

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

## Data Sheet

High-Voltage Insul:  
Tester



## Application

Insulation measurement for cables, motors etc.

## Product 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.

- 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)

## 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 <sup>1)</sup>	Deviation
① VDE0413	100V / 250V 500V / 1000V	100K Ω ... 100MΩ	1mA	1.3mA	± 2.5%	± 30% of rdg.
②	100V / 250V 500V / 1000V	10K Ω.. 1TΩ	1mA	1.3mA	± 5%	
②	1500V 2000V 2500V 5000V	10KΩ.. 1TΩ	0.7mA 0.5mA 0.4mA 0.1mA	1.3mA	± 5%	

### Insulation Resistance (For Mains) :

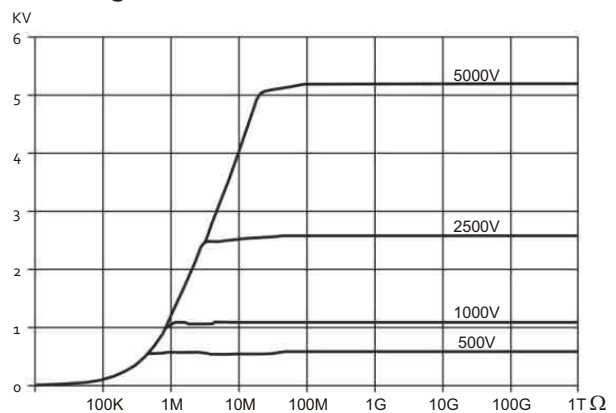
Scale/Standard	Nominal/Open-Circuit Voltage $U_N/U_O$	Meas. range	Nom. current $I_N$	S.C. current $I_K$	Intrinsic error <sup>1)</sup>	Deviation
① VDE0413	100V / 250V / 500V / 1000V	100KΩ... 100MΩ	1mA	1.3mA	± 2.5%	± 30% of rdg.
②	100V / 250V / 500V / 1000V	10KW..1TΩ (except 10MΩ)	1mA	1.3mA	± 5%	
②	1500V 2000V 2500V 5000V	10KW..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 <sup>1)</sup>
0...2000V AC/DC	15...500Hz	5M	2200VAC/DC max. 10s	± 5%

<sup>1)</sup> referring to scale length

### U-R Diagram for RISH $I_{max}$ 5000A



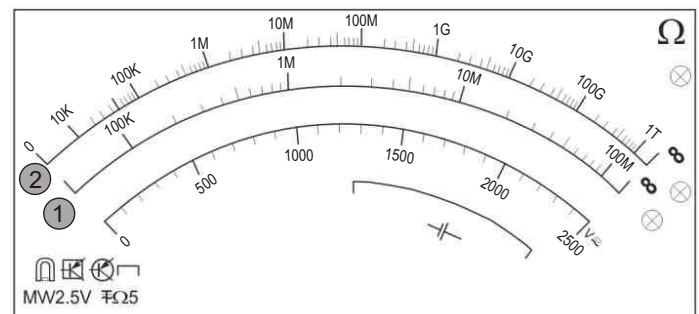
### Display

Movement

Core-magnet moving-coil mechanism

Scale length

111.5mm (longest scale)



## Reference Conditions

Ambient Temperature	+ 23 <sup>0</sup> 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 (Mains)	9V

## 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
Battery charging time	8 -15 Hrs
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

## Ambient Conditions

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

## 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

## 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

### Note

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

## Accessories

- 1) Crank Generator



- 2) Carrying Case



- 3) 3 pin Power Supply Cable



- 4) Rechargeable Battery (Additional)



## Ordering Information

Designation	Type	Product code
High-voltage insulation tester for battery operation	<b>RISH Insu 5000 A</b>	P3100040RIS
High-voltage insulation tester for hand crank generator operation	<b>RISH Insu 5000 AK</b>	P3100050RIS
High-voltage insulation tester for mains operation	<b>RISH Insu 5000 M</b>	P3100060RIS
High-voltage insulation tester for mains operation with rechargeable battery (10 meters Probe)	<b>RISH Insu 5000 R</b>	P3100061RIS
High-voltage insulation tester for mains operation with rechargeable battery (1.5 meters Probe)	<b>RISH Insu 5000 R</b>	P3100063RIS
Carrying bag	<b>F204</b>	
1 Set (2 nos.) crocodile clips (5kV versions)	<b>KY 5000A</b>	
Guard cable with plug, test probe and crocodile clip	<b>Guard 5000 A</b>	
Crank generator <i>RISH Insu 5000A</i> for retrofitting to hand crank generator operation	<b>Z580A</b>	
Set consisting of <i>RISH Insu 5000 A</i> , F204, KY 5000A and guard 5000A	<b>RISH Insu 5000 A -Set</b>	



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