

**FINERO** *The Quality Control Company*



# Quanti MHI

**DMM - HIGH VOLTAGE - INSULATION RESISTANCE**

**Reliable, Rugged, Fast, Accurate, Intrinsically Safe & Easily Programmable Measurements**

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## DMM - M

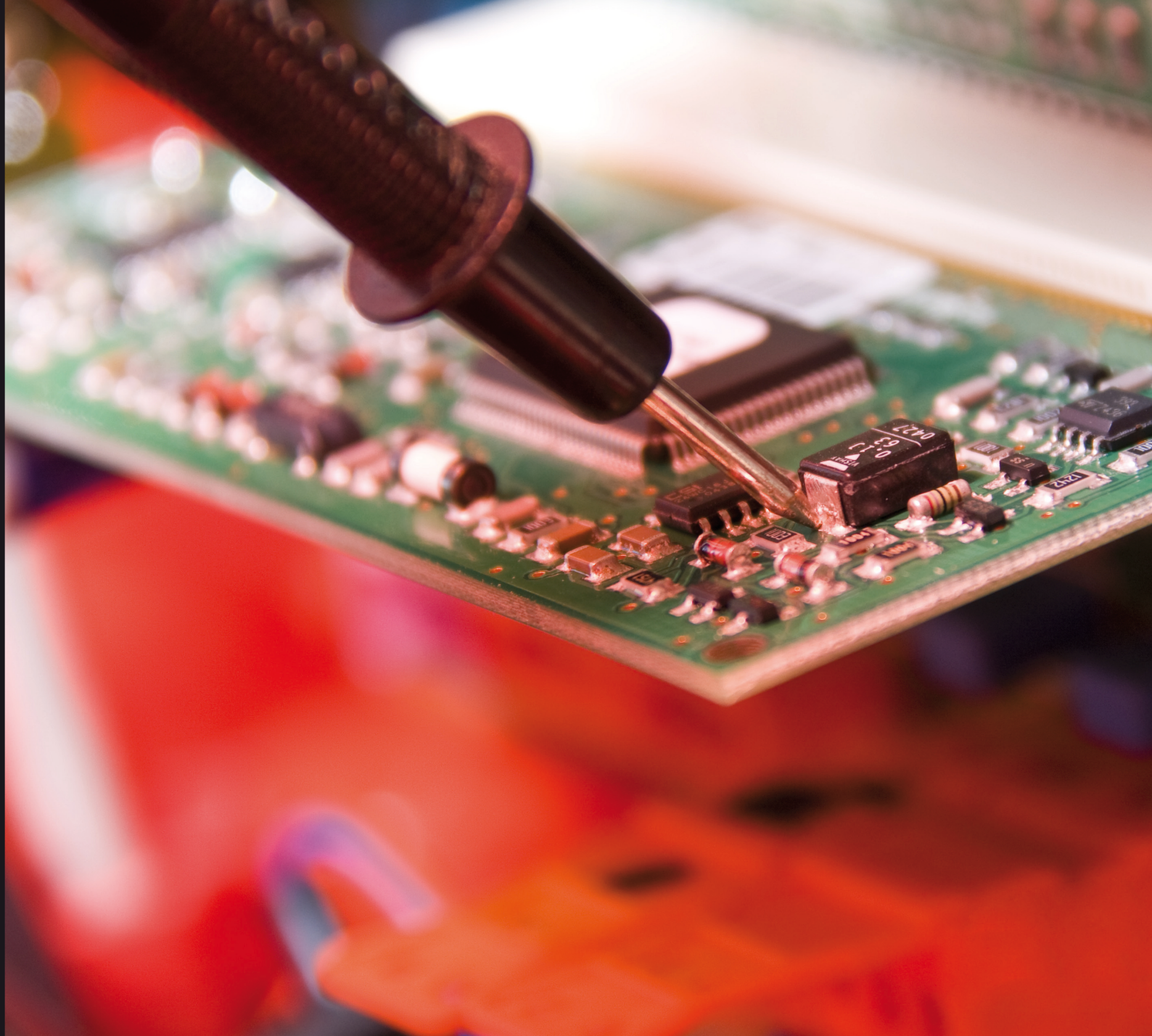


### WHY?

DMM usually combines several measurement functions in one unit. A typical multimeter may include features such as the ability to measure voltage, current and resistance. DMM is used in R&D, type tests and production test.

DMM FUNCTION SPECIFICATIONS			
MEASUREMENT FUNCTION	RANGE		ACCURACY % OF RANGE
VOLTAGE DC	100mV 1V 10V 100V 1000V		0.025
RESISTANCE 2 WIRE	100Ω		0.05
	1kΩ		0.05
	10kΩ		0.05
	100kΩ		0.05
	1MΩ		0.1
	10MΩ		0.25
	100MΩ		2.5
CURRENT DC	10mA 100mA 1A 10A		0.1
10Hz - 120kHz VOLTAGE AC TRMS	100mV 1V 10V 100V 750V	10Hz - 50Hz	1
		50Hz - 100Hz	0.5
		100Hz - 25kHz	0.25
		25kHz - 120kHz	1
20Hz - 5kHz CURRENT AC TRMS	10mA 100mA 1A 10A		0.5
FREQUENCY	PERIOD RANGE		% OF RANGE
3Hz - 500kHz (For 0.1V - 750V AC RMS)	333msec - 2μsec		0.01 %





## **ALL THE TOOLS FOR ACCURATE MEASUREMENTS**

**VOLTAGE DC RANGE 100mV - 1000V**

**RESISTANCE 2 WIRE RANGE 100Ω - 100MΩ**

**CURRENT DC TRMS 10mA - 10A**

**VOLTAGE AC TRMS 100mV - 750V**

**CURRENT AC TRMS FREQUENCY 3Hz - 500kHz**

**4½ DIGITS**

With Quanti's digital multimeter, you will get all the tools you need at an affordable price without compromising the quality. It provides a broad range of features and measurement functions such as DC voltage, DC current, true-RMS AC voltage and AC current, resistance, frequency, which are designed to meet general industrial needs.

## DIELECTRIC WITHSTAND - H

### WHY?

Hipot test or also called a Dielectric Withstand test verifies that the insulation of a product or component is sufficient to protect the operator from electrical shock. In a typical Hipot test high voltage is applied between a product's current carrying conductors and for instance its metallic chassis. Hipot equipment measure extremely low currents like from microamps to milliamps.



DIELECTRIC WITHSTAND (HIPOT) FUNCTION SPECIFICATIONS			
OUTPUT VOLTAGE	0.05V - 6kV AC/DC, Fully floating		
OUTPUT REGULATION	Max $\pm$ (2% of output + 5V) from no load to full load over input voltage range		
VOLTAGE SETTING	Range: AC: 0.05 - 6000V, DC: 0.05 - 6000V Resolution: 5V Accuracy: $\pm$ (1% of reading + 5V)		
VOLTAGE MEASUREMENT	Range: 0.05 - 6000V Resolution: 1V Accuracy: $\pm$ (1% of reading + 5V)		
MAXIMUM OUTPUT CURRENT	100mA AC/DC		
MAX TEST APPARENT POWER	600VA		
MEASUREMENTS	AC Total, AC Real, DC		
CURRENT MEASUREMENT RESOLUTION	1mA : 0.1 $\mu$ A AC/DC 10mA: 1 $\mu$ A AC/DC 100mA: 10 $\mu$ A AC/DC		
CURRENT ACCURACY	AC Total: $\pm$ (0.5% of range + 5 counts) AC Real: $\pm$ (1% of range + 5 counts) DC: $\pm$ (0.5% of range, + 5 counts)		
OUTPUT FREQUENCY	50 or 60 Hz, User selectable		
TEST TIME	AC: 0; 0.3 - 999.9sec (0 = continuous) DC: 0; 0.3 - 999.9sec (0 = continuous)		
RAMP TIME	AC: 0.1 - 99.9sec; No Ramp DC: 0.1 - 99.9sec; No Ramp, $\tau$ << Ramp time		
OUTPUT WAVEFORM	True Sine wave, THD < 1 %		
HI AND LO LIMIT	AC TOTAL	AC REAL	DC
	Range: 100mA Resolution: 10 $\mu$ A Range: 10mA Resolution: 1 $\mu$ A	Range: 100mA Resolution: 10 $\mu$ A Range: 10mA Resolution: 1 $\mu$ A	Range: 10mA Resolution: 1 $\mu$ A Range: 1mA Resolution: 0.1 $\mu$ A
	Lo Limit: 0 = OFF		
MEASUREMENT CIRCUIT DISCHARGE TIME	< 0.2sec, see max. capacitive loads		
MAXIMUM CAPACITIVE LOAD IN DC MODE	0.03 $\mu$ F $\leq$ 6kV 0.5 $\mu$ F $\leq$ 3kV 1 $\mu$ F $\leq$ 1kV		
MEASUREMENT SAFETY	Fully floating output <sup>1</sup>		
ARC DETECTION	Setting mode: Programmable setting Minimum pulse width: < 5 $\mu$ sec or > 5 - 100 $\mu$ sec Detection current: Programmable 1 - 20mA		

1) Except with some combination with other functions



## ENSURING CONNECTIVITY

For optimum quality process control the connectivity to the DUT has to be ensured. Quanti gives the user several options to check this. The user can select either automatic or manual mode connectivity check. The parameters can be adjusted in order to meet high quality control standards and optimum yield.

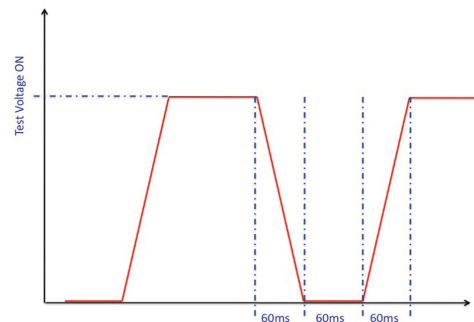
## 1, 2 AND 4 CHANNEL SIMULTANEOUS MEASUREMENT POSSIBLE

## ARC DETECTION

Arc is electrical spark occurred by voltage or current quickly changing. There should be no “sparking” in a Hipot test. Arc detection can help you to solve product quality issues.

## MINIMUM TEST CYCLE 1,2 SEC

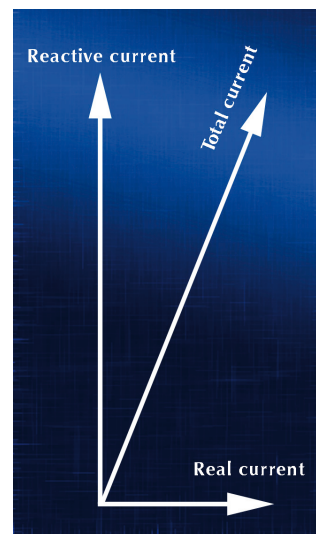
Exceptional high speed (see the diagram) allows to build ultra high speed high volume production test lines. This diagram shows how fast the test cycle can be. With minimum test time of 1sec the overall test cycle time is 1.18sec only. And this for all channels.



## TOTAL AND REAL CURRENT MEASUREMENTS

Real Current measurement allows operators to monitor total and real current on a single screen. When testing highly capacitive devices, it is often desirable to make a distinction between real and total current.

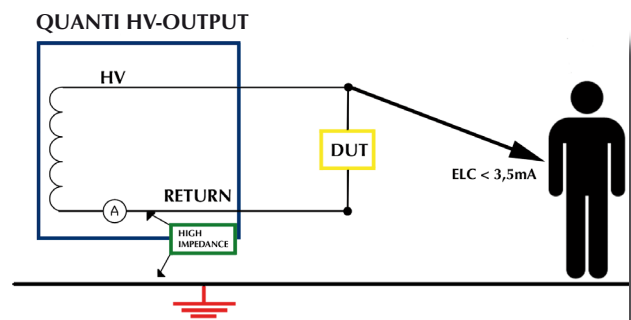
Total current is the vector sum of resistive and capacitive leakage current (see picture on the right). If the tester monitors only the total current, a substantial change in real current can often go undetected. The ability to separate the real and capacitive currents is an important requirement for AC Hipot testing. Nowadays some test requirements clearly specify the measurement of real rather than total current.



**DANGER: HIGH VOLTAGE**

## INTRINSICALLY SAFE - FLOATING OUTPUT

A floating electrical circuit is created by separating grounds; one for the operator, one for the equipment. This method creates an intrinsically safe operator environment. (please see the picture on the right).



## INSULATION RESISTANCE - I



### WHY?

Insulation resistance test is one of the tests that are required by the electrical safety testing standards. The test measures insulation resistance of a Device Under Test, while phase and neutral are short circuited together.

### INSULATION RESISTANCE FUNCTION SPECIFICATIONS

OUTPUT VOLTAGE	Range: 50 - 1000V DC Resolution: 1V Accuracy: ± 0.5% of range			
RESISTANCE MEASUREMENT	Range: 0.5MΩ - 50 000MΩ (5 digit, Auto range)			
	Resolution:		MΩ	MΩ
			0.001	0.500 - 9.999
			0.01	1.00 - 99.99
			0.1	10.0 - 999.9
			1	100 - 50 000
Accuracy: ± 5% to ± 15% depending upon the voltage and the selected range				
50 - 499V DC: 0.5MΩ - 999.9MΩ, ± (5% of reading +2 counts) 1000MΩ - 9999MΩ, ± (8% of reading +2 counts) 10000MΩ - 50000MΩ, ± (17% of reading +2 counts)				
500 - 1000V DC: 0.5MΩ - 999.9MΩ, ± (3% of reading +2 counts) 1000MΩ - 9999MΩ, ± (6% of reading +2 counts) 10000MΩ - 50000MΩ, ± (15% of reading +2 counts)				
RAMP TIME	Ramp up: 0.1 - 99.9sec; No Ramp Ramp down: 0.1 - 99.9sec; No Ramp			
TEST TIME	0; 0.3 - 999.9sec (0 = continuous)			
HI AND LO LIMIT (MΩ)	Range: 0.500 - 0.999 Resolution: 0.001	Range: 1.00 - 9.99 Resolution: 0.01	Range: 10.0 - 99.9 Resolution: 0.1	Range: 100 - 50 000 Resolution: 1
	Hi Limit: 0 = OFF			





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## OUTPUT VOLTAGE 50 - 1000V DC

Quanti measures insulation resistance in electrical systems and equipment such as: electrical machines, household appliances, transformers, cables, power supplies and so on. Measuring range is from  $0.5\text{M}\Omega$  to  $50\text{G}\Omega$ .

## VOLTAGE RESOLUTION 1V

## VOLTAGE ACCURACY $\pm 0.5\%$ OF RANGE

## RESISTANCE MEASUREMENT ACCURACY $\pm 5\%$ TO $\pm 15\%$

## RAMP TIMER

The voltage is ramped up from zero to the final value. Once the voltage reaches the selected value, it is kept at that value for a brief period (typically up to 5 seconds) before the resistance value is measured.

