



## 1. TECHNICAL SPECIFICATIONS

Accuracy is calculated as:  $\pm[\% \text{reading} + (\text{no. of digits}) * \text{resolution}]$  at 23°C, <80%RH

### AC TRMS VOLTAGE

Range (V)	Resolution (V)	Accuracy
15 ÷ 460	1	$\pm(3.0\% \text{ rdg} + 2\text{dgt})$

### FREQUENCY

Range (Hz)	Resolution (Hz)	Accuracy
47.50 ÷ 52.50 / 57.00 ÷ 63.00	1	$\pm(0.1\% \text{ rdg} + 1\text{dgt})$

### CONTINUITY OF PROTECTION CONDUCTORS WITH 200mA

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.00 ÷ 9.99	0.01	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

Test current: >200mA DC up to 5 $\Omega$  (test leads included)  
 Test current generated: 1mA resolution, range 0 ÷ 250mA  
 Open-circuit voltage: 4 < V<sub>0</sub> < 24VDC  
 Safety protection: error message for input voltage >10V

### INSULATION RESISTANCE

DC test voltage (V)	Range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy
50	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 49.9	0.1	
	50.0 ÷ 99.9		$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
100	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 99.9	0.1	
	100 ÷ 199	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
250	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 99.9	0.1	
	100 ÷ 249	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
500	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 199.9	0.1	
	200 ÷ 499	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$
1000	0.01 ÷ 9.99	0.01	$\pm(2.0\% \text{ rdg} + 2\text{dgt})$
	10.0 ÷ 199.9	0.1	
	200 ÷ 999	1	$\pm(5.0\% \text{ rdg} + 2\text{dgt})$

Open-circuit voltage: rated test voltage -0% +10%  
 Rated measuring current: >1mA with 1k $\Omega$  x V<sub>nom</sub> (50V, 100V, 250V, 1000V), >2.2mA with 230k $\Omega$  @ 500V  
 Short-circuit current: <6.0mA for each test voltage  
 Safety protection: error message for input voltage >30V

### LINE/LOOP IMPEDANCE P-P, P-N, P-PE – TT/TN SYSTEMS

Range ( $\Omega$ )	Resolution ( $\Omega$ ) (*)	Accuracy
0.01 ÷ 19.99	0.01	$\pm(5.0\% \text{ rdg} + 3\text{dgt})$
20.0 ÷ 199.9	0.1	

(\*) 0.1m $\Omega$  in range 0.1 ÷ 199.9 m $\Omega$  (by using the optional accessory IMP57)

Maximum test current: 3.31A (at 265V); 5.71A (at 457V)  
 P-N/P-P Test voltage: (100V ÷ 265V) / (100V ÷ 460V); 50/60Hz  $\pm$ 5%  
 Protection types: MCB (B, C, D, K), Fuse (aM, gG, BS882-2, BS88-3, BS3036, BS1362)

### TEST ON RCD PROTECTION (MOLDED-CASE TYPE)

Differential protection type (RCD):	AC(⌚), A/F(⌚⌚), B/B+(⌚⌚), CCID (⌚⌚⌚ - USA country), General (G), Selective (S)
<b>Single -phase systems (L-N-PE)</b>	
Voltage range L-PE, L-N:	100V ÷265V RCD type AC, A/F, B/B+ and CCID (I $\Delta$ N ≤100mA) 190V ÷265V RCD type B/B+ (I $\Delta$ N = 300mA)
Voltage range N-PE:	<10V
<b>Split-phase systems (phase delay VL1-PE, VL2-PE = 180° or phase delay VL1-PE, VL2-PE = 120°)</b>	
Voltage range L1-PE, L1-L2:	100V ÷265V RCD type AC, A/F, B/B+ and CCID (I $\Delta$ N ≤100mA)
Voltage range L2-PE:	0V÷265V RCD type AC, A/F 0V÷min[(VL1-PE-100V) and (VL1-L2-100V)], RCD type B/B+ (I $\Delta$ N ≤100mA)
Rated tripping currents (I $\Delta$ N):	5mA, 6mA, 10mA, 20mA, 30mA, 100mA, 300mA, 500mA, 650mA, 1000mA
Frequency:	50/60Hz ± 5%

### RCD tripping current (for General RCDs only)

Type RCD	I $\Delta$ N	Range I $\Delta$ N (mA)	Resolution (mA)	Accuracy
CCID	5mA, 20mA	(0.2 ÷ 1.3) I $\Delta$ N	0.1 I $\Delta$ N	- 0%, +10% I $\Delta$ N
AC, A/F, B/B+	6mA, 10mA	(0.2 ÷ 1.1) I $\Delta$ N		- 0%, +5% I $\Delta$ N
AC, A/F, B/B+	30mA ≤ I $\Delta$ N ≤ 300mA			
AC, A/F	500mA ≤ I $\Delta$ N ≤ 650mA			

### Measurement RCD tripping time – TT/TN systems

	x 1/2		x 1		x 5		AUTO		AUTO+	
	G	S	G	S	G	S	G	S	G	S
<b>5mA</b>	AC									
	A/F									
	B/B+									
	CCID		999						310	
<b>6mA</b>	AC	999	999	999	999	999	✓	✓	310	✓
	A/F	999	999	999	999	999	✓	✓	310	✓
	B/B+	999	999	999	999				310	
	CCID									
<b>10mA</b>	AC	999	999	999	999	999	✓	✓	310	✓
	A/F	999	999	999	999	999	✓	✓	310	✓
	B/B+	999	999	999	999				310	
	CCID									
<b>20mA</b>	AC									
	A/F									
	B/B+									
	CCID			999					310	
<b>30mA</b>	AC	999	999	999	999	999	✓	✓	310	✓
	A/F	999	999	999	999	999	✓	✓	310	✓
	B/B+	999	999	999	999				310	
	CCID									
<b>100mA</b>	AC	999	999	999	999	999	✓	✓	310	
	A/F	999	999	999	999	999	✓	✓	310	
	B/B+	999	999	999	999				310	
	CCID									
<b>300mA</b>	AC	999	999	999	999	999	✓	✓	310	
	A/F	999	999	999	999	999	✓	✓	310	
	B/B+	999	999	999	999				310	
	CCID									
<b>500mA</b> <b>650mA</b>	AC	999	999	999	999	999	✓	✓	310	
	A/F	999	999	999	999				310	
	B/B+									
	CCID									
<b>1000mA</b>	AC	999	999	999						
	A/F	999	999	999						
	B/B+									
	CCID									

Table with duration of tripping time measurement [ms] - Resolution: 1ms, Accuracy: ±(2.0%reading + 2digits)

### Measurement RCD tripping time – IT systems

	x 1/2		x 1		x 5		AUTO		AUTO+		
	\	G	S	G	S	G	S	G	S	G	S
<b>6mA</b>	AC	999	999	999	999	50	150	✓	✓	310	✓
<b>10mA</b>	A/F	999	999	999	999	50	150	✓	✓	310	✓
<b>30mA</b>	B/B+	999	999	999	999					310	
<b>100mA</b>	AC	999	999	999	999	50	150	✓	✓	310	
<b>300mA</b>	A/F	999	999	999	999	50	150	✓	✓	310	
	B/B+	999	999	999	999					310	
<b>500mA</b>	AC	999	999	999	999	50	150	✓		310	
<b>650mA</b>	A/F	999	999	999	999			✓		310	
	B/B+										
<b>1000mA</b>	AC	999	999	999	999						
	A/F	999	999	999	999						
	B/B+										

 Table with duration of tripping time measurement [ms] - Resolution: 1ms, Accuracy:  $\pm(2.0\% \text{reading} + 2 \text{digits})$ 

### TEST ON RCD TYPE DD PROTECTION

Differential protection type (RCD):	DD type (compliance with IEC62955 guideline), General (G)
<b>Single -phase systems (L-N-PE)</b>	
Voltage range L-PE, L-N:	100V $\div$ 265V
Voltage range N-PE:	<10V
<b>Split-phase systems (phase delay VL1-PE, VL2-PE = 180° or phase delay VL1-PE, VL2-PE = 120°)</b>	
Voltage range L1-PE, L1-L2:	100V $\div$ 265V
Voltage range L2-PE:	0V $\div$ min[(VL1-PE-100V) and (VL1-L2-100V)]
Rated tripping currents (I $\Delta$ N):	6Ma
Frequency:	50/60Hz $\pm$ 5%

### Tripping current – (RCD DD type General)

RCD type	I $\Delta$ N	Range (mA)	Resolution (mA)	Accuracy
DD	6mA	(0.2 $\div$ 1.1) I $\Delta$ N	$\leq$ 0.1 I $\Delta$ N	- 0%, +10% I $\Delta$ N

### Tripping time – (RCD DD type General)

RCD type	I $\Delta$ N	Range (ms)	Resolution (ms)	Accuracy
DD	6mA	10000	1	$\pm(2.0\% \text{rdg} + 2 \text{dgt})$

### FIRST FAULT CURRENT – IT SYSTEMS

Range (mA)	Resolution (mA)	Accuracy
0.1 $\div$ 0.9	0.1	$\pm(5.0\% \text{rdg} + 1 \text{dgt})$
1 $\div$ 999	1	$\pm(5.0\% \text{rdg} + 3 \text{dgt})$

Limit contact voltage (ULIM) : 25V, 50V

### OVERALL EARTH RESISTANCE WITHOUT RCD TRIPPING

Voltage range P-PE, P-N:	100V $\div$ 265V
Voltage range N-PE:	<10V
Frequency:	50/60Hz $\pm$ 5%

### Overall earth resistance in systems with Neutral (3-wire) – (30mA or higher RCD)

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.05 $\div$ 9.99	0.01	$\pm(5.0\% \text{rdg} + 8 \text{dgt})$
10.0 $\div$ 199.9	0.1	

### Overall earth resistance in systems with Neutral (3-wire) – (6mA and 10mA RCD)

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.05 $\div$ 9.99	0.01	$\pm(5.0\% \text{rdg} + 30 \text{dgt})$
10.0 $\div$ 199.9	0.1	



# COMBI519

Rel. 1.01 of 06/09/22

Multifunctional instrument for safety measurements

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## Overall earth resistance in systems without Neutral (2-wire) – (30mA or higher RCD)

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 8dgt)
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

## Overall earth resistance in systems without Neutral (2-wire) – (6mA and 10mA RCD)

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.05 ÷ 9.99	0.01	± (5.0% rdg + 30dgt)
10.0 ÷ 99.9	0.1	
100 ÷ 1999	1	

## Contact voltage

Range [V]	Resolution [V]	Accuracy
0 ÷ $U_t$ LIM	0.1	-0%, +(5.0%rdg + 3V)

## VOLTAGE DROP ON LINES ( $\Delta V\%$ )

Range [%]	Resolution [%]	Accuracy
0.0 ÷ 100.0	0.1	±(10.0%rdg + 4dgt)

## PHASE ROTATION WITH 1 TEST LEAD

Voltage range P-N, P-PE[V]	Frequency range
100 ÷ 265	50Hz/60Hz ± 5%

Measurement is only carried out by direct contact with metal live parts (not on insulation sheath)



## 2. GENERAL SPECIFICATIONS

### MECHANICAL CHARACTERISTICS

Dimensions (L x W x H):	225 x 165 x 75mm (9 x 6 x 3in)
Weight (batteries included):	1.2kg (42 ounces)
Mechanical protection:	IP40

### MEMORY AND PC CONNECTIONS

Memory:	999 locations, 3 mark levels
PC connection:	optical/USB port

### DISPLAY

Characteristics:	COG Black/white graphic LCD, 320x240pxl
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### POWER SUPPLY

Battery type:	6x1.5V alkaline batteries type AA IEC LR06 or 6 x1.2V rechargeable NiMH type AA
Battery life:	> 500 tests for each function
Auto Power OFF:	after 5 minutes' idling (if activated)

### ENVIRONMENTAL CONDITIONS FOR USE

Reference temperature:	23°C ± 5°C (73°F ± 41°F)
Operating temperature:	0°C ÷ 40°C (32°F ÷ 104°F)
Allowable relative humidity:	<80%RH
Storage temperature:	-10°C ÷ 60°C (14°F ÷ 140°F)
Storage humidity:	<80%RH
Max. operating altitude:	2000m (6562ft)

### REFERENCE GUIDELINES

Safety:	IEC/EN61010-1, IEC/EN61010-2-030, IEC/EN61010-2-033 IEC/EN61010-2-034, IEC/EN61557-1
EMC :	IEC/EN61326-1
Technical documentation:	IEC/EN61187
Safety of accessories:	IEC/EN61010-031
Insulation:	double insulation
Pollution level:	2
Measurement category:	CAT IV 300V to earth, maximum 415V between inputs
RPE:	IEC/EN61557-4, BS7671 17th ed., AS/NZS3000/3017
MΩ:	IEC/EN61557-2, BS7671 17th ed., AS/NZS3000/3017
RCD:	IEC/EN61557-6 (only on Phase-Neutral-Earth systems)
RCD-DD:	IEC62955
RCD CCID:	UL2231-2
LOOP P-P, P-N, P-PE:	IEC/EN61557-3, BS7671 17th ed., AS/NZS3000/3017
Multifunction:	IEC/EN61557-10, BS7671 17th ed., AS/NZS3000/3017
Short-circuit current:	EN60909-0

**This instrument satisfies the requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU**

**This instrument satisfies the requirements of European Directive 2011/65/EU (RoHS) and 2012/19/EU (WEEE)**



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EURO-INDEX is fabrikant, importeur en distributeur van diverse A-merken op het gebied van test- en meetinstrumenten. Daarnaast leveren wij een groot aantal diensten om het gebruik van deze instrumenten in uw bedrijfsvoering te optimaliseren. Dit omvat uiteraard onderhoud, reparatie en kalibratie van de instrumenten, maar ook kennisdeling via de EURO-INDEX Academy en verhuur van instrumenten.

## Geautoriseerd Service Centrum

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## Kalibratielaboratorium

Ons moderne service- en kalibratielaboratorium beschikt over een RvA accreditatie naar NEN-EN-ISO/IEC 17025. Deze accreditatie geldt voor grootheden, zoals gespecificeerd in de scope bij accreditatienummer K105.



Kijk voor een overzicht van al onze diensten op [euro-index.nl/diensten](http://euro-index.nl/diensten)



## Mobiele Service

Naast de vaste kalibratielaboratoria in Capelle aan den IJssel en Zaventem beschikken wij ook over laboratoria op wielen met de naam "Mobiele Service". Dit biedt vertrouwde service en kwaliteit, bij u voor de deur!

## KWS®

KWS® is een uniek servicesysteem voor uw meetinstrumenten met periodiek onderhoud en kalibratie tegen vaste, lage kosten. Uw kalibratiecertificaten zijn digitaal beschikbaar via Mijn KWS (gratis webportaal en app).

## Verhuur van meetinstrumenten

- Uitgebreid assortiment
- Nauwkeurigheid aantoonbaar door actueel kalibratiecertificaat
- Deskundig advies
- Complete levering inclusief accessoires

## EURO-INDEX Academy

- Trainingen (individueel en klassikaal)
- Cursussen en workshops
- Demonstratie- en instructievideo's
- Whitepapers



Servicebalie



Onderhoud, reparatie en kalibratie



Cursussen en workshops



Mobiele Service

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