAT. #5000.94 — Set of (2) 5 ft color-coded (red/black) silicone leads with 4 mm straight/right angle banana plugs (Rated 1000 V CAT IV, UL)

CAT. #5000.97 — Black Test Probe (1000 V CAT IV, 15 A, UL V2)

CAT. #5000.98 — Red Test Probe (1000 V CAT IV, 15 A, UL V2)

CAT. #5000.99 — Safety Alligator Clip – Black (1000 V CAT IV, 15 A, UL V2)

CAT. #5100.00 — Safety Alligator Clip – Red (1000 V CAT IV,15 A, UL V2)

POWER & ENERGY LOGGER Model PEL 52

MODEL PEL 52

Combining energy and power logging with the affordable PEL 52 Power and Energy Logger enables efficient residential and light industrial energy savings, audits, power quality troubleshooting, and renewable energy system evaluation. This integration empowers contractors to make informed energy usage decisions, identify improvement opportunities, and track energy-saving progress, leading to reduced costs, a smaller environmental impact, and improved operational efficiency.

Pending

AUTOMATIC REPORT GENERATION

DataView®
DataViewSync™

EFFORTLESSLY TEST THE NEC CODE 220.87 30-DAY EXCEPTION LOAD STUDY!

SPECIFICATIONS

MODEL	PEL 52		
GENERAL			
Inputs	2V / 2I		
Types of installations	Single phase, split phase or 2 single-phase channels		
Recording / Data Storage Rate	Unlimited duration (4 GB max recording size) / 1 s to 1 h (Min/Avg/Max)		
Network Frequency	(45 to 65) Hz		
Voltage	(10 to 600) V		
ELECTRICAL			
VOLTAGE	**RANGE**	**RESOLUTION**	**ACCURACY**
Vrms	(10 to 660) V P to N	0.1 V	± 0.2 % Reading ± 0.2 V
Urms	(20 to 1200) V P to P	0.1 V	± 0.2 % Reading ± 0.4 V
CURRENT MEASUREMENT @ (50 and 60) HZ	**RANGE**	**RESOLUTION**	**ACCURACY**
Amps (1 V nominal) (excluding clamp accuracy)	Probe dependent (0.2 % < I < 120 % Inom)	Probe dependent	± 0.2 % Reading ± 0.02 Inom
POWER	**RANGE**	**RESOLUTION**	**ACCURACY**
Watts P-Q-S (W-var-VA)	V = (100 to 660) V I = (5 to 120) % Inom	Probe dependent	± 0.3 % R ± 0.003 % Pnom ± 1 % R ± 0.01 % Qnom ± 0.3 % R ± 0.003 % Snom
Power Factor	-1 to 1	0.001	±0.02 %
Cos φ (DPF)	-1 to 1	0.001	±0.05 %
ENERGY	**RANGE**	**RESOLUTION**	**ACCURACY**
Ep-Eq-Es (Wh, varh, VAh)	V = (100 to 660) V I = (5 to 120) % Inom	0.001 and ±0.02%	±0.5 % Reading ±2.5 % Reading ±0.5 % Reading
MECHANICAL			
Communication	Wi-Fi (access point and hot spot)		
Data Storage	8 GB SD-Card (included); expandable to 32 GB		
Dimension	(7.08 x 3.46 x 1.45) in (180 x 88 x 37) mm		
Weight	14.10 oz (400 g)		
Case	Compact and rugged, shock and vibration IEC 61010		
Display Type	LCD with blue backlight		
Real-Time Clock	Time and date stamp for Trend mode		
Power Supply	From phase 1 (90 to 660) V battery backup when power OFF		
Battery Life	3 h without Wi-Fi, 1 h typical with Wi-Fi enabled		
ENVIRONMENTAL			
Operating Temperature / Relative Humidity	(-4 to 122) °F (-20 to 50) °C / (10 to 85) % RH		
Storage Temperature	(-40° to 158) °F (-40 to 70) °C / (0 to 95) % RH w/out battery		
SAFETY			
Electro-Magnetic-Compatibility (EMC)	EN 61326-1 for emission and immunity		
Safety Rating / CE Rating	IEC/EN 61010-2-30 (600 V CAT III) / Yes		
IP Rating	IP54 per IEC 60529		
CAT. #	2137.69 (w/LCD, w/2 MA193-10-BK sensors) 2137.71 (w/LCD, no sensors)		

* Minimum and maximum values are current probe dependent. Consult factory for NIST Calibration prices

PRODUCT INCLUDES

CAT. #2137.69 (WITH PROBES)
Soft carrying bag, (2) MiniFlex® MA193-10-BK sensors, (3) black test leads and alligator clips, 110 V US power Cord, (1) adapter for power cord, 8 GB SD card, USB SD card reader, (2) AAA rechargeable batteries, quick start guide, and USB drive with DataView® software and user manual.

CAT. #2137.71 (NO PROBES)
Soft carrying bag, (3) black test leads and alligator clips, 110 V US power Cord, (1) adapter for power cord, 8 GB SD card, USB SD card reader, (2) AAA rechargeable batteries, quick start guide, and USB drive with DataView® software and user manual.

POWER & ENERGY LOGGER Model PEL 52

FEATURES

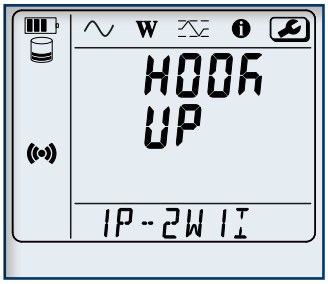
- Low cost, simple-to-use, portable, single- and split-phase power & energy data logger
- View measurements in real-time for voltage, current, frequency and power
- Wide backlit LCD display
- Install without de-energizing the electrical network being monitored
- Vital energy data is easily measured, recorded and analyzed
- TRMS voltage and current measurement up to 3000 A *(dependent on sensor)*
- Phase powered, does not require a separate power source
- Measurement of the AC phase currents (I1, I2) *(dependent on sensor)*
- TRMS AC measurements (50 and 60) Hz, aggregation every second without missing measurements
- Easy to use; automatic recognition of current sensors
- W, VA and var (P, Q, S, N and D) power measurements
- Calculation of the Cos φ and Power Factor (DPF)
- Aggregation measurements over a period from 1 minute to 1 hour
- Storage of the 1 s and aggregated measurements on SD/SDHC card; data can be read directly on a PC
- Remote connectivity and data viewing via DataViewSync™ *(Android™, iOS, Windows, etc.)*
- Wi-Fi offers accessibility to diagnose problems in real-time and/or multi-station operation.
- Includes FREE DataView® software for configuring, data retrieval, real-time measurement display, data analysis and report generation
- Compact casing with built-in magnets to facilitate mounting for easier implementation in electrical cabinets
- ECO-DESIGN - environmental aspects considered during product development to make the lowest possible environmental impact throughout the product life cycle

ACCESSORIES/REPLACEMENTS

CAT. #2140.32 AC Current Probe Model MN93-BK
CAT. #2140.33 AC Current Probe Model SR193-BK
CAT. #2140.34 AmpFlex® Sensor 24 in Model 193-24-BK
CAT. #2140.35 AmpFlex® Sensor 36 in Model 193-36-BK
CAT. #2140.36 AC Current Probe Model MN193-BK
CAT. #2140.48 MiniFlex® Sensor 10 in Model MA193-10-BK
CAT. #2140.50 MiniFlex® Sensor 14 in Model MA193-14-BK
CAT. #2140.80 MiniFlex® Sensor 24 in Model MA194-24-BK
CAT. #2140.44 (1) 10 ft (3 M) Black Lead w/(1) Black Alligator Clip (Lead rated 1000 V CAT IV 15 A, Clip rated 1000 V CAT IV 15 A, UL)
CAT. #2140.45 Set of (12), color-coded Input ID Markers
CAT. #5000.43 Magnetized Voltage Probe Set of (2) color-coded (Red/Black) magnetized voltage probes (Rated 600 V CAT IV, 1000 V CAT III)

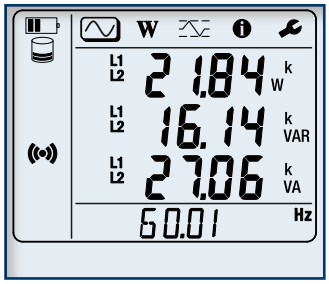
LARGE FUNCTIONAL DISPLAYS

INFORMATION MODE



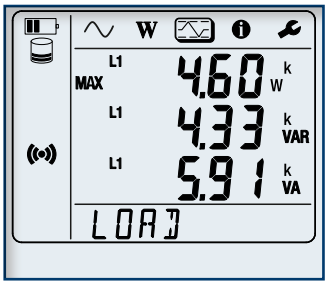
Hook up, Wi-Fi, aggregation period, can be configured from the front panel of the PEL 52. Current ratios and number of turns need to be configured via the PEL Transer software based on the current sensor type.

MEASUREMENT MODE (2P-3W2I)



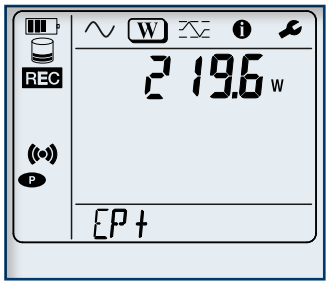
Real-time updates are displayed for voltage (V), current A) active power (P), reactive power (Q), apparent power (S), frequency (Hz), power factor (PF).

MAX MODE (1P-2W1I)



Max aggregated values of measurements and energy.

ENERGY MODE



Active energy (Wh), reactive energy (varh), apparent energy (VAh). The energies displayed are the total energies, of the source or of the load.
(The "h" symbol is not displayed on the screen. You will see W, VA, var for Wh, VAh and varh. Downloaded recordings will show the "h")

APPLICATIONS

- *Load surveys - Find out how much energy each item of equipment consumes operating at its min/max power level.*
- *Energy analysis - Estimate energy consumption before and after the improvements.*
- *Energy surveys - The measurements for energy surveys must be performed at several locations on the evaluation site. Starting with the main power, compare the power and energy measurements on the electricity meter and bills. Sub metering can then be performed on downstream of the installation.*

POWER & ENERGY LOGGER PEL 100 Series

MODEL PEL 102 & PEL 103

Three-Phase Power and Energy Logger

Monitor your power & energy usage and costs locally or from anywhere in the world !

Phase Powered

AUTOMATIC REPORT GENERATION
DataView®

PEL 102 & PEL 103 INCLUDE

PEL 102: CAT. #2137.51 & CAT. #2137.61 (NO SENSORS)
PEL 103 CAT. #2137.52 & CAT. #2137.62 (NO SENSORS)

Small classic tool bag, 5 ft USB cable, (4) 10 ft black voltage leads and alligator clips, power cord, (12) color-coded ID markers, (3) water-tight MiniFlex® 193-10-BK sensors *(included with Cat. #2137.51 & Cat. # 2137.52 only)*, MultiFix mounting system, safety card for the PEL, 8.4 V NiMH battery, sensor compliance sheet, 8GB SD-Card with USB SD-Card reader, quick start user guide and USB drive supplied with DataView® software and user manual.

FEATURES

- Simple-to-use, single-, dual- (split-phase) and three-phase (Y, Δ) power &energy logger
- Power measurements: kVA, kW and kvar
- Designed to work in 1000 V CAT III and 600 V CAT IV environments
- Automatic recognition of the connected current sensors and probes
- Energy measurements: kVAh, kWh (source, load) and kvarh (four quadrant indication
- Includes DataView® software for configuring, real-time display, analysis and report generatio
- 8 GB SD card supplied, can be upgraded up to 32 G
- USB, LAN, Ethernet, Wi-Fi and Bluetooth communication *(Class 1 wireless communication, up to 300 ft away)*
- Satisfies the monitoring requirements of NEC Code 220.87
- Power adapter allows the PEL 102 to be powered from a phase measurement input
- Supports 17 different network connections *(PEL 103)*
- PEL 103 can be configured from front panel, DataView® control panel or the FREE Android™ application
- Provides all the necessary functions for power and energy data logging for (50, 60, AND 400) Hz and DC distribution systems
- Automatic recognition of the connected current sensors and probes

POWER ADAPTER FOR PEL 102 & 103

CAT. # 2137.52

Powers from phase to neutral (110 to 277) V_{AC} or phase to phase (110 to 480) V_{AC}

***ADAPTER SOLD SEPARATELY**

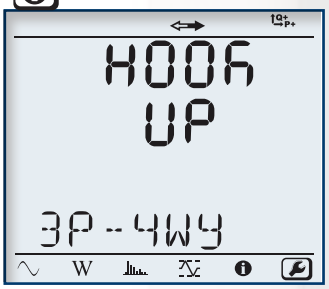
POWER & ENERGY LOGGER PEL 100 Series

ANDROID™ APP AVAILABLE!

- Configure measurements and recordings
- Display data in real-time
- For use on devices with Android™ platform
- ***New*** software sensors providing all comprehensive and instantaneous motors electrical parameters such as rotation speed, efficiency and torque

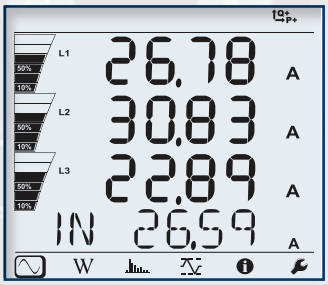
PEL 103 LARGE FUNCTIONAL DISPLAYS

INFORMATION MODE



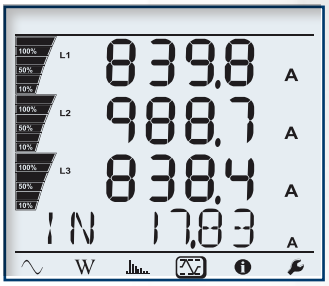
Hook up, voltage and current ratios and aggregation period can be configured from the front panel of the PEL 103

MEASUREMENT MODE



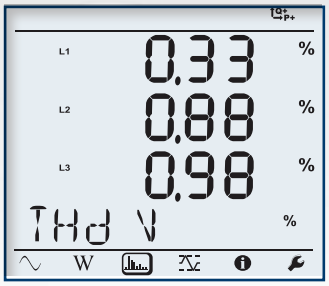
Real-time updates are displayed for voltage, current, power, frequency, power factor and tangent

MAX MODE



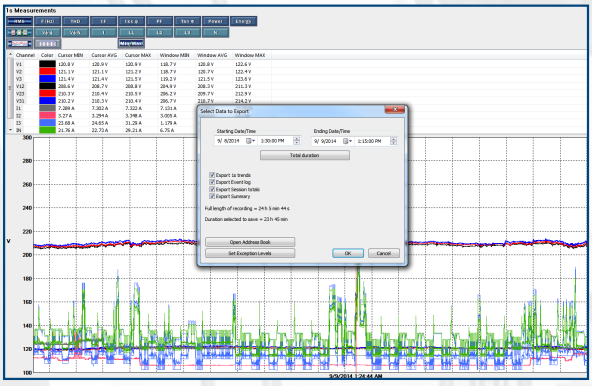
Max values for voltage, current (including neutral current), power and harmonics

HARMONIC MODE

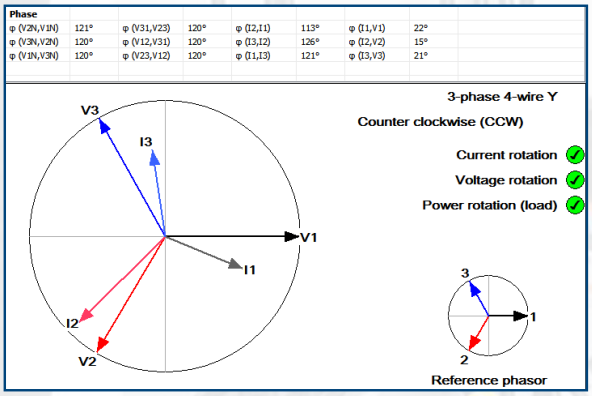


Total Harmonic Distortion (THD) can be displayed by phase or phase to phase. Neutral current THD can also be displayed.

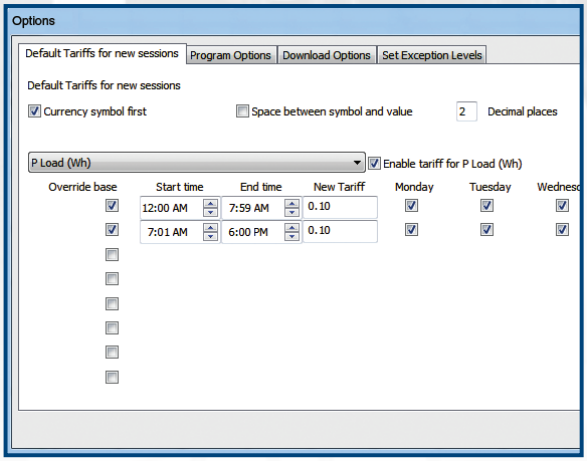
PEL 103 CAN BE CONFIGURED DIRECTLY FROM THE FRONT PANEL, DATAVIEW® CONTROL PANEL OR THE ANDROID™ APP



Export 1 Sec Data: Create DataView® reports from 1 sec data, as well as aggregate data



Updated Phasor Diagram Screen: Now shows actual and reference diagrams and indicates whether voltage, current and/or power orientations are as expected



Time of Use Selection: Program up to 8 different tariffs for energy cost based on day of week and time of day

POWER & ENERGY LOGGER PEL 100 Series

SPECIFICATIONS

MODELS	PEL 102 & PEL 103		
GENERAL			
Sampling Frequency	128 samples per cycle; (50/60) Hz (16 samples/cycle 400 Hz)		
Data Storage Rate	1 per second		
Demand Period Storage Rate	User selectable (1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60 min)		
Recorded Parameters (Single- and Poly-Phase)	V, I, W, VA, var, PF, Tan, Wh, VAh, varh, THD (V and I), Individual harmonics (from 1 through 50 per phase); Crest Factor (CF), Cos f / DPF		
Event Log	Tracks and records status changes and error messages along with recorded data		
Front Panel Indicator LEDs	Bluetooth active, recording in progress, phase connection reversal, overload, battery charging and SD card status		
Storage Capacity	8 GB SD card included / SD cards up to 32 GB formatted FAT32 are supported		
INPUTS Voltage	PEL 102/103: 3 input channels		
Current	PEL 102/103: 3 input channels		
ELECTRICAL			
VOLTAGE MEASUREMENT	RANGE	RESOLUTION*	ACCURACY*
(50/60) Hz	(42.5 to 69) Hz	–	± 0.1 Hz
Single-Phase RMS Voltages	(10 to 1000) Vrms	0.1 V	± 0.2 % Reading ± 0.2 V
Phase-to-Phase RMS Voltages	(17 to 1700) Vrms	(0.1 to 1) V	± 0.2 % Reading ± 0.4 V
400 Hz	(340 to 460) Hz	–	
Single-Phase RMS Voltages	(10 to 600) Vrms	0.1 V	± 1 % Reading ± 1 V
Phase-to-Phase RMS Voltages	(17 to 1200) Vrms	(0.1 to 1) V	± 1 % Reading ± 1 V
DC	(100 to 1000) V	0.1 V	± 1 % Reading ± 3 V (typical)
PT Ratios	Programmable from (50 to 650,000) V	–	(0.01 to 0.1) V
CURRENT MEASUREMENT	A193 A*** (PEL 102/103)	–	–
Nominal range for current probes supplied with kit. (See chart on Pages 32 and 33 for other probes)	200 mA to 10,000 A		–
CT Ratios	Programmable from 1:1 to 25,000:1 (probe dependent)		
POWER MEASUREMENTS	RANGE	RESOLUTION*	ACCURACY*
Active Power (P)*	(-2 to 2) GW	0.001 W	± 0.5 % Reading ± 0.005 % Pnom
Reactive Power (Q)*	(-2 to 2) Gvar	0.001 var	± 1 % Reading ± 0.01 % Qnom
Apparent Power (S)*	(0 to 2) GVA	0.001 VA	± 0.5 % Reading ± 0.005 % Snom
Power Factor	-1 to 1	0.001	± 0.05
Tangent φ (active/reactive power ratio)	-3.2 to 3.2	0.001	± 0.02
ENERGY MEASUREMENTS	RANGE	RESOLUTION*	ACCURACY*
Active Energy (EP)	4 EWh	1 Wh	± 0.5 % Reading
Reactive Energy (EQ)	4 Evarh	1 varh	± 2 % Reading
Apparent Energy (ES)	4 EVAh	1 VAh	± 0.5 % Reading
THD	± 655 %		
Individual Harmonics	1 to 50 displayed in percentage; 1 to 7 at 400 Hz		
External Supply	110/250 V (10 %) @ (50/60) Hz; 400 Hz		
Power From Phase Measurement	PEL 102/103: Requires optional 600 V Power Adapter		
Back-Up Power Supply/Charge Time	Rechargeable 8.4 V NiMH battery pack / Approximately 5 hr		
Battery Life	30 min minimum, 60 min typical		
MECHANICAL			
Communication	USB 2.0, Ethernet (RJ45), Wireless Bluetooth Class 1 **		
Dimension/Weight	PEL 102/103: (10.08 x 4.92 x 1.46) in (256 x 125 x 37) mm / 2.20 lb (1 kg)		
Case	Double insulated, rubber over-molded, polycarbonate UL94 V1 rated		
Display Type for Model PEL 103	(2.63 x 2.16) in (67 x 55) mm, four line, monochrome, backlit LCD with adjustable brightness and contrast		
ENVIRONMENTAL / SAFETY			
Operating Temperature/Relative Humidity	PEL 102/103: (32 to 108.5) °F (0 to 42.5) °C / up to 85 % RH		
Storage Temperature	(-4 to 122) °F (-20 to 50) °C with batteries; (-4 to 158) °F (-20 to 70) °C without batteries		
Safety Rating/CE Rating	PEL 102/103: Complies with IEC 61010-1, and IEC 61010-2-030 for 1000 V CAT III / 600 V CAT IV Pollution Degree 2 / Yes		
Ingress Protection	PEL 102/103: IP54 non operating		

Consult factory for NIST Calibration prices

* Maximum value is current probe dependent.

** Computers with Class II Bluetooth will restrict range to 40 ft; Computers without Bluetooth will require a Class I or Class II Bluetooth radio adapter.

*** Maximum current reduced by a factor of 2 for 400 Hz fundamental frequency.

DataView®

Data Analysis and Reporting Software

AEMC® Instruments developed our DataView® software interface for recording and displaying measurement data recorded on an AEMC® Instrument and generates views for analysis and both custom and standard reports. DataView® is compatible with all our electrical test instruments requiring software, even older models, and it's included at no cost with a compatible instrument purchase. Additonally any future software upgrades are always free. This approach ensures users can easily learn and utilize the software, regardless of the AEMC® instrument being used.

DataView® automatically identifies connected test instruments on a PC, opens their respective menus for direct data access to recorded data, and offers users quick, access to preset reports with full safety compliance to current standards. You can also create and save custom reports and views, streamlining fieldwork.

FUNCTIONS FOR ALL APPLICABLE AEMC® INSTRUMENTS:

- Capture, download, display and analyze real-time data on your PC
- Upload stored test results to your PC
- Easily configure all functions and parameters specific to each instrument from your PC
- Create and store a complete library of configurations that can be uploaded to a device as needed
- Create custom views, templates, and reports to your exact needs
- Zoom in and out and pan through sections of graphs to analyze the data
- View measurements in real-time (model specific), download, display and analyze recorded and stored data
- Display Fall-of-Potential plots, tabular listings of test results, resistance vs. frequency plots, soil resistivity and bonding tests (models 6417 & 6471)
- Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs and stored alarms (model specific)
- Print all test result reports using our standard report templates or your custom templates
- Free updates available from the help menu on your instrument or on our website: www.aemc.com/resources

ADDITIONAL DATAVIEW® FUNCTIONS

For Megohmmeters:

- Select test voltage and run tests from your computer with a simple click and execute process
- Retrieve data from the instruments' memory for:
  – Over 1500 insulation resistance measurements
  – Over 4000 resistance measurements
- Display DAR and PI ratios
- Plot graphs of manual and timed tests
- Include your analysis comments section with the report
- Store a library of setups for different applications
- Certification of results through report generation

Configurations and real-time data can be displayed on a PC.

Remote connectivity and data viewing is acheived with DataViewSync™ (AndroidTM, iOS, Windows, etc.) (Model dependent).

DataView®
Data Analysis and Reporting Software

Software Configuration and Control Panels

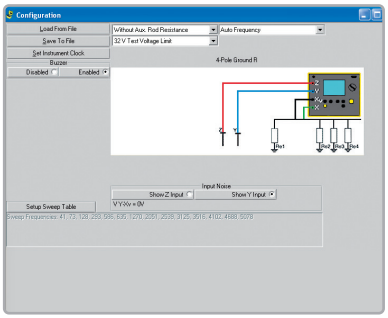
DataView® software simplifies the setup and control of AEMC® test instruments on your PC computer. It offers user-friendly tabbed dialog boxes for configuring tests, displaying real-time results, and saving data onto your PC. You can also print reports that include operator comments and analysis. All AEMC® instrument functions can be configured and tests can be initiated from within the DataView® software.

Typical DataView® Functional Digital & Graphical Display

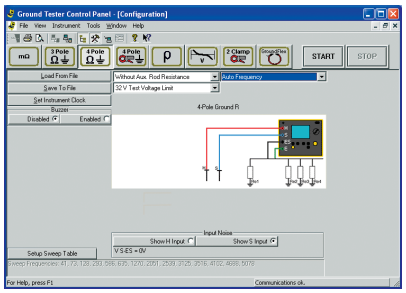
Clear and Simple Setup of all Functions and Settings from One Tabbed Dialog Box

In the instrument's Control Panel you will find tools and selection buttons to configure paramenters, and review recorded data.

GROUND TESTERS

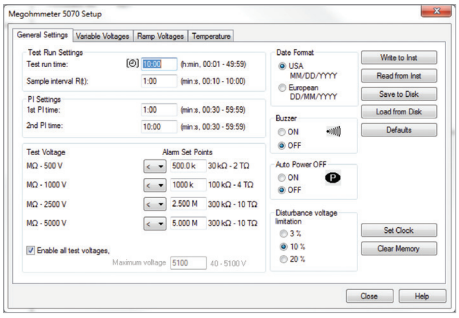


Configure and control ground resistance tests from your computer through the use of clear and easy-to-use tabbed dialog boxes.

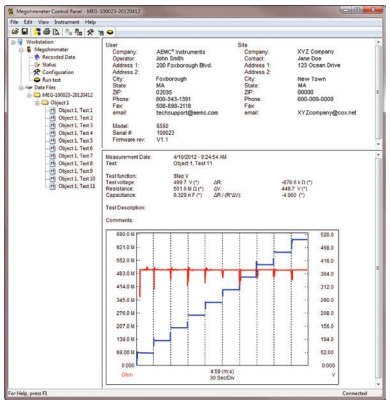


All Ground Tester functions can be configured and tests can be initiated with graphical illustration of proper connections

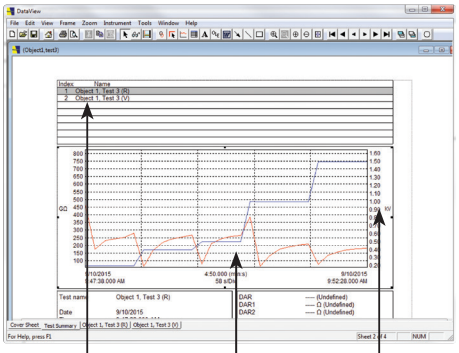
MEGOHMMETERS



Configure voltage variation selections, alarm thresholds, step voltage tests, and temperature compensation.



All stored test results presented on screen



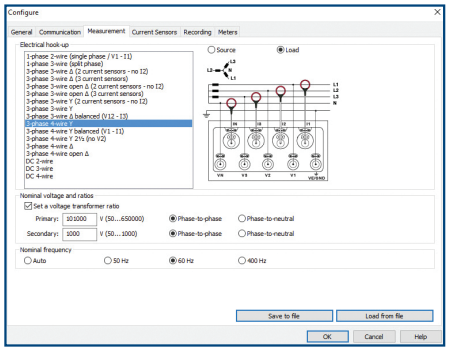
Test result status box displays complete test results in real-time

Insulation resistance with temperature compensation

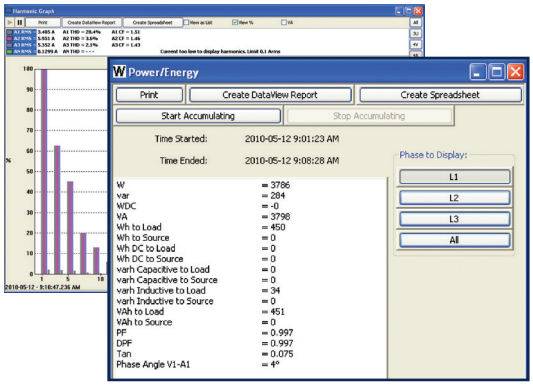
Step voltage during the test run

Other screens allow for the selection of measurement units, alarm set points, and other user selectable parameters.

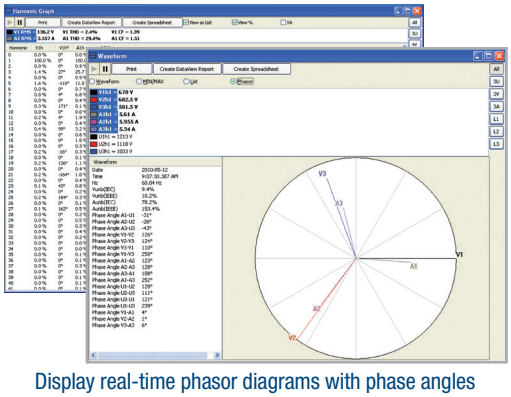
POWER QUALITY / ENERGY ANALYZERS, METERS & LOGGERS



Configure clock settings, alarms, inrush and transient capture, network configuration, nominal frequency, recording storage rate and length, current probe options and rations, and more.



Display harmonics in a text table from harmonic 0 (DC) through the 50th



Display real-time phasor diagrams with phase angles

AEMC® INSTRUMENTS

DataView®
Data Analysis and Reporting Software

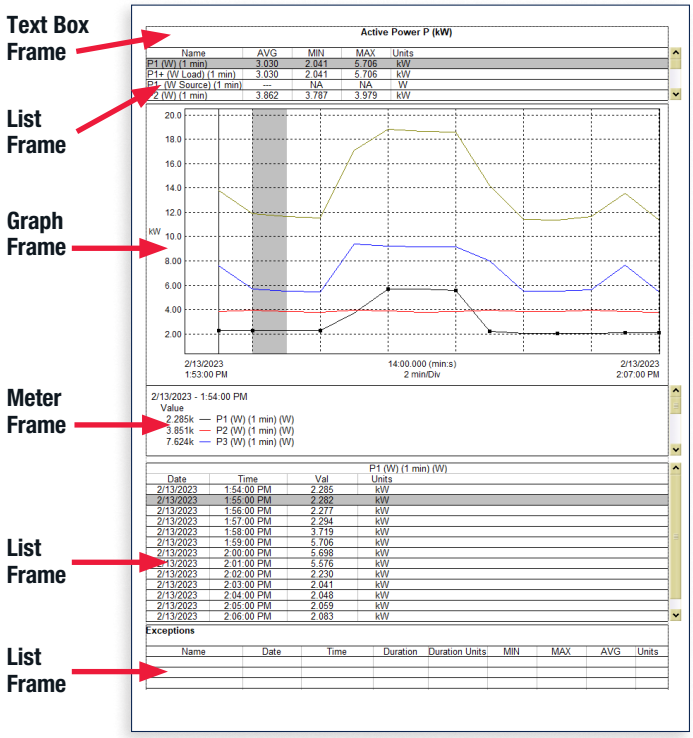
Custom and Standard Report Templates

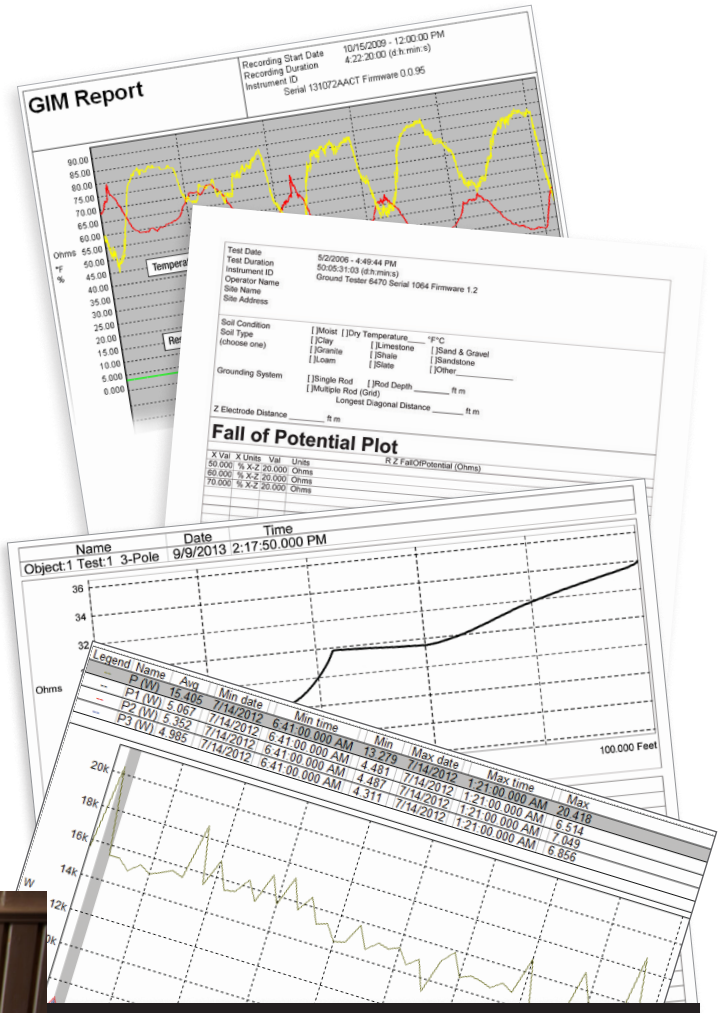
DataView® software simplifies report creation by automactically generating a report from an instrument with the click of a button. What could be simplier?

Building a Custom Report

If a standard report template does not contain sufficient data for your reports, creating a custom report is a straight-forward task. A DataView® report utilizes frames, which serve as containers for presenting data, text, and visuals, allowing you to control the content and layout of your report. You have the ability to handle frames within reports and templates, such as creating, editing, and repositioning them, as well as linking them to showcase data according to your reporting needs. A diverse range of frames and data options is at your disposal for this purpose.

Custom Report Using Various Frames for a PEL (Power and Energy Logger)





Reports can be displayed on a PC and printed. Each report includes all test results in a tabular and graphic format, as well as operator and test site information. Comments typed by the operator will also be included.

AEMC® INSTRUMENTS
CHAUVIN ARNOUX GROUP

CHAUVIN ARNOUX GROUP

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