

**Data Sheet**

**Analog - Digital Insulation  
and Continuity Tester**



## Applications

**RISH Insu 20** Digital Insulation and Continuity Tester is suitable for following

- Measurement of the insulation resistance on electrically dead equipment and systems with test voltages up to 1000V.
- For testing motors, transformers, generators, switchgears.
- For testing of house hold appliances.
- Measurement of the insulation resistance of cables.
- Very useful for on-site maintenance and service departments.

## Features

### Analog + Digital Display (Log scale for Insulation Measurement)

The Analog scale for insulation resistance measurement is logarithmic in nature which gives the dynamic performance of an analog insulation tester. The Analog scale is linear for low ohm and voltage measurement.

### User Selectable Backlit Display

The instrument is provided with user selectable backlit for taking measurements in dark areas/poor lighting conditions.

### Connector jack for External Mains Adapter (Optional)

The instrument can be operated from mains supply(230V AC) instead of batteries using an external mains adapter (230V AC/9V DC,500mA(4.5VA) isolated)

### Test Voltages 50V/100V/250V/500V/1000V

Test voltages from 50V to 1000V can be selected for insulation resistance measurement. It covers all insulation tests up to 1000V.

### Insulation Resistance Measurement

The instrument is capable of measuring insulation resistance from 10K  $\Omega$  ... 2G  $\Omega$

### Low Resistances Measurement: (0.01 $\Omega$ ... 99.9 $\Omega$ ),

Low resistances can be measured up to 99.9  $\Omega$  . There are two measuring ranges for Low  $\Omega$  : 9.99  $\Omega$  and 99.9  $\Omega$

### Hands-free continuity testing

Continuity testing (0-10  $\Omega$  with acoustic signal) can be done without pressing the test button. In addition to the display function, an acoustic signal can be activated which sounds if the adjustable limit value is violated.

### Voltmeter

Instrument measures voltages >25V ... 600V AC/DC

### Automatic discharge for capacitive circuits after test measurement

Capacitive devices under test, such as cables and windings, that get charged during the test, are discharged by the tester.

### Live circuit detection

Displays presence of voltages >25V irrespective of function selected.

### Blown fuse indication

The display FUSE points to a blown fuse.

### Pre-selectable measurement time for Insulation Resistance Measurement

In normal course, the insulation test terminates and the measured insulation resistance value remains on display for 2 sec after the test key is released. With the **Pre-selectable measurement time** feature, the insulation test continues and the measured value remains on the display for the pre-determined time. Pre-selectable time: 10 sec - 5 min.

### Pre-selectable limit checks (Go / No-Go option) for M $\Omega$ /G $\Omega$

An acoustic signal can be generated when the measured value of insulation resistance falls below an adjustable limit value.

### Lead resistance null facility

The instrument provides a facility to compensate the resistance of the leads for an accurate measurement of low resistances.

### Storage of MIN / MAX values

In addition to the display of the actual measured value, the minimum or maximum value can constantly be updated or stored.

### Storage Memory for last 10 readings

The instrument provides a facility to store and recall 10 values in each of the 5 ranges of insulation resistance measurement, continuity and resistance measurement.

### Low battery indication

Automatic display of the Symbol “—|—” when battery cells are exhausted.

### Stop Watch

This function allows you to measure elapsed time up to 1 hour.



### Auto-power off function

The instrument turns off automatically, if any of the keys or the selector switch have not been activated for about 10 minutes in insulation range and 5 minutes in other ranges or can be switched to continuous operation.

### Protective holster for rough duty

A holster of soft rubber with tilt stand protects the meter against damage in case of shock and drop.

## Specification

Meas. Function	Range	Resolution	Accuracy $\pm$ (...% of rdg $\pm$ ...Digit)	Overload value & duration
Insulation <sup>1)</sup> Resistance M $\Omega$ U <sub>N</sub> =50V, 100V	0.01 M $\Omega$ to 0.99 M $\Omega$	10 K $\Omega$ (0.01 M $\Omega$ )	$\pm$ 3% $\pm$ 2D	1200 Vrms 10 sec
	$\geq$ 1.0 M $\Omega$ to 9.9 M $\Omega$	100 K $\Omega$ (0.1 M $\Omega$ )	$\pm$ 5% $\pm$ 2D	
	$\geq$ 10 M $\Omega$ to 99 M $\Omega$	1 M $\Omega$	$\pm$ 30%	
Insulation <sup>1)</sup> Resistance M $\Omega$ U <sub>N</sub> =250V, 500V,1000V	0.01 M $\Omega$ to 9.99 M $\Omega$	10 K $\Omega$ (0.01 M $\Omega$ )	$\pm$ 5% $\pm$ 2D	1200 Vrms 10 sec
	$\geq$ 10.0 M $\Omega$ to 99.9 M $\Omega$	100 K $\Omega$ (0.1 M $\Omega$ )	$\pm$ 5% $\pm$ 2D	
	$\geq$ 100 M $\Omega$ to 999M $\Omega$	1 M $\Omega$	$\pm$ 30% service error	
Low Ohms <sup>2)</sup> $\Omega$	0 to 9.99 $\Omega$	0.01 $\Omega$ at 210 mA	$\pm$ 3% $\pm$ 2D	1200 Vrms 10 sec
	$\geq$ 10 $\Omega$ to 99.9 $\Omega$	0.1 $\Omega$ at 21 mA	$\pm$ 5% $\pm$ 2D	
Continuity <sup>2)</sup> 	0 to 9.99 $\Omega$	0.01 $\Omega$ at 210 mA	$\pm$ 3% $\pm$ 2D	1200 Vrms 10 sec
	$>$ 10 $\Omega$ to 99.9 $\Omega$	0.1 $\Omega$ at 21 mA	$\pm$ 5% $\pm$ 2D	
V AC/DC 	25V to 450V	1V	$\pm$ 2% $\pm$ 3D	1200 Vrms 10 sec
	450V to 600V	1V	$\pm$ 3%	

1) For Insulation Resistance Range:

- Terminal voltage on open circuit (DC)- 0% + 30% of rated voltage
- Short circuit current < 2 mA
- Test current on load 1 mA at minimum pass values of Insulation as specified in VDE 0413 Part 1.

2) For Low Ohms/Continuity Ranges:

- Open circuit voltage 5V + 1V D.C.
- Lead Resistance Compensation: 0 - 9.99W.

### Power Supply

Battery

6 x 1.5 V cells IEC LR6 (Nickel cadmium rechargeable cells may used)

## Service Life

Without Backlit ON	Typically 2500 x 5 sec. operations
With Backlit ON	Typically 1250 x 5 sec. operations

## Battery Test

Automatic display of the Symbol “ $\rightarrow|$ ” when battery cells are exhausted.

## Fuse

500 mA(F) / 440V H.B.C. 10kA min (32mm x 6mm)

## Mains Adapter (Optional)

23 0V AC / DC 9V, 500mA (4.5VA) (isolated)

## Environmental conditions

Temperature Coefficient	<0.1% per °C
Operating Temp.	-20°C...+40°C (full range) -20°C...+60°C (upto 100M $\Omega$ )
Storage Temp.	-25°C...+65°C
Relative Humidity	90% RH at 40°C max.

## Display

LCD display field (65 mm x 30mm) with analog indication and digital display and with display of unit of measured quantity and functions.

## Analog

Display Logarithmic Scale

**Note :** Battery cells should not be left in the instrument which may remain unused for extended period of time.

## Auto turn OFF

Meter turns off automatically, if no keys or the selector switch have been activated for about 10 minutes in insulation range and 5 minutes in other ranges.

## Digital

Display/Char.Height	7 segment digits/ 12mm
Number of Digits	3 digit for $\Omega$ , M $\Omega$ , G and V $\Omega$ 4 digit for Stop watch
Overflow Display	OL

## Reference Conditions

Ambient Temp.	+23 °C + 2 K
Relative Humidity	45% ... 55%
Battery Voltage	8V + 0.1V
Voltage Measurement	AC (Sine), 50/60 Hz

## Applicable Standards

IEC/EN 61010 - 1 VDE 0411 - 1	Safety regulations for electrical measuring, control, regulation and laboratory devices
IEC/EN 61557 VDE 0413	Devices for testing, measuring and monitoring protective safety measures in system with voltages of upto 1000 V A.C. and 1500 V D.C.
Part 1	- General requirements
Part 2	- Insulation resistance measuring instruments
Part 3	- Low-resistance measuring instruments
DIN 43751	Digital measuring instruments
IEC/EN 61 326	Electromagnetic Compatibility (EMC)
EN 60529 VDE 0470-Part1	Test Instruments and test procedures Degree of protection provided by enclosures (IP code)

## EMC

IEC/EN 61326  
(EMC)

Electromagnetic Compatibility

## Electrical Safety

Protection class

II per IEC 61010-1/EN61010-1/  
VDE0411-1

Overvoltage

Category

II III  
600V 300V

Nominal Voltage

Contamination degree

2 2

Test Voltage

3.7KV~per IEC 61010-1  
/EN61010-1

## Mechanical Design

Protection

Instrument : IP 50  
For terminal socket : IP 20 to  
DIN VDE 0470 part 1 /  
EN60529 according

Dimensions

W x H x D  
84 mm x 195 mm x 35 mm  
500 g including battery

Weight

