AMIC

Insulation resistance testers

MODELS
10, 30, 2501, 10K1-5050, 15K1

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amperis

AMIC-10 & AMIC-30

Earthing resistance meter

- Wireless transmission of data.
- USB radio interface included!

Features

The Amperis AMIC-10 and AMIC-30 are universal insulation resistance testers of high quality and performance in accordance with the European standard EN 61557.

The characteristics of the equipment are as follows:

- Insulation resistance measurement:
  - Selectable insulation test voltage: 50, 100, 250, 250, 500, 1000V (AMIC-10) and 50 to 1000V at 10 V steps (AMIC-30).
  - Automatic measurement in sockets with the UNI-Schuko adapter (AMIC-30) with the possibility to configure measured cable sets.
  - Continuous indication of insulation resistance or leakage current.
  - Automatic discharge of the capacity of the devices after the insulation resistance measurement.
  - Acoustic signalling every five seconds provides an indication of the elapsed time.
  - Measurement of test times T_1, T_2 and T_3 to measure one or two insulation absorption coefficients for three adjustable time intervals from 1...600 seconds (AMIC-30).
  - Indication of actual measurement voltage during measurement.
  - Protection against measurement of live objects.
  - Three-wire measurement
- Continuity measurement of protective and equipotential bonding conductors according to EN 61557 with>200mA current.
- Low-voltage circuit continuity and measurement of resistance: :
  - circuit resistance measurement (<1999Ω) with <15mA current.
  - rapid acoustic signal if circuit resistance is under 30
- Leakage current measurement (AMIC-30).
- Capacitance measurement during R_{ISO} measurement.
- Measurement of DC and AC voltages in the range 0...600V.
- Memory for 990 measurements with the possibility of transferring the stored data to PC using USB - OR-1 (AMIC-30).
- Power supply: 4 AA batteries or rechargeable batteries, low battery indicator.

AMIC-10 % AMIC-30

Insulation resistance measurement

Measuring range according to EN 61557-2 for UN=50V:
50kΩ...250,0MΩ

Range	Resolution	Accuracy
0,0...999,9kΩ	0,1kΩ	±(3% v.m. + 8 digits) [±(5% v.m. + 8 digits)]*
1,000...9,999MΩ	0,001MΩ	
10,0...99,99MΩ	0,01MΩ	
100,0...250,0MΩ	0,1MΩ	

*- for WS-04 (AMIC-30)

Measuring range according to EN 61557-2 pour U_N=100V:
100kΩ...500,0MΩ

Range	Resolution	Accuracy
0,0...999,9kΩ	0,1kΩ	±(3% v.m. + 8 digits) [±(5% v.m. + 8 digits)]*
1,000...9,999MΩ	0,001MΩ	
10,00...99,99MΩ	0,01MΩ	
100,0...500,0MΩ	0,1MΩ	

*- for WS-04 (AMIC-30)

Measuring range according to EN 61557-2 for U_N=250V:
250kΩ...2,000GΩ

Range	Resolution	Accuracy
0,0...999,9kΩ	0,1kΩ	±(3% v.m. + 8 digits) [±(5% v.m. + 8 digits)]*
1,000...9,999MΩ	0,001MΩ	
10,00...99,99MΩ	0,01MΩ	
100,0...999,0MΩ	0,1MΩ	
1,000...2,000GΩ	0,001GΩ	

*- for WS-04 (AMIC-30)

Measuring range according to PN-EN 61557-2 for U_N=500V:

- 500kΩ...5,00GΩ (AMIC-10)
- 1000kΩ...100,00GΩ (AMIC-30)

Range	Resolution	Accuracy	
0,0...999,9kΩ	0,1kΩ	±(3% v.m. + 8 digits) [±(5% v.m.. + 8 digits)]*	
1,000...9,999MΩ	0,001MΩ		
10,00...99,99MΩ	0,01MΩ		
100,0...999,0MΩ	0,1MΩ		
1,000...5,000GΩ	0,001GΩ	±(4% v.m. + 6 digits)	AMIC-10
1,000...9,999GΩ	0,001GΩ	±(4% v.m. + 6 digits)	AMIC-30
10,00...20,00GΩ**	0,01GΩ	[±(6% v.m.. + 6 digits)]*	

*- for WS-04 (AMIC-30)
**- for WS-04 – to 10GΩ

Measuring range according to PN-EN 61557-2 for U_N=500V:

- 500kΩ...5,00GΩ (AMIC-10)
- 1000kΩ...100,00GΩ (AMIC-30)

Range	Resolution	Accuracy	
0,0...999,9kΩ	0,1kΩ	±(3% v.m. + 8 digits)	
1,000...9,999MΩ	0,001MΩ		
10,00...99,99MΩ	0,01MΩ		
100,0...999,0MΩ	0,1MΩ		
1,000...5,000GΩ	0,001GΩ	±(4% v.m. + 6 digits)	AMIC-10
5,00...10,00GΩ	0,01GΩ		
1,000...9,999GΩ	0,001GΩ		AMIC-30
10,00...99,99GΩ	0,01GΩ		
100,0GΩ	0,1GΩ		

"v.m." measured value

Measurement of continuity of protective and equipotential bonding conductors

Measuring range according to EN 61557-4: 0,10...1999Ω

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(2% v.m. + 3 digits)
20,0...199,9Ω	0,1Ω	
2000...1999Ω	1Ω	±(4% v.m. + 3 digits)

- Voltage on open terminals: <8V
- Output current R <2Ω: ISC >200mA
- Test lead resistance compensation
- AMIC-30 - bi-directional current flow, display of average resistance values
- AMIC-10 - unidirectional current flow

Low voltage and resistance measurement

Range	Resolution	Accuracy
0,00...199,9Ω	0,1Ω	±(3% m.v. + 3 digits
200...1999Ω	0,1Ω	

- Voltage on open terminals: <8V
- Current on closed terminals 5mA < ISC < 15mA
- Green LED beep if resistance < 30Ω ± 50% is detected.
- Test lead resistance compensation

Measurement of alternation & direct voltage

Range	Resolution	Accuracy
0,0...299,9V	0,1V	±(5% m.v. + digits)
300...600V	1V	±(2%v.m. + 2 digits)

- Frequency range: 45...65Hz

Standard equipment

AMIC-30 test cable 1.2m; red	WAPRZ1X2REBB
AMIC-30 test cable 1.2m; blue	WAPRZ1X2BUBB
AMIC-30 1.2m shielded test cable; black	WAPRZ1X2BLBBE
AMIC-30 "Crocodile" K02; blue	WAKROBU20K02
AMIC-30 Receiver - interface for OR1 radio transmission (USB)	WAADAUSBOR1
AMIC-10 test cable 1.2m; blue	WAPRZ1X2BLBB
AMIC-10 test cable 1.2m; red	WAPRZ1X2REBB
AMIC-10 "Crocodile" K01; black	WAKROBLK01
probe with banana plug; black	WASONBLOGB1
probe with banana plug; red	WASONREOGB1
M6 sleeve	WAFUTM6
straps	WAPOZSZE4
handle for equipment	WAPOZUCH1
calibration certificate	
set of batteries	

Additional accessories

5m test cable; red	WAPRZ005REBB
5m test cable; blue	WAPRZ005BUBB
5m shielded test cable; black	WAPRZ005BLBBE
1.2m test cable; blue	WAPRZ1X2BUBB
"Crocodile" K02; red	WAKRORE20K02
"Crocodile" K01; black	WAKROBL20K01
"Crocodile" K02; blue	WAKROBU20K02
probe with banana plug; blue	WASONBUOGB1
adapter WS-04 with UNI-Schuko	WAADAWS04
AMIC-30 Electrical measurement reporting software "SONEL Reports"	WAPROSONPE4

Electrical safety

type of insulation	double, according to EN 61010-1 and IEC 61557
measurement category	IV 600V (III 1000V) according to EN 61010-1
protection class EN 60529	IP67

Other technical data

feed	4 alkaline batteries or set of Ni-MH batteries
weight	-1kg
dimensions	220 x 100 x 60 mm

AMIC-30

Insulation resistance meter

Insulation resistance meter


For the measurement of wiring in dwellings


to measure the cablagem telefonica


To measure low voltage engines


For measuring pre-insulated pipes


Measured household appliances


For measurement in frost protection systems against freezing

CAT IV 600 V

IP67

Main features

- Measurement of the insulation resistance up to 100 GΩ thanks to a maximum measurement voltage of 1000 V.
- Designed for harsh environmental conditions - IP67 ingress protection.
- Excellent for repetitive measurements - memory of 12 000 records and UNI-Schuko socket adapter.
- For testing electrical continuity - R_{CONT} 200 ma function.
- Testing of starting capacitors in motors thanks to the capacitance measurement function.

... and much more

- Measuring voltage selected from: 50, 100, 250, 500, 1000 V or freely configurable within the range 50...1000 V in 10 V steps.
- continuous reading of the measured insulation resistance or leakage current.
- automatic discharge of the capacitance of the measured object upon completion of the insulation resistance measurement.
- audible signalling of five-second time intervals, which facilitates the capture of time characteristics.
- timing of the measurement times T1, T2 and T3 for the measurement of one or two absorption coefficients, within the range of 1 ... 600 seconds.
- readings of the actual measurement voltage during the measurement.
- protection against the measurement of live objects.
- three-wire measurement - additional GUARD connection.
- capacitance measurement during R_{ISO} measurement.
- low voltage measurement of continuity and circuit resistance.
- continuity test of protective conductors and equipotential bonding with I_{ISO} current ≥ 200 mA flowing in two directions according to EN 61557-4
- measurement of DC and AC voltages within the range 0...600 V

Low voltage measurement of circuit continuity and resistance

Measuring range according to EN 61557-4: 0,10... 1999 Ω

Range	Resolution	Précision
0,00...19,99 Ω	0,01 Ω	±(2% v.m. + 3 digits)
20,0... 199,9 Ω	0,1 Ω	
200,0... 1999 MΩ	1 Ω	±(4% v.m. + 3 digits)

Capacity measurement

Range	Resolution	Précision
1... 999 nF	1 nF	±(5% v.m. + 10 digits)
1,00... 9,99 µF	0,01 µF	

- The result of the capacitance measurement is displayed after the R_{ISO} measuremment
- For measuring voltages below 100 V and measuring resistances below 100 V of less than 10 M Ω, the capacitance measurement error is not specified. .

DC and AC voltage measurement

Range	Resolution	Précision
0... 299,9 V	0,1 V	±(2% v.m. + 6 digits)
300... 600 V	1 V	±(2% v.m. + 2 digits)

- Frequency range: 45... 65 Hz

Low current resistance measurement

Range	Resolution	Précision
0,00... 199,9 Ω	0,1 Ω	±(3% v.m. + 3 digits)
200... 1999 MΩ	1 Ω	

Technical specifications

Type of insulation according to EN 61010-1 and EN 61557	double
Measurement category according to EN 61010-1	IV 600 V (III 1000 V)
Degree of protection of the enclosure according to EN 60529	IP67
Meter power supply	4 x AA alkaline battery or 4 x AA rechargeable battery
Dimensions	200 x 100 x 60 mm
Weight of the meter	Ca. 0,6 Kg
Operating temperature	*-10°C...+50°C*
Display	Segmented LCD
Memory of measured results	990 cells
Data transmission	wireless
Quality standard for the design, construction and manufacture in accordance with	ISO 9001
The device complies with the requirements of	EN 61557
The product meets the EMC requirements (immunity for industrial environments) according to the following standards	EN 61323-1 EN 61323-2-2

Standard accessories

1kV black tip probe (banana plug)

WASONBLOGB1

1kV red tip probe (banana plug)

WASONREOGB1

Blue crocodile 1 kV 20 A

WAKROBU20K02

Cable 1.2 m black 1 kV (banana plugs, shielded)

WAPRZ1X2BLBBE

Cable 1.2 m red 1 kV (banana plugs)

WAPRZ1X2REBB

Cable 1.2 m blue 1 kV (banana plugs)

WAPRZ1X2BUBB

Case M6

WAFUTM6

Meter harness (type M1)

WAPOZSZE4

Bracket - M1 hook for the meter

WAPOZUCH1

There is also a whole range of additional accessories that cover all measurement needs and which are available on request.

AMIC-2501

Insulation resistance meter

CAT IV 600 V

CAT III 1000 V

IP65

For measuring of wiring in houses

For measuring power cables of street lighting

To measure wires and cables

To measure telephone cables

For pole measurement transformer substations

For measurement of pre-insulated pipes

Product features

- Selección de tensión de medición en un rango de 100 a...2500 V, con pasos de 100 V
- Indicación continua de resistencia de aislamiento o medición de corriente de fuga
- Descarga automática de capacitancia de los objetos probados después de la medición de resistencia de aislamiento
- Señalización acústica de intervalos de 5 segundos para facilitar la captura de las características de tiempo
- Medición de los tiempos T_1, T_2 y T_3 para la medición de los coeficientes de absorción (Ab/PI/DAR) a 15, 60 y 600 s
- Lectura de la medición actual de tensión durante la medición
- Protección contra la medición de objetos vivos

Choose the AMIC meter that best suits your needs

MAXIMUM MEASURING VOLTAGE	METER	WEIGHT
1000	AMIC-10 & AMIC-30	0,6 kg
2500	AMIC-2501	1,0 kg
2500	AMIC-5001	5,6 kg
5000	AMIC-5005 & 5010	5,6 kg
5000	AMIC-5050	5,6 kg
5000	AMIC-5010	6,3 kg

Insulation resistance measurement

Measuring range according to IEC 61557-2
for $R_{ISOmin} = U_{ISOnom} / I_{ISOmin}$... 1 TΩ ($I_{ISOnom}$=1 mA)

Range	Resolution	Precisión
0,0...999,9 Ω	0,1 kΩ	±(3% v.m. + 20 digits)
1,000... 9,999 MΩ	0,001 MΩ	
10,00... 99,99 MΩ	0,01 MΩ	
100,00... 999,9 MΩ	0,1 MΩ	
1,000... 9,999 GΩ	0,001 GΩ	
10,00... 99,99 GΩ	0,01 GΩ	
100,0... 999,9 GΩ	0,1 GΩ	
1000 GΩ	0,1 GΩ	

DC and AC voltage measurement

Range	Resolution	Precisión
0... 299,9 V	0,1 V	±(3% v.m. + 2 digits)
300... 750 V	1 V	

- Frequency range: 45... 65 Hz

Measuring resistance values depend on the measurement voltage

Tensão U_{ISO}	Range de medição
Hasta 100 V	50 GΩ
200 V... 400 V	100 GΩ
500 V... 900 V	250 GΩ
1000 V... 2400 V	500 GΩ
2500 V	1000 GΩ

Low-voltage measurement of circuit continuity and resistivity

Range	Resolution	Precisión
0,00... 19,99 Ω	0,01 Ω	±(2% v.m. + 3 digits)
20,0... 199,9 Ω	0,1 Ω	
200... 999,9 MΩ	1 Ω	

Technical specifications

Type of insulation according to EN 61010-1 and EN 61557	double according to EN 61010-1 and EN 61557
Measurement category	CAT IV 600 V (CATIII 1000 V) acc. to EN 61010-1
Degree of protection of the enclosure according to EN 60529	IP65
Instrument power supply	SONEL NiMH battery pack 9,6 V 2 Ah
Battery charging time	Usually 4 h maximum 10 h
Parameters of the external power adaptor	90... 264 V 50... 60 Hz
Dimensions	200 x 150 x 75 mm
Weight	approx. 1.0 kg
Operating temperature	*-15°C...+40°C*
Number of R_{ISO} measurements according to EN 61557-2	approx. 800
Display	Modular LCD
Memory of measured results	990 cells
Data transmission	USB
Quality standard for the design, construction and manufacture in accordance with	ISO 9001 ISO 14001 ISO 14001 PN-N 18001
The device complies with the requirements of	EN 61557
The product meets the EMC requirements in accordance with the following	EN 61323-1 EN 61323-2-2

AMIC-10K1/5050

Insulation resistance testers

CAT III 1000 V | CAT IV 600 V | IP67

- AMIC 5050 and 10K1 equipment allow to measure and locate a fault.

Cable insulation

Transformers

Electric machines

Power objects

Additional features

- Insulation resistance measurement: :
  - Up to 40 T Ω (MIC-10k1)
  - Up to 20 T Ω (MIC-5050)
- Insulation resistance measurement:
  - MIC-10k1: 50 ... 10000 V, 50 ... 1000 V with 10 V steps, 1...10 kV with 25 V steps
  - MIC-5050: 50...5000 V, 50...1000 V with steps 10 V, 1 ... 5 kV with 25 V steps
- Continuous display of insulation resistance or leakage current measurement
- Automatic discharge of the capacitive voltage of the object at the end of the insulation resistance measurement.
- Acoustic signalling at 5-second intervals for easy capture of time characteristics
- Measuring time adjustable up to 99'59".
- Measurement of the test times T_1, T_2 and T_3 for the measurement of one or two absorption coefficients, in the range of 1...600 s. 600 s
- Measurement of polarisation index (PI), polarisation coefficients, polarisation coefficients of absorption Ab1, Ab2 and dielectric absorption (DAR)
- Indication of the actual test voltage during measurement
- Test current: 1.2 mA, 3 mA or 6 mA
- Two-wire and three-wire method of insulation resistance measurement
- Test cables up to 20 m in length
- Protection against measurement on live objects
- Automatic multi-wire measurement with optional AutoISO-5000 adapter (for MIC-10k1 max. voltage 5 kV)
- Capacity measurement during R_{ISO} measurement
- Temperature measurement (with optional ST-1 probe)
- Insulation resistance measurement with voltage steps (SV)
- Calculation of Dielectric Discharge (DD)
- Burn-in mode, for fault location
- Digital filters for measurements in high noise environment
- Can work in environments with interference 400 kV electromagnetic
- Measurement of DC/AC voltages from 0 to 750 V

Applications

The MIC-10k1 meter is designed to measure the insulation resistance of electrical power objects, i.e. single-core and multicore cables, transformers, motors and generators, capacitors, circuit breakers and other devices installed in power stations. Furthermore, it is dedicated to measurements in areas with electromagnetic disturbances, i.e. electrical substations with a voltage of 765 kV or higher.

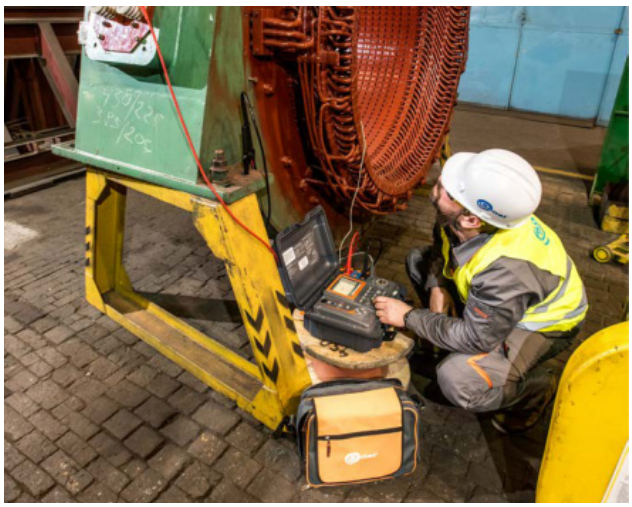
Characteristics of the equipment

High efficiency HV inverter with a test voltage of 10 kV and current of 6 mA, ideal for measuring insulation resistance up to 40 TΩ. Obtaining this result makes this equipment unbeatable. The three-wire resistance measurement, performed with the "GUARD" cable, eliminates the surface leakage current caused by contaminated insulation, increasing the reliability of the results obtained.

The device measures the temperature of the test object, which is necessary to determine the temperature correction factor for RISO. In addition, it indicates the absorption coefficient (DAR - dielectric absorption ratio), the polarization index PI and the dielectric discharge (DD) value. The device allows the user to assess the insulation condition by applying a test voltage in the following incremental manner (SV). This ensures that a dielectric in good condition will give the same results regardless of the voltage applied. Deviations of approximately 25% in the resistance values obtained, observed in the table at the different stages, may indicate potential insulation defects.

MIC-10k1 has the unique ability to perform measurements on multi-wire cables in a single connection step using the AutoISO-5000 adapter, reducing the time required for measurements on repetitive objects such as cables in street lighting systems. The inverter with a power of up to 60 W can intensify the cable's point of damage, which facilitates fault location using a reflectometric method, for example with the TDR-420.

The integrated digital filters with an averaging time of 10, 30, 60, 100, 200 seconds and the "intelligent" solution guarantee stable measurement results in areas of high electromagnetic interference.

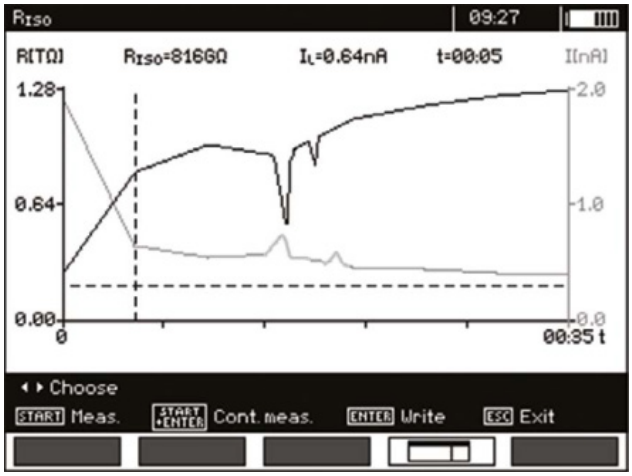


Professional diagnostic tool

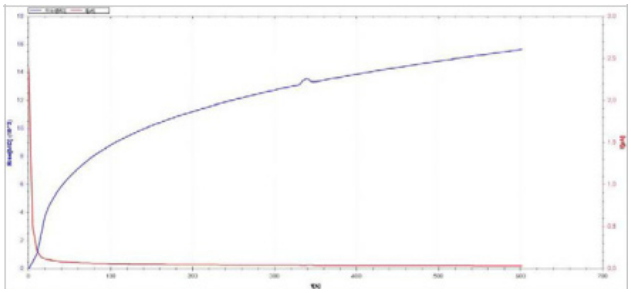
Several measurements in one connection

Data analysis

The device, with its backlit graphical display, can show a waveform of insulation resistance, voltage and current as a function of time. The user, based on the trend shown by the waveform, can quickly assess the condition of the insulation right after starting the measurement. This provides full control over the tested object and a clear picture of the tested insulation. In addition, with mobile cursors, the user can trace the course of the measurement and verify the resistance values obtained at any time from the current measurement and from measurements made in the past. After installing the mobile application, as part of the package, the user receives the Reader software to collect historical data and compare it with the current results, transferred from the extensive memory of the device. This solution helps the user to prepare measurement reports, track insulation deterioration and plan maintenance / repair work.



Graphical interpretation of results



Exclusive PC software

For the toughest working conditions

Comparison

	MIC-10k1	MIC-5050
maximum supply voltage	10 000 V	5000 V
maximum measuring range	40 TΩ	20 TΩ
resistance to external interference voltages	up to 1550 V	up to 1550 V
interference filter advanced digital	10 / 30 / 60 / 100 / 200 seconds and "SMART (clever)	10 / 30 / 60 / 100 / 200 seconds and "SMART (clever)
cable locking	√	√

AMIC-15k1

Insulation quality meter

CAT IV 1000 V

IP67

50°C HEAVY DUTY -20°C

Full insulation analysis within a wide range

Cable insulation

Transformers

Electric machines

Electric raiways vehicles

Power objects

Main features

- The PDI Partial Discharge Indicator.
- Diagnosis of insulation systems based on standard measurements of IR, DAR, PI, SV, RT, DD.
- Allows to test the electrical durability of the object tested - breakdown voltage indication.
- High resistance to electromagnetic interference ensures uninterrupted operation in power plants and near high voltage transmission lines up to 1200 kV AC and 500 kV DC.
- The function of smooth voltage rise over time (RT - Ramp Test) allows to indicate partial discharges in the installation and to perform a partial localisation of their occurrence.
- An efficient inverter with an output of approx. 150 W shall intensify the point of potential damage to facilitate fault location using the following methods:

  - visual method (if the cables are visible along their entire length).

  - reflective methods, seismic-acoustic wave detector, or sampling to indicate fault direction (conductor must be buried in the ground with direct contact to earth).
- Compatible with external software.

Aplication

The MIC-15k1 meter is designed to measure the insulation resistance of electrical energy objects, i.e. the insulation resistance of the object:

- single and multi-core cables,
- transformers,
- engines and generators,
- capacitors, switches and other devices installed in power stations. .

It is especially recommended for measurements in areas with very high electromagnetic disturbances, e.g. electrical substations with 1200 kV AC and 500 kV DC. Due to the measuring voltage of 15 kV (according to ANSI / NETA ATS-2009 TABLES 100.1) the meter can be used to measure objects with a nominal voltage higher than 34.5 kV.

Professional diagnostic tools

Characteristics of the equipment

Highly efficient HV inverter, with a test voltage of 15 kV and current up to 10 mA, ideal for measuring insulation resistance up to 40 TΩ. Achieving this result makes this device unrivalled. The three-wire resistance measurement, performed with the "GUARD" cable, eliminates surface leakage current caused by contaminated insulation, which increases the reliability of the results obtained.

The equipment indicates the absorption coefficient (DAR - dielectric absorption ratio), the polarisation index PI and the dielectric discharge (DD) value.

The device allows the user to evaluate the state of the insulation by applying test voltage incrementally in steps (SV) or slowly in voltage ramps.

- In the stepwise method (SV) the solution guarantees that a good dielectric will give the same results, regardless of the applied voltage.

For the toughest working conditions

- The Ramp Test (RT) method allows us to determine the insulation characteristics of the material. The meter gently increases the measuring voltage without exposing the object to the so-called electrical stress. It records time and voltage value at which the electrical breakdown of the insulation occurred.

Built-in digital filters, with an averaging time of 10, 30, 60, 100, 200 sec guarantee stable measurement results in areas of strong electro-magnetic interference.

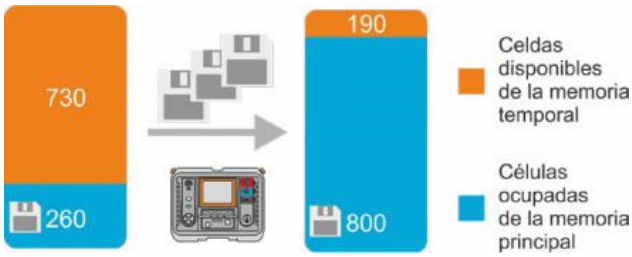
Mobile application

Burnout

A very useful solution is the function that allows the exhaustion of the damaged object. In the case of exposed cables, it allows visual identification of the location of the fault. In the case of armoured cables, the method allows the generation of a seismic acoustic wave from the damage location.

Under special conditions, an energy discharge will appear cyclically. By using the geophone it will be possible to pinpoint the precise location where such a discharge occurs.

The burn-out function also allows locating transient faults (which appear, for example, only during rain) with the support of reflectometry, and in case of a short circuit (of a protection or return cable) to earth - by applying the voltage drop measurement method (Figure A).



Static and dynamic measurement memory

Automatic saving of the measurement results

A very useful solution is the function that allows the exhaustion of the damaged object. In the case of exposed cables, it allows visual identification of the location of the fault. In the case of armoured cables, the method allows the generation of a seismic acoustic wave from the damage location.

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PROYECTO COFINANCIADO POR EL IGAPE, XUNTA DE GALICIA Y FONDO EUROPEO DE DESARROLLO REGIONAL DEL PROGRAMA OPERATIVO 2014-2020

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"Unha maneira de facer Europa"

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