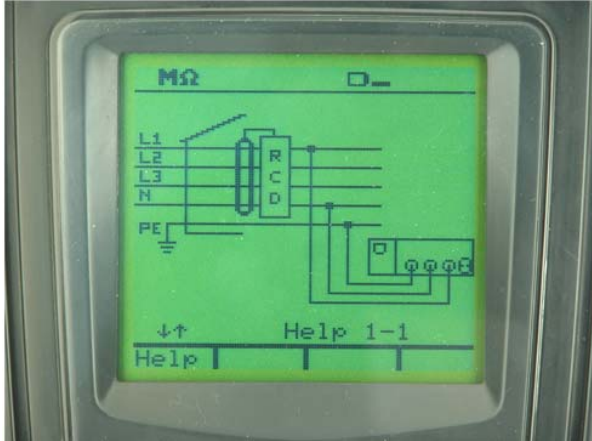
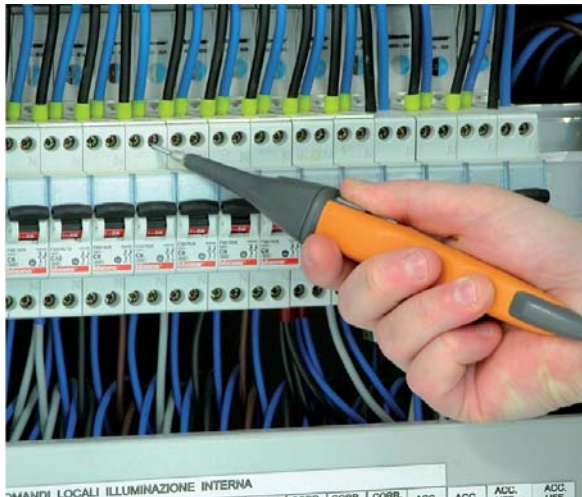


## 1. MAIN FEATURES OF FAMILY 400 METERS



Help on line (available on each function) to support the user while connecting the instrument to the installation under measurement



Each model permits the Start of measurements with remote probe (PR400 optional accessory)



General menu to quickly selection of available test performed by meter (COMBI419 and COMBI420 models only)



## 1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as  $\pm$  (% rdgs + no. of dgt) at 23°C  $\pm$  5°C, con relative humidity <60%HR

### RCDs tripping time

Range (ms)		Resolution (ms)	Accuracy	Category of measure
$\frac{1}{2} I_{\Delta N}, I_{\Delta N}$	1 $\div$ 999	1	$\pm(2.0\%rdg + 2\ dgt)$	CAT III 240V to Ground CAT III 415V between inputs
2 $I_{\Delta N}$	1 $\div$ 200 general			
	1 $\div$ 250 selective			
5 $I_{\Delta N}$ RCD	1 $\div$ 50 general			
	1 $\div$ 160 selective			

Nominal tripping current: 10mA, 30mA, 100mA, 300mA, 500mA  
 RCD type: AC, A, general and selective  
 Phase-ground voltage: (110V  $\div$  240V)  $\pm$ 10%  
 Frequency: 50Hz  $\pm$  0.5Hz, 60Hz  $\pm$  0.5Hz  
 Voltage contact limits: 25V or 50V

### RCDs tripping current

RCD's type	$I_{\Delta N}$	Range $I_{\Delta N}$ (mA)	Resolution (mA)	Accuracy	Category of measure
AC	$I_{\Delta N} \leq 10mA$	(0.5 $\div$ 1.4) $I_{\Delta N}$	0.1 $I_{\Delta N}$	-0%, +10% $I_{\Delta N}$	CAT III 240V to Ground CAT III 415V between inputs
A		(0.5 $\div$ 2) $I_{\Delta N}$			
AC	$I_{\Delta N} > 10mA$	(0.5 $\div$ 1.4) $I_{\Delta N}$			
A		(0.5 $\div$ 2) $I_{\Delta N}$			

### Contact voltage $U_t$

Range (V)	Resolution (V)	Accuracy	Category of measure
0 $\div$ 2 $U_{tlim}$	0.1	-0%, +(2.0%rdg + 2dgt)	CAT III 240V to Ground CAT III 415V between inputs

$U_{tlim}$  (UI): 25V , 50V

### Loop impedance P-P, P-N, P-PE TT/TN systems

Range ( $\Omega$ )	Resolution ( $\Omega$ ) (*)	Accuracy	Category of measure
0.01 $\div$ 9.99	0.01	$\pm(5.0\%rdg + 3dgt)$	CAT III 240V to Ground CAT III 415V between inputs
10.0 $\div$ 199.9	0.1		
200 $\div$ 1999 (only P-PE)	1		

(\*) 0.1m $\Omega$  in 0.0  $\div$  199.9 m $\Omega$  range (with option accessory IMP57)

Maximum peak current: 3A @ 127V, 6A @ 230V, 10A @ 400V  
 Test voltage: (110 $\div$ 240V)  $\pm$ 10% (P-N, P-PE) ; 50Hz  $\pm$  0.5Hz, 60Hz  $\pm$  0.5Hz  
 (110 $\div$ 415V)  $\pm$ 10% (P-P); 50Hz  $\pm$  0.5Hz, 60Hz  $\pm$  0.5Hz

### Loop impedance P-P, P-N, P-PE IT systems

Range (mA)	Resolution (mA)	Accuracy	Category of measure
5 $\div$ 999	1	$\pm(5.0\%rdg + 3dgt)$	CAT III 240V to Ground CAT III 415V between inputs

$U_{tlim}$  (UI): 25V , 50V

### Global Earth Resistance $R_A$ without tripping the RCD (COMBI419-COMBI420)

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Category of measure
0.01 $\div$ 9.99	0.01	$\pm(5.0\%rdg + 1.0\Omega)$	CAT III 240V to Ground CAT III 415V between inputs
10.0 $\div$ 199.9	0.1		
200 $\div$ 1999 (solo F-PE)	1		

$U_{tlim}$  (UI): 25V , 50V

### Phase sequence with 1 or 2 wires (COMBI419-COMBI420)

Range (V)	Results displayed	Category of measure
(100 $\div$ 240) $\pm$ 10%	"123" $\rightarrow$ correct phase sequence "132" $\rightarrow$ wrong phase sequence "11-" $\rightarrow$ phase coincidence	CAT III 240V to Ground CAT III 415V between inputs

The instrument detects the phase sequence by touching the hot wire. The detection is not performed on insulated cables.

Frequency: 50Hz  $\pm$  0.5Hz, 60Hz  $\pm$  0.5Hz



## 2. GENERAL SPECIFICATIONS

### MECHANICAL FEATURES

Dimensions:	240 (L) x 160 (W) x 70 (D) mm
Weight (batteries included):	about 1.2kg
Protection degree:	IP50

### MEMORY AND SERIAL INTERFACE

Each measurement can be stored	
Memory:	>600 locations
PC communication port:	optical / USB

### DISPLAY:

Features:	graphic LCD with backlight
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### POWER SUPPLY:

Batteries:	6x 1.5V type LR6, AA, AM3, MN 1500
Battery life:	> 600 measurements (without using the timer)

### ENVIRONMENTAL CONDITIONS:

Reference temperature of calibration:	23°C ± 5°C
Working temperature:	0° ÷ 40°C
Working humidity:	< 80%HR
Storage temperature (batteries not included):	-10 ÷ 60°C
Storage humidity:	< 80%HR

### GENERAL REFERENCE STANDARDS:

Safety:	IEC / EN61010-1, IEC / EN61557-1, -2, -3, -4, -6, -7
Technical literature:	IEC/EN61187
Safety of accessories:	IEC / EN61010-031 IEC / EN61010-2-032
RCD:	CEI 64-8 612.9 e app. D, IEC / EN61557-6
LOOP P-P, P-N, P-PE:	CEI 64-8 612.6.3, IEC / EN61557-3
Ra 15 <sub>mA</sub>	CEI 64-8 612.6.3, IEC / EN61557-3
123:	IEC 61557-7
Insulation:	class 2 (double insulation)
Pollution degree:	2
Overvoltage category of the voltage inputs (installation/measurement):	CAT III 240V to ground, 415V between inputs
Overvoltage category of the AUX input:	5V to ground
Max altitude:	2000m

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