

### 1. TECHNICAL SPECIFICATIONS – DMM FUNCTIONS

Accuracy is indicated as  $\pm$  (% readings + no. of digits) at 23°C  $\pm$  5°C, relative humidity HR <70%

#### DC VOLTAGE (Autorange)

Range	Resolution	Accuracy	Input impedance	Overload protection
1.0mV $\div$ 999.9mV	0.1mV	$\pm(0.5\%rdg + 2 \text{ dgt})$	1M $\Omega$	605Vrms max
1.000V $\div$ 9.999V	1mV			
10.00V $\div$ 99.99V	10mV			
100.0V $\div$ 605.0V	100mV			

#### AC VOLTAGE TRMS (Autorange)

Range	Resolution	Accuracy (30 $\div$ 70Hz)	Accuracy (70 $\div$ 400Hz)	Input Impedance	Crest factor
1.0mV $\div$ 999.9mV	0.1mV	$\pm(1.0\%rdg + 2dgt)$	$\pm(2.0\%rdg+2 \text{ dgt})$	1M $\Omega$	3
1.000V $\div$ 9.999V	1mV				1.5
10.00V $\div$ 99.99V	10mV				
100.0V $\div$ 605.0V	100mV				

#### AC/DC VOLTAGE: MAX / MIN / AVG / PEAK

Function	Range	Resolution	Accuracy	Response time
MAX, MIN, AVG	1.0mV $\div$ 999.9mV	0.1mV	$\pm(5.0\%rdg + 10dgt)$	500ms
	1.000V $\div$ 9.999V	1mV		
	10.00V $\div$ 99.99V	10mV		
	100.0V $\div$ 605.0V	100mV		
PEAK	10.0mV $\div$ 999.9mV	0.1mV		1ms
	1.000V $\div$ 9.999V	1mV		
	10.00V $\div$ 99.99V	10mV		
	100.0V $\div$ 605.0V	100mV		

#### DC/AC CURRENT TRMS (with external clamp)

Range	Resolution	DC Accuracy	Accuracy (30 $\div$ 70Hz)	Accuracy (70 $\div$ 400Hz)	Crest factor	Overload protection
1.0mV $\div$ 999.9mV	0.1mV	$\pm(0.5\%rdg+2 \text{ dgt})$	$\pm(1.0\%rdg+2 \text{ dgt})$	$\pm(2.0\%rdg+2 \text{ dgt})$	3	605Vrms max
1.000V $\div$ 1.200V	1mV				1.5	

**Note:** accuracy indicated don't consider clamp accuracy. Please refer also to transducers clamp user's manual.

#### AC/DC CURRENT: MAX / MIN / AVG / PEAK (with external clamp)

Function	Range	Resolution	Accuracy	Response time	Overload protection
MAX, MIN, AVG	1.0mV $\div$ 999.9mV	0.1mV	$\pm(5.0\%rdg+10 \text{ dgt})$	500 ms	605Vrms max
	1.000V $\div$ 1.200V	1mV		1ms	
	10.0mV $\div$ 999.9mV	0.1mV			
PEAK	10.0mV $\div$ 999.9mV	0.1mV		1ms	
	1.000V $\div$ 3.000V	1mV			

#### RESISTANCE AND CONTINUITY TEST

Range	Resolution	Accuracy	Continuity test	Overload protection
0.00 $\Omega$ $\div$ 39.99 $\Omega$	0.01 $\Omega$	$\pm(1.0\%rdg+5 \text{ dgt})$	R $\leq$ 40 $\Omega$	605Vrms max for 1 minute
40.0 $\Omega$ $\div$ 399.9 $\Omega$	0.1 $\Omega$			
400 $\Omega$ $\div$ 3999 $\Omega$	1 $\Omega$			
4.00k $\Omega$ $\div$ 39.99k $\Omega$	10 $\Omega$			

#### FREQUENCY (with test leads)

Range	Resolution	Accuracy	Input voltage	Overload protection
30.0 $\div$ 199.9Hz	0.1Hz	$\pm(0.5\%rdg+2 \text{ dgt})$	1.0mV $\div$ 605V	605Vrms max
200 $\div$ 400Hz	1Hz			

#### FREQUENCY (with external clamp)

Range	Resolution	Accuracy	Input voltage	Overload protection
30.0 $\div$ 199.9Hz	0.1Hz	$\pm(0.5\%rdg+2dgt)$	1.0mV $\div$ 1.000V	605Vrms max
200 $\div$ 400Hz	1Hz			

## 2. TECHNICAL SPECIFICATIONS – VERIFY TESTS

Accuracy is indicated as  $\pm$  (% readings + no. of digits) at 23°C  $\pm$  5°C, relative humidity HR <70%

### Continuity test on protective and equalizing conductors

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
0.01 $\div$ 19.99	0.01	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$	605Vrms max
20.0 $\div$ 99.9	0.1		

Test current: > 200mA DC for  $R \leq 4\Omega$  (included calibration)  
Resolution on current measurement: 1mA

Open-circuit voltage:  $4V \leq V_0 \leq 24V$

### Insulation Resistance

Range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy	Overload protection
0.00 $\div$ 19.99	0.01	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$	605Vrms max
20.0 $\div$ 199.9	0.1		
200 $\div$ 999	1	$\pm(10.0\% \text{ rdg} + 2\text{dgt})$	

Test Voltage: 500V DC  
Test voltage accuracy:  $-0\% \div +10\% \text{ rdg}$   
Short circuit current: <3.0mA  
Nominal test current: 1mA @ 1k $\Omega$  x Vnom ; 1mA @ 500 k $\Omega$

### RCD Tripping time

Range (ms)	Resolution (ms)	Accuracy	Overload protection
2 $\div$ 400	1	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$	605Vrms max

Nominal trip-out currents: 30mA, 30x5mA, 100mA, 300mA  
RCD type: AC, Standard  
Phase-Earth voltage: 110V  $\div$  265V  
Frequency: 50Hz  $\pm$  0.5Hz / 60Hz  $\pm$  0.5Hz  
Limit contact voltage: 50V

### Global Earth Resistance

Test current	Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
15mA	1 $\div$ 1999	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$	605Vrms max
100mA	0.1 $\div$ 199.9	0.1	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$	

Phase-Earth voltage: 110V  $\div$  265V  
Frequency: 50Hz  $\pm$  0.5Hz / 60Hz  $\pm$  0.5Hz  
Limit contact voltage: 50V

### PHASE SEQUENCE / CONFORMITY (1 wre measurement)

Type of measure	Voltage range (V)	Frequency range (Hz)	System type
SEQUENCE	90 $\div$ 315 (Phase – Earth)	45 $\div$ 65	up to 315 (Phase – Earth)
CONFORMITY			up to 550V (Phase – Phase)

### PHASE SEQUENCE / CONFORMITY (2 wre measurement)

Type of measure	Voltage range (V)	Frequency range (Hz)	System type
SEQUENCE	110 $\div$ 315 (Phase – Neutral)	45 $\div$ 65	up to 315 (Phase – Earth)
CONFORMITY			up to 550V (Phase – Phase)

Max crest factor :1.5

**NOTE:** the two-wire measurement can be performed also phase to phase in plants without neutral, even with one phase to earth, but always with phase to phase voltage up to 550V

### 3. GENERAL SPECIFICATIONS

#### DISPLAY:

Features:	Dual numeric, 9999 points
Display update:	2 times/sec
Visible area:	73x73 mm

#### POWER SUPPLY:

Batteries:	4 batteries 1.5V type LR6-AA-AM3-MN 1500
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#### ELECTRICAL FEATURES:

Conversion:	AC 16 Bit, TRMS
Sample frequency:	64 sample/period

#### MECHANICAL FEATURES:

Dimensions:	240(W) x 100(L) x 45(D) mm
Weight (included batteries):	about 630 g

#### WORKING ENVIRONMENTAL CONDITIONS:

Reference temperature:	23°C ± 5°C
Working temperature:	0° ÷ 40°C
Allowed relative humidity:	< 70% HR
Storage temperature:	-10 ÷ 60°C
Storage humidity:	< 70% HR

#### TEST VERIFIES REFERENCE STANDARDS:

Continuity test with 200mA:	IEC/EN61557-4
Insulation resistance:	IEC/EN61557-2
Global earth resistance:	IEC/EN61557-3
RCDs test:	IEC/EN61557-6
Phase sequence indication:	IEC/EN61557-7

#### GENERAL REFERENCE STANDARDS:

Safety of measuring instruments:	EN61010-1 + A2(1997)
Product type standard:	IEC61557-1, 2, 3, 4, 6,7
Insulation:	class 2 (double insulation)
Pollution degree:	2
Overvoltage category:	CAT III 550V AC Phase - Ground CAT III 550V AC Phase - Phase
Use:	internal use; max altitude: 2000m
EMC:	EN61326-1 (1998) + A1 (1999)

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