CONTINUITY TEST ON PROTECTIVE AND EQUALIZING CONDUCTORS (modes: AUTO, RTimer+, RTimer-)

Range [Ω]	Resolution [Ω]	Accuracy*
0.01 ÷ 9.99 10.0 ÷ 99.9	0.01 0.1	±(2% reading + 2 dgt)

* after cable calibration (which eliminates the cable resistance)

Test current > 200mA DC for R≤13Ω (after calibration)
Current measurement resolution: 1mA
Open-circuit voltage: $4V \le V_o \le 24V$

INSULATION RESISTANCE (modes: MAN, TIMER)

Test voltage [V]	Range [MΩ]	Resol. [MΩ]	Accuracy
50	0.01 ÷ 9.99	0.01	±(2% reading + 2 dgt) if V/R>1µA
	10.0 ÷ 49.9	0.1	
	50.0 ÷ 99.9	0.1	±(5% reading + 2 dgt) if V/R≤1µA
100	0.01 ÷ 9.99	0.01	±(2% reading + 2 dgt) if V/R>1µA
	10.0 ÷ 49.9	0.1	
	100.0 ÷ 199.9	0.1	±(5% reading + 2 dgt) if V/R≤1µA
250	0.01 ÷ 9.99	0.01	±(2% reading + 2 dgt) if V/R>1µA
	10.0 ÷ 49.9	0.1	
	200 ÷ 249	1	
	250 ÷ 499	1	±(5% reading + 2 dgt) if V/R≤1µA
500	0.01 ÷ 9.99	0.01	±(2% reading + 2 dgt) if V/R>1µA
	10.0 ÷ 49.9	0.1	
	200 ÷ 499	1	
	500 ÷ 999	1	±(5% reading + 2 dgt) if V/R≤1µA
1000	0.01 ÷ 9.99	0.01	±(2% reading + 2 dgt) if V/R>1µA
	10.0 ÷ 49.9	0.1	
	200 ÷ 999	1	
	1000 ÷ 1999	1	±(5% reading + 2 dgt) if V/R≤1µA

Open-circuit voltage: 1.3 x nominal test voltage
Short circuit current: <6.0mA at 500V testing voltage
Nominal test current: 500V >2.17mA on 230kΩ load
others >1mA on $1k\Omega*V_{nom}$

RCD

Nominal tripping currents ($I_{\Delta N}$) 10mA, 30mA, 100mA, 300mA, 500mA
RCD type AC, A General and Selective
Phase-Earth voltage 100V ÷ 255V 50 Hz

TRIPPING TIME OF GENERAL, SELECTIVE, A AND AC RCDs

Tripping time $t_{\Delta N}$

Range [ms]		Resol. [ms]	Accuracy
½ $I_{\Delta N}$, $I_{\Delta N}$	0÷999	1	±(2% reading+2dgt)
2 $I_{\Delta N}$	0÷200 general		
	0÷250 selective		
5 $I_{\Delta N}$ RCD	0÷50 general		
	0÷160 selective		

Contact voltage U_t

Range [V]	Resolution [V]	Accuracy
0 ÷ $2U_{t\ lim}$	0.1	- 0%, +(2% reading + 2 dgt)

$U_{t\ LIM}$ (U_L): 25V o 50V

Earth resistance R_A without tripping of RCDs

Range [Ω]	Resolution [Ω]	Accuracy $I_{\Delta N}$
1 ÷ 1999	1	- 0%, +(5% reading + 2 dgt)

Test current 0.5 $I_{\Delta N}$ set for U_t test
15mA for $R_{a\ 15mA}$ test

TRIPPING CURRENT OF GENERAL, A AND AC RCDs

$I_{\Delta N} \le 10mA$

RCD	Range $I_{\Delta N}$ [mA]	Resolution [mA]	Accuracy $I_{\Delta N}$
AC	(0.5 ÷ 1.4) $I_{\Delta N}$	0.1 $I_{\Delta N}$	- 0%, +5% $I_{\Delta N}$
A	(0.5 ÷ 2.4) $I_{\Delta N}$	0.1 $I_{\Delta N}$	- 0%, +5% $I_{\Delta N}$

$I_{\Delta N} > 10mA$

RCD	Range $I_{\Delta N}$ [mA]	Resolution [mA]	Accuracy $I_{\Delta N}$
AC	(0.5 ÷ 1.4) $I_{\Delta N}$	0.1 $I_{\Delta N}$	- 0%, +5% $I_{\Delta N}$
A	(0.5 ÷ 2) $I_{\Delta N}$	0.1 $I_{\Delta N}$	- 0%, +5% $I_{\Delta N}$

FREQUENCY

Range (Hz)	Resolution (Hz)	Accuracy
47.0 ÷ 63.6	0.1	±(0.1% reading+1 dgt)

Loop and RCD measurements are active only at 50Hz

VOLTAGE

Range [V]	Resolution [Ω]	Accuracy
0 ÷ 460	1	± (3% reading + 2 dgt)

LINE IMPEDANCE (phase to phase, phase to neutral)

Range [Ω]	Resolution [Ω]	Accuracy
0.01 ÷ 19.99 20.0 ÷ 199.9	0.01 0.1	±(5% reading + 3 dgt)

Maximum peak current at the test voltage: 100V 3.17A
230V 6.64A
400V 11.5A
Test voltage phase-neutral/phase-phase: 100÷255V/100÷440V 50Hz

FAULT LOOP IMPEDANCE (phase to earth)

Range [Ω]	Resolution [Ω]	Accuracy
0.01 ÷ 19.99 20.0 ÷ 199.9 200 ÷ 1999	0.01 0.1 1	±(5% reading + 3 dgt)

Maximum peak current at the test voltage 100V 3.17A
230V 6.64A
Test voltage phase-earth: 100÷255V 50Hz

FAULT LOOP IMPEDANCE WITHOUT RCD's TRIPPING (phase to earth $R_{a\ 15mA}$)

Range [Ω]	Resolution [Ω]	Accuracy
1 ÷ 1999	1	±(5% reading + 3 dgt)

Test current 15mA
Test voltage phase-earth: 100÷255V 50Hz

EARTH RESISTANCE WITH RODS

Range R_E [Ω]	Resolution [Ω]	Accuracy
0.01 – 19.99 20.0 – 199.9 200 - 1999	0.01 0.1 1	±(5% reading + 3 dgt)

Test current <10mA - 77.5Hz
No-load voltage <20V RMS

EARTH RESISTIVITY

Range ρ (*)	Resolution	Accuracy
0.60÷ 19.99 Ωm	0.01 Ωm	±(5% reading + 3 dgt)
20.0 ÷ 199.9Ωm	0.1 Ωm	
200 ÷ 1999Ωm	1 Ωm	
2.00 ÷ 99.99kΩm	0.01 kΩm	
100.0 ÷ 125.5kΩm	0.1 kΩm	

(*) with distance = 10m
Distance setting range: d: 1÷10m
Test current <10mA - 77.5Hz
Open-circuit voltage <20V RMS

REFERENCE STANDARD FOR SAFETY TESTS

VDE 413 German safety tests standard
EN 61008 RCDs without breakers
EN 61009 RCDs with breakers
EN60439-1 (CEI17/13) test on protective conductors
EN 60947-2 point B 4.2.4.1.

GENERAL INFO ON ACCURACY

Accuracy is indicated as [% reading + no. of digits].

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GENIUS 5080E

VOLTAGE – SINGLE-PHASE SYSTEM (AUTORANGE)

Range [V]	Resolution [V]	Accuracy	Input impedance
15 ÷ 310	0.2	±(0.5% reading + 2 dgt)	300kΩ (phase to neutral) 300kΩ (phase to phase)
310 ÷ 600	0.4		

VOLTAGE ANOMALIES – SINGLE-PHASE SYSTEM (MANUAL selection of RANGE)

Range [V]	Resolution [V]	Resolution (Time)	Accuracy	Accuracy (ref. 50Hz) (Time)	Input impedance
15 ÷ 310	0.2	½ period (10ms)	±(1.0% reading + 2 dgt)	± 10ms	300kΩ (phase to neutral) 300kΩ (phase to phase)
30 ÷ 600	0.4				

CURRENT (with external clamp) – SINGLE-PHASE SYSTEM

Full range (*)	Resolution [mV]	Accuracy	Input impedance	Protection against overloads
0.005÷0.26V	0.1	±(0.5% reading + 2 dgt)	200kΩ	5V
0.26÷1V	0.4			

(*): Example: by using a clamp whose range is 1000A/1V, the instrument measures currents higher than 5A

POWER – SINGLE-PHASE SYSTEM

Type of measurement	Range	Accuracy	Resolution
ACTIVE POWER	0 ÷ 999.9W 1 ÷ 999.9kW 1 ÷ 999.9MW 1000 ÷ 9999MW	±(1.0% reading + 2 dgt)	0.1W 0.1kW 0.1MW 1MW
REACTIVE POWER	0 ÷ 999.9VAR 1 ÷ 999.9kVAR 1 ÷ 999.9MVAR 1000 ÷ 9999MVAR		0.1VAR 0.1kVAR 0.1MVAR 1MVAR
APPARENT POWER	0 ÷ 999.9VA, 1 ÷ 999.9kVA, 1 ÷ 999.9MVA 1000 ÷ 9999MVA		0.1VA 0.1kVA 0.1MVA 1MVA
ACTIVE ENERGY (Class 2 EN61036)	0 ÷ 999.9Wh, 1 ÷ 999.9kWh, 1 ÷ 999.9MWh 1000 ÷ 9999MWh		0.1Wh 0.1kWh 0.1MWh 1MWh
REACTIVE ENERGY (Class 3 IEC1268)	0 ÷ 999.9VARh, 1 ÷ 999.9kVARh, 1 ÷ 999.9MVARh 1000 ÷ 9999MVARh		0.1VARh 0.1kVARh 0.1MVARh 1MVARh

Cosφ - SINGLE-PHASE SYSTEM

Cos φ	Resolution	Accuracy expressed in degrees (°)
0.20	0.01	0.6
0.50		0.7
0.80		1.0

HARMONICS – SINGLE-PHASE SYSTEM

Range	Basic accuracy	Maximum resolution
DC – 25H	±(5% + 2 dgt)	0.1V / 0.1A
26H – 33H	±(10% + 2 dgt)	
34H – 49H	±(15% + 2 dgt)	

ENVIRONMENTAL PARAMETERS

Range	Accuracy	Resolution
-20°C ÷ 80 °C	±(2% reading + 2 dgt)	0.1 °C
0 ÷ 100% UR		0.1% UR
0.001Lux ÷ 20.00 Lux		0.001 ÷ 0.02 Lux
0.1Lux ÷ 2000 Lux		0.1 ÷ 2 Lux
1Lux ÷ 20 kLux		1 ÷ 20 Lux

LEAKAGE CURRENT (with optional clamp)

Range [mA] (*)	Resolution [mA]	Accuracy	Input impedance	Protection against overloads
0.5 ÷ 999.9	0.1	±(5% reading + 4 dgt)	200kΩ	5V

(*): While recording the instrument stores only current values > 5mA

SINGLE -PHASE RECORDER

RECORDABLE QUANTITIES:
Phase voltage
Phase current
Phase Active, reactive, apparent power
Active energy (Class 2 EN61036), reactive energy (Class 3 IEC1268)
Phase Power factor Cosφ
Harmonics (DC, 1,2, .., 49)

Selectable quantities	63 or 1 AUX (Enviromnent or leackage)
Integration period	5 ÷ 3600 sec.
Recording autonomy	> 30 days with integration periods of 15 minutes
Memory capacity	2Mbyte

POWER MEASUREMENT REFERENCE STANDARDS

Features of voltage supplied by public utilities	EN50160
Active energy static counters for AC current (Class 2)	EN61036
Reactive energy static counters for AC current (Class 3)	IEC1268

DISPLAY AND MEMORY

Features	Dot matrix with backlight
Resolution	128x128
Visible area	73mmx73mm
Memory	999 misure

MECHANICAL FEATURES

Dimensions	225x165x 105mm
Weight (battery included)	about 1,2kg

POWER SUPPLY

Batteries	6 batteries 1.5-LR6-AA-AM3-MN 1500
Extenal power supply adapter	Cod. A0050 (only for AUX e ANALYSER functions)

WORKING ENVIRONMENTAL CONDITIONS

Reference temperature	23° ± 5°C
Working temperature	0° ÷ 40°C
Allowed relative humidity	< 80%
Storage temperature	-10 ÷ 60°C
Storage humidity	< 80%

GENERAL REFERENCE STANDARDS

Safety of measuring instruments	EN 61010-1 + A2 (1997)
Product type standard	IEC61557-1, -2, -3, -4, -5, -6
Insulation	class 2
Pollution degree	2
Overvoltage category	600V~ (CATII) / 350V~ to earth 600V~ (CATIII) / 300V~ to earth
Indoor use; max altitude:	2000m
EMC	EN61326-1 (1998) + A1 (1999)

This instrument complies with the European Directive for CE marking.

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