

Data Sheet

High-Voltage Insulation Tester



Guard Cable

Hand Crank Generator



RISH *Imm* 5000 A/AK/M High-Voltage Insulation Tester

- Broad measuring range from 10KΩ to 1TΩ
- Easy to read logarithmic display
- Test voltages :
100V, 250V, 500V, 1000V, 1500V, 2000V, 2500V, 5000V
- Measurement to 2000V in accordance with DIN VDE 0413
- Measuring range : 100kΩ to 100MΩ (1000V)
- Voltage measurement to 2000V=,~
- Guard Terminal eliminates surface current
- Power supply with batteries or Crank Generator (Optional) or mains operated (Optional)

Application

Insulation measurement for cables, motors etc.

Features

Test Voltages to 5000 V

This instrument is suited for the non-destructive measurement of insulation resistance in electrical systems, at machines and transformers and in cables, as well as within the electrical equipment of, for example, locomotives, tram systems and ocean going vessels, with eight selectable test voltages up to 5kV.

Voltage measurement to 2000 V

With the voltage measuring ranges, test objects can be checked for the absence of voltage in networks of up to 2KV. This is important for insulation resistance measurement, because extraneous voltages distort measurement results.

Discharge of Capacitive Devices Under Test

Capacitive devices under test such as cables and coils, which might be discharged to test voltage, are discharged by the measuring instrument. The drop in voltage can be observed at the needle gauge.

Measurement in accordance with EN61557 part 1 and 2/ IS 2992 (VDE 0413)

Measuring current is equal to 1mA at a test voltage of 100V, 250V, 500V and 1000V.

Measurement Cables with Heavy-Duty Insulation

The measurement cables with heavy-duty insulation are permanently connected for safety and technical reasons. Possible danger caused by the unintentional removal of cables is thus avoided, for example when charging occurs due to capacitive test objects.

Needle Gauge with LEDs

Three LEDs arranged within the needle gauge make reading easier. The lamp lights up which is located next to the scale, which is assigned to the selected measuring range. During the measurement sequence, the green LED indicates whether or not the battery charge is sufficient for the measurement.

Applicable Regulations and Standards

| | |
|--|--|
| IEC61010-1 EN61010-1 VDE0411-1 | Safety regulations for electrical measurement, control, regulation and lab devices |
| DIN VDE0413 Part 1 | Devices for the testing of safety requirements for electrical systems Insulation measuring devices |
| IEC61557 / IS 2992 EN61557 VDE0413 Part 1 Part 2 | Measuring and monitoring facilities for testing the electrical safety in lines with nominal voltages up to AC1000V and DC1500V - General - Insulation resistance measuring devices |
| IEC/EN61326-1 | Generic Emission Standard; Electrical equipment for measurement, control and laboratory use |
| IEC/EN61326/A1 | Generic Immunity Standard; Electrical equipment for measurement, control and laboratory use |
| DIN EN60529 DIN VDE0470 part 1 | Test instruments and test procedures - degree of protection provided by enclosures (IP code) |
| DIN EN60051 | Direct-acting and direct-display electrical measurement devices and their accessories |

Measuring Ranges

Insulation Resistance (For Battery + Crank Generator) :

| Scale/ Standard | Nominal/Open-Circuit Voltage U_N/U_O | Meas. range | Nom. current I_N | S.C. current I_K | Intrinsic error ¹⁾ | Deviation |
|-----------------|---|-----------------------|----------------------------------|-----------------------|-------------------------------|------------------|
| ① VDE0413 | 100V / 250V 500V / 1000V | 100KΩ ... 100MΩ | 1mA | 1.3mA | ± 2.5% | ± 30% of rdg. |
| ② | 100V / 250V 500V / 1000V | 10KΩ .. 1TΩ | 1mA | 1.3mA | ± 5% | |
| ② | 1500V 2000V 2500V 5000V | 10KΩ .. 1TΩ | 0.7mA 0.5mA 0.4mA 0.1mA | 1.3mA | ± 5% | |



RISH *I_{mm}* 5000 A/AK/M High-Voltage Insulation Tester

Insulation Resistance (For Mains) :

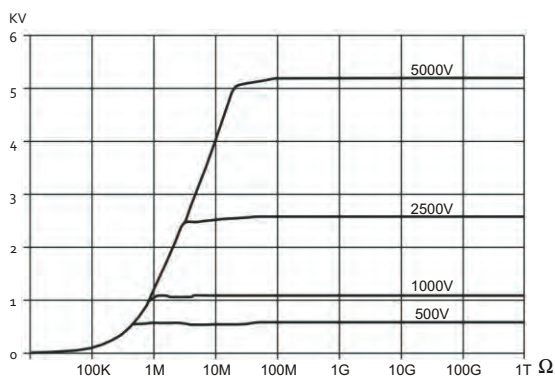
| Scale/ Standard | Nominal/Open- Circuit Voltage U_N/U_O | Meas. range | Nom. current I_N | S.C. current I_K | Intrinsic error ¹⁾ | Deviation |
|--------------------|---|-----------------------------|--|--------------------------|----------------------------------|------------------|
| ① VDE0413 | 100V / 250V / 500V / 1000V | 100KΩ ... 100MΩ | 1mA | 1.3mA | ± 2.5% | ± 30% of rdg. |
| ② | 100V / 250V / 500V / 1000V | 10KΩ ..1TΩ (except 10MΩ) | 1mA | 1.3mA | ± 5% | |
| ② | 1500V 2000V 2500V 5000V | 10KΩ ..1TΩ (except 10MΩ) | 0.7mA 0.5mA 0.4mA 0.1mA | 1.3mA | ± 5% | |
| ② | 100V / 250V 500V / 1000V 1500V 2000V 2500V 5000V | 10MΩ | 1mA 1mA 0.7mA 0.5mA 0.4mA 0.1mA | 1.3mA | ± 6.5% | |

Direct and Alternating Voltage

| Measuring range | Frequency | Internal resistance | Max. allowable voltage | Intrinsic error ¹⁾ |
|-----------------|------------|------------------------|---------------------------|----------------------------------|
| 0...2000V AC/DC | 15...500Hz | 5M | 2200VAC/DC max. 10s | ± 5% |

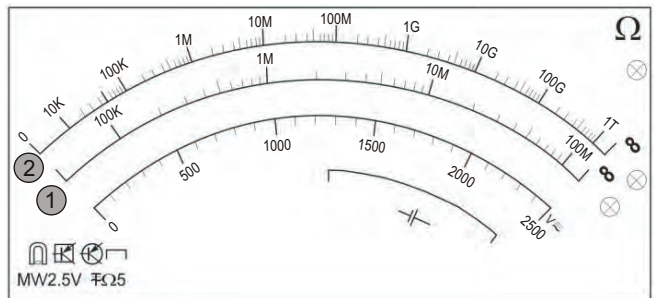
¹⁾referring to scale length

U-R Diagram for RISH *I_{mm}* 5000A



Display

Movement : Core-magnet moving-coil
mechanism
Scale length : 111.5mm (longest scale)



Reference Conditions

Ambient Temperature : + 23°C ± 2K
Relative Humidity : 45 ... 55%
Measured Quantity
Frequency : 50Hz ± 10Hz
(for voltage measurements)

Line Voltage
Waveform : Sine, deviation between
effective and rectified
value < 1%

Battery Voltage : 8V ± 1%
Operating position : Horizontal
Power Supply Voltage : 9V
(Mains)

Power Supply (Battery)

Standard or Storage Battery : 6 nos. 1.5V single cell per
IEC R20
Working range : 6V ... 10V
Battery service life : 100 hours for no-load
and Intermittent operation
7500 measurements for test
voltage of 1000V with
meas. Resistance of 1MΩ
15000 measurements for test
voltage of 500V with meas.
resistance of 500KΩ
measurement of 5s-pause
25s

Crank generator (Optional) : 2 to 3 r.p.s With moderate
strength. The W LED ON
signals sufficient Crank
frequency and consequently
the validity of measuring
values

Nominal Voltage : 7.5V (at approx. 2.5 r.p.s)
Nominal Power : 4W (at approx. 2.5 r.p.s)

Power Supply (Mains)

Nominal Power (Mains) : 230V AC, ± 15%, 50Hz
Nominal Voltage : 9V

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RISH *Insu* 5000 A/AK/M High-Voltage Insulation Tester

Ambient Conditions

| | |
|-----------------------|--|
| Operating Temperature | : 0°C ... +40°C |
| Storage Temperature | : -20°C ... + 60°C (without batteries) |
| Relative Humidity | : max. 75% condensation must be avoided |
| Elevation | : up to 2000m |

Electrical Safety

| | |
|---------------------------|----------------------------------|
| Protection Class | : II |
| Test Voltage | : 8.5kV~ |
| Overvoltage Category | : 2000V CAT II or 5000V CAT I |
| Fouling Factor Protection | : 2 : IP 52 |

Electromagnetic Compatibility (EMC)

| | |
|-----------------------|-------------------|
| Interference emission | : IEC/EN 61326-1 |
| Interference immunity | : IEC/EN 61326/A1 |

Mechanical Design

| | |
|------------|--|
| Dimensions | : W x D x H 290mm x 250mm x 140mm |
| Weight | : 3.4Kg with batteries 4.5Kg (Mains operated + Batteries) |

Standard Scope of Supply

- 1 High-voltage insulation tester with permanently connected measurement cables and test probes, 2 crocodile clips (5 kV version) and plug in battery module including batteries
- 1 Carrying strap
- 1 Operating instructions
- 1 Test certificate

Accessories

1) Crank Generator



2) Carrying Case



3) 3 pin Power Supply Cable



Ordering Information

| Designation | Type | Product code |
|---|------------------------------|--------------|
| High-voltage insulation tester for battery operation | RISH <i>Insu</i> 5000 A | P3100040RIS |
| High-voltage insulation tester for hand crank generator operation | RISH <i>Insu</i> 5000 AK | P3100050RIS |
| High-voltage insulation tester for mains operation | RISH <i>Insu</i> 5000 M | P3100060RIS |
| Carrying bag | F204 | |
| 1 Set (2 nos.) crocodile clips (5kV versions) | KY 5000A | |
| Guard cable with plug, test probe and crocodile clip | Guard 5000 A | |
| Crank generator RISH <i>Insu</i> 5000A for retrofitting to hand crank generator operation | Z580A | |
| Set consisting of RISH <i>Insu</i> 5000 A, F204, KY 5000A and guard 5000A | RISH <i>Insu</i> 5000 A -Set | |

Note

Earth is Mandatory for Mains Operated Instrument.
3 Pin Mains Power Cable is Provided with Instrument.

