M73 - SPEED418

MULTIFUNCTION INSTRUMENTS FOR TOTAL EARTH RESISTANCE MEASUREMENT AND TESTS ON DIFFERENTIAL SWITCHES

Models M73 and SPEED418 are innovative instruments for measuring the total earth resistance without causing the differential switch's tripping (typically used in TT systems as an alternative to earth measurement with probes) and for evaluating the tests on differential switches on civil and industrial electric systems. Model SPEED418, differently from M73, allows storing each measurement result in its own internal memory and downloading the saved data onto the PC with the aid of the dedicated software. SPEED418 also allows carrying out measurements by using a switch probe (optional accessory PR400), which makes it much easier to carry out more measurements one after the other. Model M73 is provided with a powerful multimeter function for measuring quantities in true RMS value (TRMS), which is useful when solving any kind of electric problem.

FUNCTIONS	M73	SPEED418
Tripping time on RCD type A, AC General and Selective with currents 10, 30,100, 300, 500mA		•
Tripping time on RCD type AC General with currents 30, 30x5, 100, 300mA	•	•
Tripping current on RCD type A, AC General and Selective		•
Global earth resistance without RCD tripping	•	•
Line/Loop impedance, also with high-resolution (0.1mΩ) *(with optional accessory IMP57)*		•
Prospective short circuit current	•	•
Phase sequence indication	•	•
DC/ACTRMS voltage	•	
DC/AC TRMS current	•	
Resistance and continuity test	•	
Data HOLD, MAX/MIN/AVG	•	
Voltage and current PEAK measurement	•	
Leakage current measurement *(with optional clamps HT96U)*	•	
Activation of measurements *(with optional remote probe PR400)*		•
Help on line on the display		•
Storage of results		•
Optical/USB interface for connection to PC		•
Safety	EN61010-1	EN61010-1
Measurement category	CAT III 550V	CAT III 265V
Power supply	4x1.5V	4x1.5V
Dimensions (LxWxH) mm	240x100x45	222x162x57
Weight (with batteries)	450g	1Kg

ACCESSORIES	Code
Standard	
2-terminal cable with SHUKO plug *(only M73)*	C2075
3-terminal cable with SHUKO plug *(only SPEED418)*	C2033X
Set of 2 cables with test leads + 2 alligator clips *(only M73)*	KIT0075
Carrying bag *(only M73)*	BORSA75
Carrying bag *(only SPEED418)*	BORSA75N
ISO9000 calibration certificate	
User manual on CD-ROM	
Quick reference guide	
Optional	
PC Windows software + optical / USB cable *(only SPEED418)*	TOPVIEW2006
Set of 3 cables + 3 alligator clips + 1 test leads *(only SPEED418)*	UNIVERSALKIT
Clamp 1-100-1000A/1V AC, diameter 54mm *(only M73)*	HT96U
Clamp 400A AC, diameter 30mm *(only M73)*	HT4003
Clamp 200A/1V AC, diameter 40mm *(only M73)*	HT4005K
Clamp 10-100A/1V DC, diameter 32mm *(only M73)*	HT4004N
Adapter for connection of HT96U, HT4004N, HT4005K clamps *(only M73)*	NOCANBA
Switch probe *(only SPEED418)*	PR400
Hands-free kit *(only SPEED418)*	SP-0400
Magnetic adapter for connection to screw heads	606-IECN
Safety flexible alligator clip	6007-IEC#

Optional accessories

PR400
Switch probe

M73
HV000073

SPEED418
HV000418

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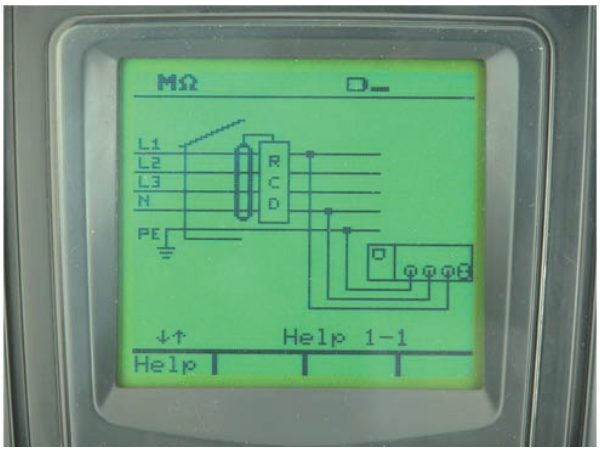
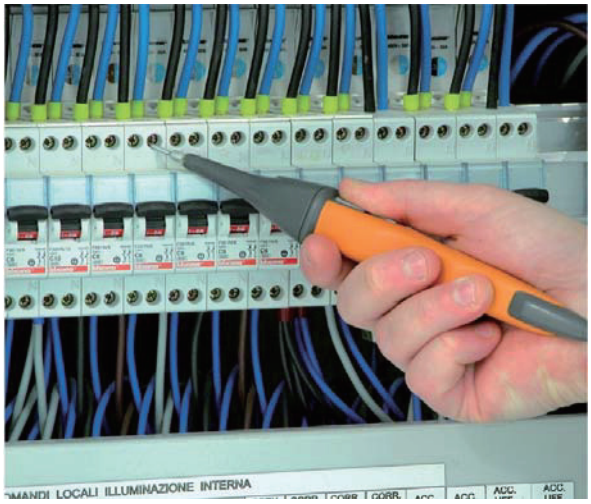
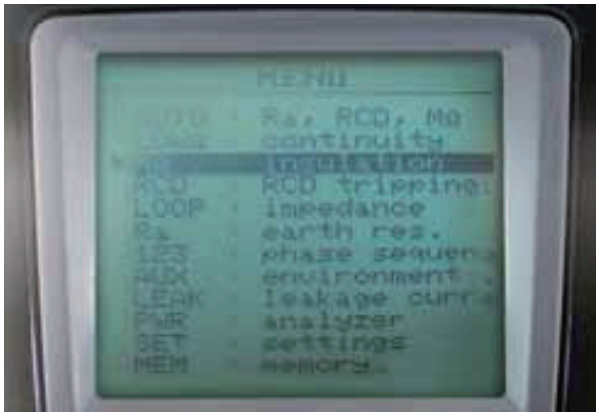
1. MAIN FEATURES OF FAMILY 400 METERS



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 ± (% rdgs + no. of dgt) at 23°C ± 5°C, con relative humidity <60%HR

RCDs tripping time

Range (ms)		Resolution (ms)	Accuracy	Category of measure
½ $I_{\Delta N}$, $I_{\Delta N}$	1 ÷ 999	1	±(2.0%rdg + 2 dgt)	CAT III 240V to Ground CAT III 415V between inputs
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, 650mA
RCD type: AC, A, general and selective
Phase-ground voltage: (110V ÷ 240V) ±10%
Frequency: 50Hz ± 0.5Hz, 60Hz ± 0.5Hz
Voltage contact limits: 25V or 50V

RCDs tripping current

RCD's type	IΔN	Range IΔN (mA)	Resolution (mA)	Accuracy	Category of measure
AC	IΔN ≤ 10mA	(0.5 ÷ 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 ÷ 2) $I_{\Delta N}$			
AC	IΔN > 10mA	(0.5 ÷ 1.4) $I_{\Delta N}$			
A		(0.5 ÷ 2) $I_{\Delta N}$			

Contact voltage Ut

Range (V)	Resolution (V)	Accuracy	Category of measure
0 ÷ 2Utlim	0.1	-0%, +(2.0%rdg + 2dgt)	CAT III 240V to Ground CAT III 415V between inputs

Utlim (Ul): 25V , 50V

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

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

(*) 0.1mΩ in 0.0 ÷ 199.9 mΩ range (with option accessory IMP57)
Maximum peak current: 3A @ 127V, 6A @ 230V, 10A @ 400V
Test voltage: (110÷240V) ±10% (P-N, P-PE) ; 50Hz ± 0.5Hz, 60Hz ± 0.5Hz
(110÷415V) ±10% (P-P); 50Hz ± 0.5Hz, 60Hz ± 0.5Hz

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

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

Utlim (Ul): 25V , 50V

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

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

Utlim (Ul): 25V , 50V

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

Range (V)	Results displayed	Category of measure
(100 ÷ 240) ±10%	"123" → correct phase sequence "132" → wrong phase sequence "11-" → 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 ± 0.5Hz, 60Hz ± 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
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, -3, -6, -7
Technical literature:	IEC/EN61187
Safety of accessories:	IEC/EN61010-031, IEC/EN61010-2-032
RCD:	IEC/EN61557-6
LOOP P-P, P-N, P-PE:	IEC/EN61557-3
Ra 15_{mA}	IEC/EN61557-3
123:	IEC/EN61557-7
Insulation:	double insulation
Pollution degree:	2
Overvoltage category:	CAT III 240V to ground, 415V between inputs
Overvoltage category of the AUX input:	5V to ground
Max altitude of use:	2000m

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