

HT FAMILY 2000 METERS

Integrated meter for test verifies on electrical installations



DESCRIPTION

ISOTEST2010 model performs Insulation Resistance measurements on each electrical installation with test voltage selectable from 50 and 1000VDC and permits also Continuity test of potential equalising circuits and protective conductors according to VDE 0413. Flexibility of this meter consents also to perform measurements on power circuits of switchboards and electrical machines according to relative standards in way to verify the correct insulation to ground of this apparatus. ISOTEST2010 can save each test result inside memory and can transfer saved dates to PC through RS-232 interface with dedicated Windows software.

GEOTEST2016 was designed to performing Earth Resistance measurements with 3-wire standards method typically in industrial electrical installations environments which consists of single probes and more or less wide earth networks. This meter can perform also 2-wire measure (where auxiliary metal parts are available) extremely important in civil environments where 3-wire method application is not possible for logistical reasons. Each measure if performed with a test current at high frequency in way to consider and eliminate noise voltages disturb which can be present on installation. GEOTEST2016 performing also Earth Resistivity test measure with 4-wire method very useful on preliminary calculation of earth installation dimension. The model can save each test result inside memory and can transfer saved dates to PC through RS-232 interface with dedicated Windows software.

SPEEDTEST2018 permits to check automatically the tripping time and current of RCDs type A, AC Standard and Selective showing a final evaluation about the device according to EN guidelines. It can also perform the measurement of Global Earth value without RCD tripping, the measurement of P-P, P-N, P-E short circuit impedance value with prospective short circuit current calculation and the phase sequence indication. You can store the test results inside instrument memory, recall them on instrument display and transfer them to PC. Using management software you will create a professional relation which will improve the quality of your work

COMBITEST2019 meter can performing necessary safety tests on electrical plants according to VDE0413. Measurement of Continuity, Insulation, Global Earth values without RCD's tripping, RCDs test, Line and Fault Loop Impedance measurement (also at high resolution 0.1mOhm with IMP57 optional accessory) with prospective short circuit current calculation, Phase sequence indication will be easily performed thanks to this new instrument extremely compact. You can store the test results inside instrument memory, recall them on instrument display and transfer them to PC using the management optional software in way to create a professional relation which will improve the quality of your work.

MODELS AND FEATURES

Measurements	ISO2010	GEO2016	SPEED 2018	COMBI 2019
Continuity test on protective conductor with 200mA	✓			✓
Insulation resistance 50-100-250-500-1000VDC	✓			✓
RCDs tripping time and current (general and selective, AC and A types) 10-30-100-300-500mA			✓	✓
Contact voltage Ut			✓	✓
Loop impedance P-N, P-P, P-PE			✓	✓
Loop impedance P-N, P-P, P-PE with high resolution (0.1mΩ) with IMP57 optional accessory				✓
Prospective short circuit current			✓	✓
Global earth resistance without RDC tripping			✓	✓
Phase rotation/sequence indication			✓	✓
Voltage and Frequency			✓	✓
3-wire Earth Resistance 2-wire Earth Resistance 4-wire Earth Resistivity		✓		
Noise voltage measure		✓		
Automatic calibration of test cables resistance	✓			✓
Save results inside memory Recall saved data at display	✓	✓	✓	✓
PC interface (RS-232)	✓	✓	✓	✓
Auto Power Off	✓	✓	✓	✓

MODELS AND ACCESSORIES

Standard Accessories	ISO2010	GE2016	SPEED2018	COMBI2019
C2033X: cable 3 wires with Shuko plug	✓		✓	✓
A2010: set of 2 cables + 2 alligator clips + 1 test lead				
UNIVERSALKIT: set of 3 cable + 3 alligator clips + 1 test lead				✓
BORSA2000: carrying bag	✓	✓	✓	✓
Calibration Certificate ISO9000	✓	✓	✓	✓
Instruction manual on CD-ROM	✓	✓	✓	✓
KITTERNE: soft bag with 4 cables + 4 metal probes		✓		
COC4-UK: kit of 4 alligator clips		✓		

Optional Accessories	ISO2010	GEO2016	SPEED2018	COMBI2019
UNIVERSALKIT: set of 3 cable + 3 alligator clips + 1 test lead			✓	
EUROLINK2000: Windows software + serial cable	✓	✓	✓	✓
IMP57: accessory for loop impedance with high resolution				✓
404-IECR: red test lead	✓		✓	✓
1066-IECN: connector for cable extension length	✓			

Standards

- CE mark
- EN 61557-4 Continuity test
- EN 61557-2 Insulation Resistance
- EN 61557-5 Earth resistance
- EN 61557-3 Loop impedance P-P, P-N, P-PE
- EN 61557-6 RCD test
- EN 61326 EMC Standards
- EN 61557, EN 61008, EN 61009
- EN 61010-032
- EN 61010-1
- EN 60204-1 safety of electrical devices equipment
- EN 61326 EMC Standards
- 16th edition
- HD 384
- VDE 0413
- IEC 60439-1 Type-tested assemblies TTA and partially type-tested assemblies PTTA

ELECTRICAL SPECIFICATIONS

ISO2010 SPEED2018 COMBI2019

Accuracy is indicated as \pm (% rdgs + no. of dgt) at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$, con relative humidity $<60\%RH$

(*) Technical specification can be modified without notice

Continuity test on protective conductors (ISO2010—COMBI2019)

Range (Ω)	Resolution (Ω)	Accuracy (*)
0.01 ~ 19.99 (ATUO,R+,R-)	0.01	\pm (2.0% rdg + 2dgt)
20.0 ~ 99.9 (ATUO,R+,R-)	0.1	
0.01 ~ 9.99 (R+,R-,TIMER)	0.01	

(*) after cable calibration which eliminates the cable resistance

Test current $>200\text{mA DC}$ for $R \leq 16 \Omega$ (calibration included)

Current measurement resolution: 1mA

Open leads voltage 9VDC

RCDs tripping time (SPEED2018—COMBI2019)

Range (ms)		Resolution (ms)	Accuracy
$\frac{1}{2} I_{\Delta N}, I_{\Delta N}$	1 ~ 999	1	\pm (2.0% rdg + 2dgt)
$2 I_{\Delta N}$	1 ~ 200 general		
	1 ~ 250 selective		
$5 I_{\Delta N}$ RCD	1 ~ 50 general		
	1 ~ 160 selective		

Nominal tripping current 10mA, 30mA, 100mA, 300mA, 500mA

RCD type AC, A, general and selective

Phase-PE voltage 100V ~ 255V

Frequency 50Hz \pm 0.5Hz

RCDs tripping current (SPEED2018—COMBI2019)

$I_{\Delta N}$	RCDs type	Range $I_{\Delta N}$ [mA]	Resolution [mA]	Accuracy $I_{\Delta N}$
$I_{\Delta N} \leq 10\text{mA}$	AC	$(0.5 \sim 1.4) I_{\Delta N}$	0.1 $I_{\Delta N}$	- 0%, + (5.0% $I_{\Delta N}$)
	A	$(0.5 \sim 2.4) I_{\Delta N}$		
$I_{\Delta N} > 10\text{mA}$	AC	$(0.5 \sim 1.4) I_{\Delta N}$		
	A	$(0.5 \sim 2.0) I_{\Delta N}$		

Insulation resistance (DC voltage) (ISO2010—COMBI2019)

Test voltage (V)	Range (MΩ)	Resolution (MΩ)	Accuracy
50	0.01 ~ 19.99	0.01	±(2% rdg+2 dgt)
	20.0 ~ 49.9	0.1	
	50.0 ~ 99.9		±(5% rdg+2 dgt)
100	0.01 ~ 19.99		0.01
	20.0 ~ 99.9	0.1	±(5% rdg+2 dgt)
	100.0 ~ 199.9		
250	0.01 ~ 19.99	0.01	
	20.0 ~ 199.9	0.1	
	200 ~ 249		1
	250 ~ 499		
500	0.01 ~ 19.99	0.01	±(2% rdg+2 dgt)
	20.0 ~ 199.9	0.1	
	200 ~ 499		1
	500 ~ 999		
1000	0.01 ~ 19.99	0.01	±(2% rdg+2 dgt)
	20.0 ~ 199.9	0.1	
	200 ~ 999		1
	1000 ~ 1999		

Open-circuit voltage

nominal test voltage -0%+10%

Short circuit current

<3.0mA @ 500V

Nominal current

<2.0mA @ 50, 100, 250, 1000V

Protections

<2.17mA @ 230kΩ, 1mA @ 1KΩ,

the instrument returns an error message while detecting an input voltage >30V

Contact voltage Ut (SPEED2018—COMBI2019)

Range (V)	Resolution (V)	Accuracy
0 ~ 2U _{lim}	0.1	- 0%, +(2% rdg+2dgt)

U_{lim} (UI):

25V, 50V

Line impedance P-P, P-N, P-PE (SPEED2018—COMBI2019)

Range (Ω)	Resolution (Ω) (*)	Accuracy
0.01 ~ 19.99	0.01	±(5% rdg+2dgt)
20.0 ~ 199.9	0.1	

(*) 0.1mΩ in 0.0 ÷ 199.9 mΩ range (with option accessory IMP57)

Maximum peak current

3.17A @ 100V; 6.64A @ 230V; 11.5A @ 400V

Test voltage

100 ~ 265V (phase-neutral) / 100 ~ 460V (phase-phase); 50Hz ± 0.5Hz

Fault Loop Impedance P-PE (SPEED2018—COMBI2019)

Range [Ω]	Resolution [Ω] (*)	Accuracy
0.01 ~ 19.99	0.01	±(5.0%rdg + 2dgt)
20.0 ~ 199.9	0.1	
200 ~ 1999	1	

(*) 0.1mΩ in 0.0 ÷ 199.9 mΩ range (with option accessory IMP57)

Maximum peak current 3.17A @ 100V; 6.64A @ 230V;

Test voltage 100 ~ 265V (phase-ground); 50Hz ± 0.5Hz,

Fault Loop Resistance R_A without tripping the RCD (SPEED2018—COMBI2019)

量程(V)	分辨力(Ω)	准确度
1 ~ 1999	1	±(5.0%rdg + 2dgt)

Test current: 0.5 $I_{\Delta N}$ set on Ut test
15mA on Ra15mA test

Voltage (RCD, LOOP, Phase Sequence) (SPEED2018—COMBI2019)

Range [V]	Resolution [V]	Accuracy
0 ~ 265(Single phase)	1	±(2.0%rdg + 2dgt)
0 ~ 460(Three phase)		±(5.0%rdg + 2dgt)

Frequency (COMBI2019)

Range (Hz)	Resolution (Hz)	Accuracy
15.3 ~ 99.9	0.01	±(2.5%rdg + 2dgt)

GEO 2016

Accuracy in indicated as ± (% of reading + number of digits) at 23°C ± 5°C ; <60%RH

Earth Resistance 3-wire and 2-wire systems

Range (Ω)	Resolution (Ω)	Accuracy
0.01 ~ 19.99	0.01	±(2.0%rdg + 3dgt)
20.0 ~ 199.9	0.1	
200 ~ 1999	1	

Test current ≤12mAAC
Open circuit voltage ≤25V ACTRMS
Test frequency 125Hz / 77.5Hz ± 1Hz

Earth Resistivity ρ with 4-wire method

Range (Ωm)	Resolution (Ωm)	Accuracy
0.8 ~ 19.99	0.01	±(2.0%rdg + 3dgt)
20.0 ~ 199.9	0.1	
200 ~ 1999	1	
2.00 ~ 19.99k	0.01k	
20.0 ~ 125.6k	0.1k	

Test current ≤12mAAC
Open circuit voltage ≤25V ACTRMS
Test frequency 125Hz / 77.5Hz ± 1Hz

Noise Voltages

Range (V)	Resolution (V)	Accuracy
460	1	±(2.0%rdg + 2dgt)

GENERAL SPECIFICATIONS


DISPLAY

Features	Custom LCD
Visible area	65x65 mm

MEMORY AND SERIAL INTERFACE

Memory	350 locations / (GEO2016:999 locations)
PC communication port	RS-232 opto-insulated

POWER SUPPLY

Batteries	6x 1.5V type LR6, AA, AM3, MN 1500
Low batteries indications	“  ” Symbol at display
Battery life	40 hours on stand-by 500 LOW Ω measuring 250 ISO 500V measuring 1000 LOOP, RCD, PHASE SEQUENCE measuring (GEO2016: about 300 test)

MECHANICAL FEATURES

Dimensions	222 (W) x 162(L) x 57 (D) mm
Weight (batteries included)	about 1kg

ENVIRONMENTAL CONDITIONS

Reference temperature of calibration	(23°C \pm 5°C)
Working temperature	-10° ~ 50°C
Working humidity	< 80%HR
Storage temperature (batteries not included)	-20°C ~ 60°C
Storage humidity	< 80%HR

TEST VERIFIES REFERENCE STANDARDS

Continuity test with 200mA	IEC 61557-4
Insulation resistance	IEC 61557-2
Fault Loop Impedance	IEC 61557-3
RCDs test	IEC 61557-6
Phase sequence	IEC 61557-7
Insulation on switchboards	EN60439-1

GENERAL REFERENCE STANDARDS

Safety of measuring instruments	EN61010-1 +A2(1997)
Product guideline	IEC61557
Insulation	class 2 (double insulation)
Pollution degree	2
Overvoltage category	CAT III 460V P-N-P between inputs

USE	CAT III 265V to ground Max altitude 2000m
EMC	EN61326-1 (1998)+A1(1999)

GENERAL REFERENCE STANDARDS – (GEO2016)

Product type standard	IEC 61557-1,
Overvoltage category	CAT III 265V ~ to ground,

This instrument complies with the requirements of the European Low Voltage Directives 72/23/CEE (LVD) and EMC 89/336/CEE, amended with 93/68/CEE

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