

# Metra Insu 20



## Application

Metra 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 1000 V.
- 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.



**METRA BLANSKO**

VALUE IS INSIDE

## Product 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 10kOhm...2GOhm.

### **Low Resistances Measurement (0.01Ohm... 99.9 Ohm):**

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

### **Hands-free continuity testing:**

Continuity testing (0-100Ohm 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.

### **Blown fuse indication:**

The display FUSE points to a blown fuse.

### **Live circuit detection:**

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

### **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 MOhm / GOhm:**

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 "L" 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



## Specifications

Measuring function	Measuring range	Resolution	Accuracy $\pm(\dots\% \text{ of rdg} \pm \dots \text{digit})$	Over load value&duration
Insulation <sup>1</sup> re- sistance M $\Omega$ U <sub>N</sub> =50V, 100 V	0,01 M $\Omega$ to 0,99 M $\Omega$	10 k $\Omega$	$\pm 3\% \pm 2D$	1200 Vrms 10 sec
	$\geq 1M\Omega$ to 9,9 M $\Omega$	100 k $\Omega$	$\pm 5\% \pm 2D$	
	$\geq 10M\Omega$ to 99 M $\Omega$	1 M $\Omega$	$\pm 30\%$	
Insulation <sup>1</sup> re- sistance M $\Omega$ U <sub>N</sub> =250V, 500V, 1000 V	0,01 M $\Omega$ to 9,99 M $\Omega$	10 k $\Omega$	$\pm 5\% \pm 2D$	
	$\geq 10M\Omega$ to 99,9 M $\Omega$	100 k $\Omega$	$\pm 5\% \pm 2D$	
	$\geq 100M\Omega$ to 2 G $\Omega$	1 M $\Omega$	$\pm 30\% \text{ service error}$	
Low Ohms <sup>2</sup> $\Omega$	0 to 9,99 $\Omega$	0,01 $\Omega$ at 210 mA	$\pm 3\% \pm 2D$	
	$\geq 10\Omega$ to 99,9 $\Omega$	0,1 $\Omega$ at 21 mA	$\pm 5\% \pm 2D$	
Continuity	0 to 9,99 $\Omega$	0,01 $\Omega$ at 210 mA	$\pm 3\% \pm 2D$	
	$>10\Omega$ to 99,9 $\Omega$	0,1 $\Omega$ at 21 mA	$\pm 5\% \pm 2D$	
VAC/DC	25 V to 450 V	1 V	$\pm 2\% \pm 3D$	
	450 V to 600 V	1 V	$\pm 3\%$	

### 1 For Insulation Resistance Range:

- Terminal Voltage on open circuit (DC)  $\leq 0\% + 30\%$  of rated voltage
- Short circuit current  $< 2\text{mA}$
- 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 DC
- Lead resistance compensation 0–99

### Power supply

Battery 6 x 1.5 V cells IEC LR6 non-rechargeable cells

### Service life

Without Backlit ON Typically 2500 x 5 sec operation

With Backlit ON Typically 1250 x 5 sec operation

### Battery test

Automatic display of the Symbol "L" when battery cells are exhausted

Reference conditions for Accuracy

### Fuse

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

### Mains Adapter (optional)

230 V AC/DC 9V, 500 mA (4,5 VA) (isolated)

### Display

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

### Analog

Display Logarithmic scale

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

**Autoturn OFF**

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

**Digital**

Display/Char. height 7 segments digits/12mm  
Number of digits 3 digit for  $\Omega$ , M $\Omega$ , G $\Omega$  and V, 4 digits for stopwatch  
Overflow display OL

**Applicable Standards**

EMC ČSN EN 61326-1 ed.2  
Immunity ČSN EN 61010-1 ed.2  
Safety ČSN EN 61010-1 ed.2  
IP for water & dust ČSN EN 60529 – IP 50  
Insulation resistance ČSN EN 61557-2 ed.2  
Pollution degree 2  
Installation category IV

**Mechanical design**

Protection Instrument IP 50, terminal socket IP20  
Dimensions 84 x 195 x 35 mm  
Weight 0,5 kg

**Reference conditions**

Ambient temperature	+ 23 °C + 2°
Relative humidity	45%...55%
Battery voltage	8 V + 0,1 V
Voltage measurement	AC(Sine), 50/60 Hz

**Environmental conditions**

Temperature coefficient	<0,1% per °C
Operating temperature	-20 to +40°C (full range) -20°C to +60°C (up to 100 M $\Omega$ )
Storage temperature	-25 to +65°C
Relative Humidity	90% RH at 40°C max.

**Sales & service:**

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