



# Data Sheet

## Insu 5Dx<sup>+</sup>



- Selectable short circuit current 1.2mA, 3mA and 6mA
- User selectable digital filters
- Noise Rejection 8 mA
- Operates on rechargeable Li-ion battery and Mains as well
- Bluetooth connectivity for data logging
- Touch screen TFT colour display
- Audio Read-out
- Test voltage can be selected in steps of 10V from 100V to 1000V & in steps of 25V from 1000V to 5000V
- Measurement of DC and AC voltages from 20V ~ 600V
- Three programmable timers
- Insulation leakage current measurement
- PI, DAR, DD, Step voltage & Ramp Test

## Application

Digital Insulation tester INSU 5Dx+ is designed to perform at power utilities where induction field is very high. Its high noise immunity and user selectable digital filters makes it most robust and reliable instrument with user selectable test voltages.

Also it is used for testing the electrical insulation of cables, motors, generators, transformers, etc. at power generation plants, utilities, distribution.

Its advance features like Bluetooth connectivity, audio read out, touch screen TFT color display makes it never before user friendly. It can store the data on its inbuilt memory with real time stamp. Data can be transferred to computer for future analysis purpose. It performs tests like Polarization Index, Dielectric Absorption Ratio, Dielectric Discharge, Ramp Diagnostic Test, Step voltage test.

### Selectable Test Voltage up to 5000 V

Test voltages can be set to any desired value from 100V to 5000V

### High Insulation resistance measurement

Insulation resistance measurement from 50 KΩ to 10TΩ for 5kV test voltage

### Noise rejection - 8mA

High Noise immunity allows accurate measurement under HT lines

### Polarization Index

Polarization index (PI) testing is an extension of the insulation resistance test and is designed to check specific issues in a motor such as moisture and insulation deterioration

### Dielectric Absorption Ratio

DAR measurement is a diagnostic test similar to the Polarization Index (PI), but DAR takes the ratio of the Insulation Resistance usually measured at 30 sec and 1 min (other time settings are possible)

### Dielectric Discharge

Dielectric Discharge (DD) Test is a diagnostic insulation test that allows aging and deterioration of insulation to be assessed

### Step Voltage Test

Step Voltage Test is designed as a controlled over-voltage or proof test to provide an additional evaluation of the insulation system integrity

### Ramp Diagnostic Test

The Ramp Test is performed with a slowly rising voltage

### Software Selectable Filter

User selectable software filter can be used depending on noise levels. This help in accurate reading in noisy environment

### Capacitance Measurement

Capacitance can be measured from 1nF to 50uF

### Go- NoGo Function

Depending on insulation resistance limit the user can be alarmed about the quality of insulation

### Insulation Resistance Graph Display

Insulation Resistance can be displayed over the time in graphical form

### Communication Interface

Bluetooth 2.0 & 4.0 Class II and electrically isolated USB 2.0 communication

### Software and Mobile Application

It has data logging and monitoring software for window system and an interactive mobile application for android

### Burn & Breakdown Mode

Burn Mode for uninterrupted insulation testing to find the breakdown region and Breakdown mode will stop generation of voltage on detection of high current

### Internal Datalogging

It has internal datalogging feature. It can log upto 2000 reading with customer information and time stamp

### File Explorer

It has file explorer to view the datalog file on TFT display

### Audio Read-Out

Audible test result on completion of test for awkward locations

### Rechargeable Battery

Li-Ion 3 Cell Battery with charging current of 1A

### Selectable test time

We can set the test time to any desired test time from 45sec to 99 min 59 sec

## Specification

Nominal Voltage	Maximum Resistance	Intrinsic Error
100V	2GΩ	5% ± 1D
	10GΩ	20% ± 1D
250V	50GΩ	5% ± 1D
	500GΩ	20% ± 1D
500V	100GΩ	5% ± 1D
	1TΩ	20% ± 1D
1000V	200GΩ	5% ± 1D
	2TΩ	20% ± 1D
2500V	500GΩ	5% ± 1D
	5TΩ	20% ± 1D
5000V	1TΩ	5% ± 1D
	10TΩ	20% ± 1D

**Test voltage accuracy**  
+7% ± 10V

#### Direct and Alternating Voltage Measurement

Measuring range	Frequency	Intrinsic error
20V-600V AC DC	45 Hz-500Hz	3%+10D

#### Capacitance Measurement

1nF to 50uF; Accuracy ±10% ± 5 nF

#### Insulation Leakage Current Measurement

0.01nA to 6mA; Accuracy ±5% ±0.2 nA

#### Guard terminal

2% error guarding 500 kΩ leakage, 100 MΩ load

#### Timer Range for IR test

Time: 45s - 99 min 59 sec with three programmable timers

Tests: IR(t),DAR,DD,PI,Step Voltage, Ramp voltage

#### Ambient Conditions

Operating Temperature	-20 °C ... +50 °C
Storage Temperature	-20 °C ... +70 °C
Relative Humidity	max. 90% (condensation must be avoided)
Elevation	up to 2000m
Protection	IP 67 with closed case IP 52 with open case

#### Applicable Standards

Standard	Norms
IEC 61010-1	Safety regulations for electrical measurement, control, regulation and lab devices
IEC 61557	Measuring and monitoring facilities for testing the electrical safety in lines with nominal voltages up to AC1000V and DC1500V
PART-1	General
PART-2	Insulation resistance measuring devices

#### Reference Conditions

Ambient Temperature	+ 23 °C + 2K
Relative Humidity	45 ... 55%
Measured Quantity	50Hz + 10Hz
Frequency	(for voltage measurements)
Line Voltage Waveform	Sine wave
Battery Voltage	11.1V + 1%
Operating position	Horizontal
Power Supply Voltage (Mains)	230V + 15%, 50/60 Hz

#### Power Supply (Battery)

Battery	11.1V ,7.8Ah Li-ion Battery
Battery service life	6 Hrs continuous testing at 5kV 100MΩ
Battery charging time	7 Hrs

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#### Power Supply (Mains)

Nominal Power (Mains) 230V AC + 15%, 50/60 Hz

#### Electromagnetic Compatibility (EMC)

IEC61326 - 1

#### Immunity

IEC 61000-4-2 : 8 KV atmosphere discharge

4 KV contact discharge

IEC 61000-4-3 : 3 V/m

#### Electrical Safety

Overvoltage Category 600V CAT IV

Test Voltage 7.4kV~

Pollution degree 2

#### Mechanical Design

Dimensions (L x W x H) 360mm x 310mm x 195mm

Weight approx 5kg

#### Standard Scope of Supply

- 1 In built Li-ion rechargeable battery
- 1 Operating instructions
- 1 Power cord
- 1 USB cable for communication and software CD(with USB and bluetooth communication interface)

#### Test lead options(one to be selected)

- Test lead set with 3m test leads(+ve, -ve & Guard lead) with 3 clamps with 50mm jaw opening
- Test lead set with 10m test leads(+ve, -ve & Guard lead) with 3 clamps with 50mm jaw opening
- Test lead set with 15m test leads(+ve, -ve & Guard lead) with 3 clamps with 50mm jaw opening

## Ordering Information

DT28-1N0000000000 : Insu 5Dx+ 5kV Digital Insulation Tester (standard set w/o leads)

#### Accessories Code

- SPAR-SD00-0774: 3m Test leads set (+ve, -ve & Gaurd) with 50mm jaw clamps
- SPAR-SD00-0775: 10m Test leads set (+ve, -ve & Gaurd) with 50mm jaw clamps
- SPAR-SD00-0776: 15m Test leads set (+ve, -ve & Gaurd) with 50mm jaw clamps

