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

宇宏企業股份有限公司
台北：三重區重新路五段609巷16號6樓之1
TEL:02-22782269 FAX:02-22782059
http://www.fluke-tektronix.tw
新竹：新竹縣竹北市台元26號4樓之10
TEL:03-552-6779 FAX:03-552-6739
http://www.radiotek.com.tw

1. TECHNICAL SPECIFICATIONS – DMM FUNCTIONS

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

DC VOLTAGE (Autorange)

Range	Resolution	Accuracy	Input impedance	Overload protection
1.0mV ÷ 999.9mV	0.1mV	±(0.5%rdg + 2 dgt)	1MΩ	605Vrms max
1.000V ÷ 9.999V	1mV			
10.00V ÷ 99.99V	10mV			
100.0V ÷ 605.0V	100mV			

AC VOLTAGE TRMS (Autorange)

Range	Resolution	Accuracy (30 ÷ 70Hz)	Accuracy (70 ÷ 400Hz)	Input Impedance	Crest factor
1.0mV ÷ 999.9mV	0.1mV	±(1.0%rdg + 2dgt)	±(2.0%rdg+2 dgt)	1MΩ	3
1.000V ÷ 9.999V	1mV				1.5
10.00V ÷ 99.99V	10mV				
100.0V ÷ 605.0V	100mV				

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

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

DC/AC CURRENT TRMS (with external clamp)

Range	Resolution	DC Accuracy	Accuracy (30 ÷ 70Hz)	Accuracy (70 ÷ 400Hz)	Crest factor	Overload protection
1.0mV ÷ 999.9mV	0.1mV	±(0.5%rdg+2 dgt)	±(1.0%rdg+2 dgt)	±(2.0%rdg+2 dgt)	3	605Vrms max
1.000V ÷ 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 ÷ 999.9mV	0.1mV	±(5.0%rdg+10 dgt)	500 ms	605Vrms max
	1.000V ÷ 1.200V	1mV			
PEAK	10.0mV ÷ 999.9mV	0.1mV		1ms	
	1.000V ÷ 3.000V	1mV			

RESISTANCE AND CONTINUITY TEST

Range	Resolution	Accuracy	Continuity test	Overload protection
0.00Ω ÷ 39.99Ω	0.01Ω	±(1.0%rdg+5 dgt)	R ≤40Ω	605Vrms max for 1 minute
40.0Ω ÷ 399.9Ω	0.1Ω			
400Ω ÷ 3999Ω	1Ω			
4.00kΩ ÷ 39.99kΩ	10Ω			

FREQUENCY (with test leads)

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

FREQUENCY (with external clamp)

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

2. TECHNICAL SPECIFICATIONS – VERIFY TESTS

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

RCD Tripping time

Range (ms)	Resolution (ms)	Accuracy	Overload protection
2 ÷ 400	1	±(2.0% rdg + 2dgt)	605Vrms max

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

Global Earth Resistance

Test current	Range (Ω)	Resolution (Ω)	Accuracy	Overload protection
15mA	1 ÷ 1999	1	±(5.0% rdg + 2dgt)	605Vrms max
100mA	0.1 ÷ 199.9	0.1	±(5.0% rdg + 3dgt)	

Phase-Earth voltage: 110V ÷ 265V
Frequency: 50Hz ± 0.5Hz / 60Hz ± 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 ÷ 315 (Phase – Earth)	45 ÷ 65	up to 315 (Phase – Earth) up to 550V (Phase – Phase)
CONFORMITY			

PHASE SEQUENCE / CONFORMITY (2 wre measurement)

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

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
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:	
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, 3, 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