

HT7051

METER FOR INSULATION RESISTANCE MEASUREMENTS PROGRAMMABLE UP TO 5kV DC

HT7051 is a meter designed to perform professional insulation resistance measurements with test voltage up to 5kV DC. This feature permits a wide range of applications in industrial plants as maintenance of rotating equipments, transformers, high voltage insulation systems, electrical cables, etc. Automatic, manual timer and programmable modes are available for both models. In programmable mode the user can be select up to three ramp features in order to completely customize the times and values of test voltage application. Other integrated available measurements are the Polarization Index (PI) and the Dielectric Absorption Ratio (DAR). The model have internal memory to save the results and a PC RS-232 interface for PC connection. All effort have been spent to create products which can be adjusted according to the standard amendments in the field of insulation measurements.

FUNCTIONS

- Insulation test with test voltage from 100 to 5kV DC
- Measurement range up to 10TΩ
- Measurements with fixed test voltages
- Up to 3 voltage/time test ramps available in programming mode
- SMOOTH feature for stable measurement results
- Dielectric leakage current measurements
- Polarization index (P.I.) measurement
- Dielectric Absorption Ratio (D.A.R) measurement
- Discharging capacitance measurement
- DC/AC TRMS voltage measurement up to 600V
- Rechargeable NiMH internal battery
- GUARD input terminal
- Automatic object discharge after test

ACCESSORIES

Standard

ACCESSORIES	Code
Set of 3 cables with alligator clips + 2 cables with test leads	KIT14000
Power supply cord	C7001
Carrying bag for accessories	BORSA2000N
PC software + RS-232 serial cable	TOPVIEW
ISO9000 calibration certificate	
User manual	
Optional	
USB to RS232 adapter	C2009

GENERAL SPECIFICATIONS

Display:	LCD custom with backlight and bargraph
External power supply:	220-240V, 50/60Hz, 20VA
Internal power supply:	rechargeable NiMH battery
Protection fuse:	T 200mA H 250V
Battery life:	> 1000 test (@ 5kV on 5M)
AutoPowerOFF:	After 5 minutes of idleness
Internal memory:	700 locations
Serial interface:	RS-232 optoinsulated
Safety:	IEC/EN61010-1, IEC/EN61557-1
Insulation :	double insulation
Pollution degree :	2
Mechanical protection :	IP53 (closed case)
Category of measure:	CAT IV 600V (to ground)
Dimensions (LxWxH):	360x310x195mm
Weight:	3.5kg



HT7051
HV007051



1. ELECTRICAL SPECIFICATION

Uncertainty is indicated as \pm (% rdgs + no. of dgt) at 23°C \pm 5°C, con relative humidity <80%HR

DC/AC TRMS VOLTAGE

Range	Resolution	Uncertainty	Overload protection
10 ÷ 660V	1V	$\pm(2\%rdg+2dgt)$	CAT IV 600 to ground

INSULATION RESISTANCE

Range	Test Voltage	Resolution	Uncertainty (*)
0.01M Ω ÷ 0.19M Ω	$\geq 100V$ DC	$\leq 1\%rdg$	$\pm(5\%rdg + 7dgt)$
0.20M Ω ÷ 199G Ω			$\pm(5\%rdg.+3dgt)$ if $R_{mis} \leq \frac{Test\ Voltage}{5nA}$
0.20M Ω ÷ 499G Ω	$\pm(20\%rdg.+3dgt)$ if $R_{mis} > \frac{Test\ Voltage}{5nA}$		
0.20M Ω ÷ 999G Ω			$\geq 250V$ DC
0.20M Ω ÷ 1.99T Ω	$\geq 500V$ DC		
0.20M Ω ÷ 4.99T Ω	$\geq 1000V$ DC		
0.20M Ω ÷ 9.99T Ω	$\geq 2500V$ DC		
0.20M Ω ÷ 9.99T Ω	5000V DC		

(*) Load Capacitance < 1nF

GENERATED TEST VOLTAGE (compliance to IEC/EN61557-2)

Test mode	Nominal test voltage	Uncertainty
FIX	100V, 250V, 500V, 1kV, 2.5kV, 5kV	-0%, +10% +15V
AJUSTABLE	100 ÷ 1kV in steps of 25V	
	1kV ÷ 5kV in steps of 50V	
RAMP	100 ÷ 1kV in steps of 25V	
	1kV ÷ 5kV in steps of 50V	

TEST CURRENT

Test Voltage	Test current
100 ÷ 5000V	1mA \leq Test Current \leq 3mA (**)

(**) Test current automatically controlled.

TEST TIME

Setting Range	Resolution
5s – 99min 59s	1s

CAPACITANCE

Range	Resolution	Resistance Load	Test Voltage (Vn)	Uncertainty
1nF ÷ 999nF	1nF	$\geq 5M\Omega$	Vn \leq 5kV	$\pm(10\%rdg+5dgt)$
1.00 μ F ÷ 5.00 μ F	0.01 μ F			
1nF ÷ 999nF	1nF		Vn \leq 2.5kV	
1.00 μ F ÷ 9.99 μ F	0.01 μ F			
10.0 μ F ÷ 19.9 μ F	0.1 μ F		Vn \leq 1kV	
1nF ÷ 999nF	1nF			
1.00 μ F ÷ 9.99 μ F	0.01 μ F			
10.0 μ F ÷ 49.9 μ F	0.1 μ F			

Capacitor charge time (OV \rightarrow 5000V): < 3s x 1 μ F

Capacitor discharge time (5000V \rightarrow 25V): < 5s x 1 μ F

**LEAKAGE CURRENT**

Range	Resolution	Uncertainty
1nA ÷ 99.9nA	0.1nA	$\pm(7\%rdg+3dgt)$ if $R_{mis} \leq \frac{Test\ Voltage}{5nA}$
100nA ÷ 999nA	1nA	
1.00 μ A ÷ 9.99 μ A	0.01 μ A	$\pm(22\%rdg+3dgt)$ if $R_{mis} > \frac{Test\ Voltage}{5nA}$
10.0 μ A ÷ 9.99 μ A	0.1 μ A	
100 μ A ÷ 999 μ A	1 μ A	
1.00mA ÷ 2.5mA	0.01mA	

P.I (Polarization Index) – D.A.R (Dielectric Absorption Ratio)

Range	Resolution	Uncertainty
0.01 ÷ 9.99	0.01	$\pm(5\%rdg+3dgt)$ if $R_{mis} \leq \frac{Test\ Voltage}{5nA}$
		$\pm(20\%rdg+3dgt)$ if $R_{mis} > \frac{Test\ Voltage}{5nA}$

(*) Load Capacitance < 1nF




2. GENERAL CHARACTERISTICS

DISPLAY, MEMORY, SERIAL INTERFACE

- Backlight LCD with three simultaneous readings:
 - Group 1 (main) → Insulation Resistance, Leakage Current, PI, DAR, Capacitance
 - Group 2 → Test voltage (nominal and generated)
 - Group 3 → Test Time
- Bargraph: 32 segments
- Low battery indications
- Memory: 700 test
- Communication interface: RS232 optoinsulated

POWER SUPPLY:

- Internal battery charger, power supply: 220-240V 50/60Hz, 20VA
- Internal NiMH rechargeable battery
- Protection fuse on power supply: T 200mA/250V, Ir: 1.5kA
- Low battery indication:  symbol at display
- Battery life: >1000 Test @ 5kV on 5MΩ (test time: 5s, delay between two test: 25s) according to IEC/EN61557-2. (par. 6.7)
- AutoPowerOFF: after 5min since last operation

ENVIRONMENT:

- Ref. Temperature: 23°C ± 5°C
- Working temperature: 0° ÷ 40°C
- Maximum relative humidity: < 80%UR
- Storage temperature: -10 ÷ 60°C
- Storage humidity: < 80%UR

MECHANICAL DATA:

- Dimensions: 360(L) x 310(W) x 195(H) mm
14.2" (L) x 12.2"(W) x 7.7"(H)
- Weight: about 3.5kg
about 7.8lv

GUIDELINES

Instrument's safety	IEC/EN61010-1, IEC/EN61557-1, IEC/EN61557-2
Technical documentatiion :	IEC/EN61187
Accessories safety :	IEC/EN61010-031
Insulation:	Double insulation
Type of Protection:	2
Mechanical protection:	IP40 (open case), IP53 (closed case)
Over voltage category:	CAT IV 600V to ground, max 600V between inputs
Maximum altitude	max altitude 2000m
Patented certification:	TÜV protocol conformity

This instrument complies with the requirements of the European Low Voltage Directives 2006/95/EEC (LVD) and EMC 2004/108/EEC