

Agilent Handheld Tools

for electronic, electrical and industrial process testing



- Digital multimeters
- Digital oscilloscopes
- Clamp meters

- Multifunction calibrator meter
- LCR meters
- Capacitance meters



Agilent Technologies



Go Further with Agilent Handheld Tools

Agilent is the world's premier measurement company and a technology leader in communications, electronics, life sciences and chemical analysis. Recognizing the increasing demand for tools that are portable, accurate and yet affordable, Agilent offers handheld instruments which include digital multimeters, oscilloscopes, clamp meters, capacitance and LCR meters and multi-function calibrator/meter for installation and maintenance activities.

These award-winning handheld tools meet critical safety standards while providing a wealth of features and world-class accuracy.

Each handheld comes in vivid orange cases that provide greater visibility and serves to highlight investment protection through feature sets that go beyond those of typical handhelds.

Digital Multimeters

Whatever your applications are, Agilent's handheld digital multimeters are up to the task. From electronics troubleshooting to installation and maintenance of machinery, our handheld DMMs are designed to withstand the harsh working conditions and improve safety. Our range of handheld DMMs are also equipped with smart features to help you quickly detect problems and obtain accurate measurements.

Recommend- ed for	Installation and maintenance of power distribution and supplies			Installation and maintenance of machinery, electrical systems		Electronics troubleshooting			Industrial	
Model no.	U1211A	U1212A	U1213A	U1241B	U1242B	U1251B	U1252B	U1253B	U1271A	U1272A

DISPLAY

Display resolution (counts)	4,000	4,000	4,000	10,000	10,000	50,000	50,000	50,000	30,000	30,000
Dual display	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Analog bar-graph	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Back-light	Yes	Yes	Yes	Yes (two inten- sity levels)	Yes (two inten- sity levels)	Yes	Yes	OLED Display	Yes	Yes

BASIC FEATURES

AC bandwidth	400 Hz	400 Hz	2 kHz	2 kHz	2 kHz	30 kHz	100 kHz	100 kHz	20 kHz	100 kHz
True RMS	AC	AC	AC + DC	AC	AC	AC	AC + DC	AC + DC	AC	AC + DC
Auto manual/ Ranging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

MEASUREMENTS

Voltage AC/DC: Range	400 V to 1000 V	400 V to 1000 V	4 V to 1000 V	1 to 1000 V	1 to 1000 V	50 mV to 1000 V	50 mV to 1000 V	50 mV to 1000 V	300 mV to 1000 V	30 mV to 1000 V
Current AC/ DC: Range	ACI: 40 A to 1000 A	40 A to 1000 A	40 A to 1000 A	1 mA to 10 A	1 mA to 10 A	500 μ A to 10 A	500 μ A to 10 A	500 μ A to 10 A	300 μ A to 10 A	300 μ A to 10 A
Resistance: Range	400 Ω to 4 k Ω	400 Ω to 4 k Ω	400 Ω to 40 M Ω	1 k Ω to 100 M Ω	1 k Ω to 100 M Ω	500 Ω to 500 M Ω	500 Ω to 500 M Ω	500 Ω to 500 M Ω	300 Ω to 100 M Ω	30 Ω to 300 M Ω
Frequency: Range	99.99 Hz to 999.9 kHz	99.99 Hz to 999.9 kHz	99.99 Hz to 999.9 kHz	100 Hz to 1000 kHz	100 Hz to 1000 kHz	99.999 Hz to 999.99 kHz	99.999 Hz to 999.99 kHz	99.999 Hz to 999.99 kHz	99.999 Hz to 999.99 kHz	99.999 Hz to 999.99 kHz
Capacitance: Range	400 μ F to 4000 μ F	400 μ F to 4000 μ F	4 μ F to 4000 μ F	1 μ F to 10 mF	1 μ F to 10 mF	10 nF to 100 mF	10 nF to 100 mF	10 nF to 100 mF	10 nF to 10 mF	10 nF to 10 mF
Temperature: Type, Range	-	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C	K: -40 $^{\circ}$ C to 1000 $^{\circ}$ C	K: -40 $^{\circ}$ C to 1000 $^{\circ}$ C J: -40 $^{\circ}$ C to 1000 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C J: -210 $^{\circ}$ C to 1200 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C J: -210 $^{\circ}$ C to 1200 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C	K: -200 $^{\circ}$ C to 1372 $^{\circ}$ C J: -200 $^{\circ}$ C to 1200 $^{\circ}$ C

Recom- mended for	Installation and maintenance of power distribution and supplies			Installation and maintenance of machinery, electrical systems		Electronics troubleshooting			Industrial	
Model no.	U1211A	U1212A	U1213A	U1241B	U1242B	U1251B	U1252B	U1253B	U1271A	U1272A

MEASUREMENTS

Continuity with beeper	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Diode test	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

DATA MANAGEMENT

Min/max recording	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Display hold	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peak hold	Yes	Yes	Yes	-	-	Yes	Yes	Yes	Yes	Yes
Manual datalogging	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Null	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PC connectivity	-	-	-	-	-	IR-USB	IR-USB	IR-USB	IR-USB	IR-USB
% scale of 4-20 mA	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes

GENERAL

Operating temperature	-10 °C to 50 °C, 0 to 80% R.H	-10 °C to 50 °C, 0 to 80% R.H	-10 °C to 50 °C, 0 to 80% R.H	-10 °C to 55 °C, 0 to 80% R.H	-10 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H
Measurement category	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V	CAT III 1000 V/ CAT IV 600 V
Battery type (included)	9 V	9 V	9 V	4x AAA	4x AAA	9 V	7.2 V (recharge- able)	7.2 V (recharge- able)	4x AAA	4x AAA
Battery life	60 hours	60 hours	60 hours	300 hours	300 hours	72 hours	36 hours	8 hours	300 hours	300 hours
Dimensions (HxWxD)	273.0 mm x 106.0 mm x 43.0 mm	260.0 mm x 106.0 mm x 43.0 mm	260.0 mm x 106.0 mm x 43.0 mm	193.8 mm x 92.2 mm x 58.0 mm	193.8 mm x 92.2 mm x 58.0 mm	203.5 mm x 94.4 mm x 59.0 mm	203.5 mm x 94.4 mm x 59.0 mm	203.5 mm x 94.4 mm x 59.0 mm	207.0 mm x 92.0 mm x 59.0 mm	207.0 mm x 92.0 mm x 59.0 mm
Advanced functions	Clamp Opening of 52 mm /2"	Clamp Opening of 52 mm /2"	Clamp Opening of 52 mm /2"	Switch counter	Switch counter, harmonic ratio, dual and differential tem- perature measure- ments	-	20 MHz frequency counter, program- mable square wave generator	Organic LED display, 20 MHz frequency counter, program- mable square wave generator	Low pass filter, AC and/or DC voltage check	Low pass filter, low impedance mode, offset compensa- tion

U1270 Series – Handheld Digital Multimeters **NEW!**

Shaped to fit, tailored to perform, built to last

Water and dust resistant. Grip-friendly and feature-packed. That's what you get with an Agilent U1270 series handheld DMM. Designed especially to fulfill the needs of industrial handheld users today, Agilent has reinvented the industrial handheld DMM to provide:



- Feature sets that meet traditional industrial requirements and improve productivity such as low impedance mode, low pass filter, offset compensation
- Both visual and audible continuity indication in noisy environments
- Dust and water resistant casing (certified to IP 54)
- Easy access to fuse for simplified maintenance
- Easy connectivity to PC and internal memory for data logging
- Better grip
- Large knob and buttons

Applications with U1270 Series Handheld Digital Multimeters

Key functions

Low Pass Filter (LPF)

In alternating current (AC) electric motor related applications such as the temperature control system in chiller rooms or conveyor drives, the efficiency of the motor is very important to reduce operating costs and improve productivity. Therefore, technicians need to perform routine servicing and repairs on the motors and variable-frequency drive (VFD). The VFD is especially important as it controls the rotational speed of the electric motor by regulating the frequency of the electrical power supplied to the motor.

Sometimes, a maintenance check on the motor and VFD reveals that the actual output voltage and frequency from the VFD differs from the readings on the VFD display. This shows that the VFD might be faulty and may therefore need replacement or repair. The difference in voltage readings could also be contributed by harmonics produced by the output of the VFD. This problem must be addressed quickly because if this situation prolongs, the motor may overheat and eventually fail, causing downtime.

It is difficult to identify the root cause of this error using a typical wide bandwidth handheld digital multimeter (DMM). A handheld multimeter with a built-in low pass filter would help technicians to quickly determine if the problem is contributed by unwanted high frequency components generated by the VFD. The Agilent U1270 Series handheld DMMs offer a 1 kHz low pass filter to provide accurate VFD output measurement. This function eliminates unwanted high frequency noise signals and components generated by the VFD. Therefore, a technician would be able to reduce troubleshooting time and ultimately reduce system downtime.



Comparison of voltage output from industrial motor VFD without and with Low Pass Filter functionality.

Low impedance mode (Z_{LOW})

Electrical conduit is commonly found in buildings, from manufacturing plants to residential homes. It provides enclosed conductors protection from moisture, chemical vapors and impact. The use of electrical conduit simplifies wiring changes as existing conductors can be withdrawn and new conductors installed with little disruption along the path of the conduit.

Although convenient and safe, unused wires can sometimes run parallel with energized wiring. This may induce capacitive coupling between these wires, causing an undesirable transfer of energy from the energized wiring to the unused wiring. This complicates installation or maintenance of electrical wiring as voltage may be detected on the unused wiring. This is known as 'stray voltage'. This causes complications for technicians, who would have to spend time troubleshooting or isolating wires in order to determine the source of the voltage.

Multimeters with a low impedance mode are able to identify the presence of stray voltages in non-energized wiring. The low impedance mode eliminates false readings by providing a load to the circuit during voltage testing.

The Agilent U1272A is a dual impedance digital multimeter, offering both high and low impedance modes. The DMM's high impedance function can be used in most electrical measurements in the industrial environment because it will not load the circuit under test. Switching to the low impedance mode allows the U1272A to perform accurate measurements on circuits that may contain stray voltages. This eliminates the need of an additional low impedance multimeter, such as a solenoid tester. If this mode is used when real voltage is present, the Agilent U1272A has a built-in positive temperature coefficient (PTC) thermistor as an overcurrent protection element.

Smart Ω

In integrated circuit (IC) manufacturing plants, ground continuity measurements on workstations are important to ensure that electrostatic discharge (ESD) is minimized. As electronic components become further miniaturized, these components are more sensitive to ESD. In order to maintain a workstation, the common ground point for continuity to earth or electrical ground should be checked periodically.

During this continuity check, leakage current may be found flowing through the common ground conductor to earth ground. This leakage current causes inaccurate ground continuity measurement.

The Agilent U1272A handheld digital multimeter (DMM) allows you to read the leakage current with its Smart Ω function. With the U1272A's dual display and 30 Ohms range, you can obtain accurate resistance measurement and read leakage current simultaneously.

Specifications of the U1270 Series Digital Multimeters

		U1271A	U1272A
Basic Features			
Display resolution		30,000	30,000
Auto/manual ranging		Yes	Yes
Analog bar graph		Yes	Yes
Backlight		Yes	Yes
AC bandwidth		20 kHz	100 kHz
True RMS		AC	AC + DC
Measurements			
Voltage DC	Range Accuracy	300 mV to 1000 V 0.05% + 2 cnts	30 mV to 1000 V ★ 0.05% + 2 cnts
Voltage AC	Range Accuracy Bandwidth	300 mV to 1000 V 0.7% + 20 cnts 45 Hz to 20 kHz	30 mV to 1000 V ★ 0.6% + 20 cnts 45 Hz to 100 kHz
Current DC	Range Accuracy	300 μ A to 10 A 0.2% + 5 cnts	300 μ A to 10 A ★ 0.2% + 5 cnts
Current AC	Range Accuracy Bandwidth	300 μ A to 10 A 0.9% + 25 cnts 45 Hz to 2 kHz	300 μ A to 10 A 0.6% + 25 cnts 45 Hz to 2 kHz
Resistance	Range Accuracy	300 Ω to 100 M Ω 0.2% + 5 cnts	30 Ω to 300 M Ω ★ 0.2% + 5 cnts
Frequency	Range Accuracy	99.999 Hz to 999.99 kHz 0.005% + 5 cnts	99.999 Hz to 999.99 kHz 0.005% + 5 cnts
Capacitance	Range Accuracy	10 nF to 10 mF 1% + 2 cnts	10 nF to 10 mF 1% + 2 cnts
Temperature	Range Accuracy	K: -200 to 1372 °C 1% + 1 °C	K: -200 to 1372 °C J: -200 to 1200 °C 1% + 1 °C
Continuity with beeper		Yes	Yes
Diode test		Yes	Yes

	U1271A	U1272A
Data Management		
Min/Max Recording	Yes	Yes
Display Hold	Yes	Yes
Peak Hold	Yes	Yes
Manual Datalogging	Yes	Yes
Null	Yes	Yes
PC Connectivity	IR-USB	IR-USB
% scale of 4-20 mA	Yes	Yes
Special Features ★		
Beep + Backlight Alert	Yes	Yes
Low Pass Filter (LPF)	Yes	Yes
Z _{LOW} - Low impedance mode	-	Yes
Smart Ω	-	Yes
Qik-V	Yes	-
Safety and Regulatory		
Over-voltage safety protection	CAT III 1000 V, CAT IV 600 V	CAT III 1000 V, CAT IV 600 V
EN/IEC 61010-1:2001 compliance	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes
General		
Operating temperature	-20 °C to 55 °C, 0 to 80% R.H	-20 °C to 55 °C, 0 to 80% R.H
Battery (included)	4x AAA	4x AAA
Battery life	300 hours	300 hours
Warranty	3 years	3 years
Dimensions (HxWxD)	207.0 mm x 92.0 mm x 59.0 mm	207.0 mm x 92.0 mm x 59.0 mm

★ represents key specifications/feature

For complete specifications, please refer to data sheet 5990-6425EN

Recommended Accessories



U1171A Magnetic hanging kit



U1174A Soft carrying case



U1173A IR-to-USB cable



U1180A Thermocouple adapter/lead kit

Web Link

www.agilent.com/find/handhelddmm



How to?

Test for stray voltage using the U1272A

<http://cp.literature.agilent.com/litweb/pdf/5990-6517EN.pdf>

U1240 Series - Handheld Digital Multimeters

Check more, fix more, spend less

Installation and maintenance of machinery, electrical systems and more often require numerous quick checks and fixes, sometimes under hazardous conditions. Whether you need to quickly inspect power supplies for harmonics, detect glitches in switch systems or monitor differential temperature, the U1240 Series of handheld digital multimeters (DMMs) is up to the task. With all you need in one portable instrument, you can travel light and finish the day's work with ease. Plus, you'll be glad to know it's easy to own one, even with the DMM's rich capabilities.

Features

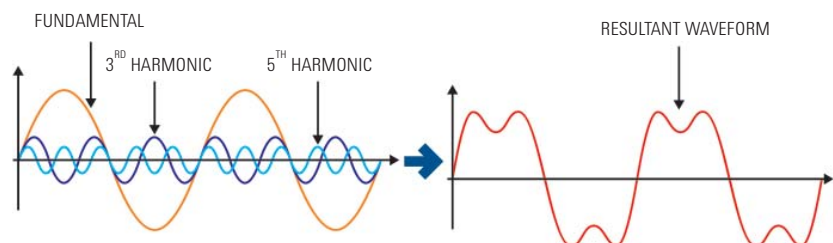
- Low micro-amp and high Mega-ohm ranges
- Switch/Relay counter for glitch detection
- Harmonic ratio measurement in AC supplies
- Dual and differential temperature measurements
- Data logging to instrument on the go



Applications with U1240 Series Handheld Digital Multimeters

Harmonic ratio measurement for maintenance of facilities, motors, generators and transformers

Any periodic waveform other than an absolutely pure sine wave has some amount of harmonic content. If these unwanted multiples of the fundamental frequency become too large, they have unwanted side effects: overheating that shortens the lifespan of motors, generators and transformers; premature tripping of circuit breakers; and blown fuses.



When harmonics are present, the shape of an original sinusoidal waveform becomes distorted, producing a non-zero harmonic ratio.






Regular maintenance with an accurate, dependable DMM ensures early detection of harmonics in the AC supply. One of the quickest ways to detect and gauge the percentage of distortion due to harmonics is to measure the harmonic ratio of the incoming AC voltage.

The U1240 Series offers a fast one-button check with its harmonic ratio function. The ratio percentage helps you decide if further analysis of the power source is necessary with an oscilloscope or a spectrum analyzer.

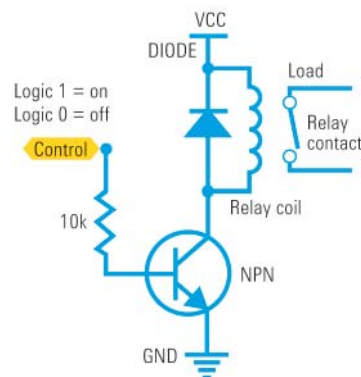
$$\text{Harmonic ratio} = \frac{V_{rms} - V_{avg}}{V_{rms}} \times 100\%$$

\downarrow V_{rms} \downarrow V_{avg}

Measuring Circuit		RMS-calculating converter calculates heating value	Multiplies rectified average by 1.1
Response To Sine Wave		Correct	Correct
Response To Square Wave		Correct	10% high
Response To Distorted Wave		Correct	Up to 50% low

Switch counter for detection of glitches on switch and relay systems

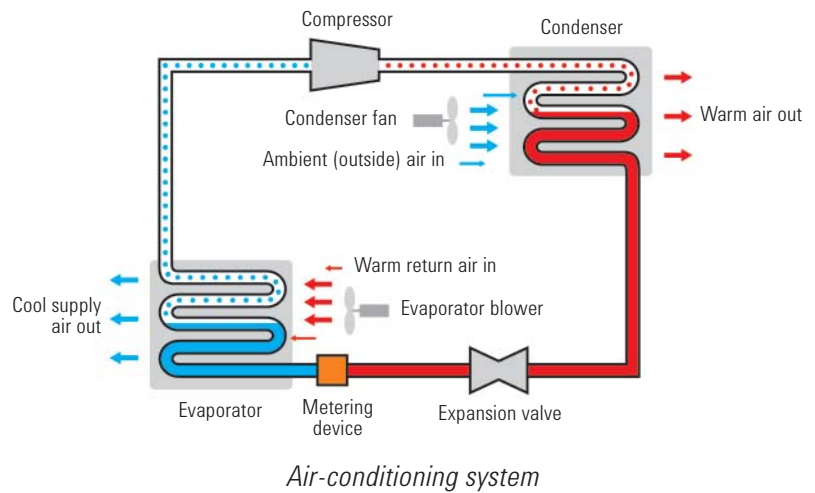
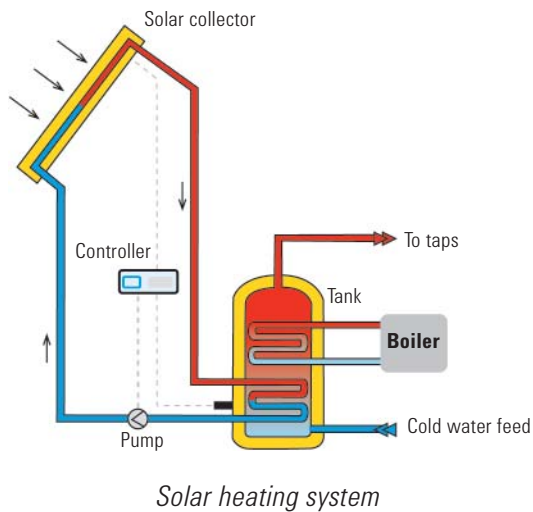
Careful maintenance of the switches and relays used in facilities and machinery helps ensure that they're operating as expected in their OPEN or CLOSED settings. You can check their performance with just one button using the U1240 Series' switch counter function. This function detects intermittent OPEN or CLOSED occurrences across relay/switch contacts in the reversed setting. The total count indicates the extent of relay/switch faults and determines if further troubleshooting is necessary.



Dual and differential temperature for efficient testing of HVAC systems



Whether you're installing, maintaining or troubleshooting heating, ventilation and air-conditioning (HVAC) systems in cars, offices, factories, stores or homes, temperature measurements are crucial. For example, to ensure boiler temperature meets safety requirements, you'd have to measure boiler and air temperature simultaneously to get accurate real-time readings. With a faulty air conditioning system, viewing the temperature difference between warm return air and cool supply air helps reveal the cooling behavior of the evaporator with respect to time. With the U1240 Series, you need just one instrument for convenient, efficient dual and differential temperature measurements.



Specifications of the U1240 Series Digital Multimeters

	U1241A/U1241B	U1242A/U1242B
Display		
Counts	10,000 ★	10,000 ★
Analog bar graph	•	•
Backlight	Dual-intensity ★	Dual-intensity ★
Back Features		
True RMS	AC	AC
Basic DCV accuracy	0.09%	0.09%
Auto/Manual ranging	•	•
Measurements		
Voltage AC/DC	1000 V	1000 V
Current AC/DC	10 A (down to microamps) ★	10 A (down to microamps) ★
Resistance	100 MΩ	100 MΩ
Frequency	200 kHz	200 kHz
Capacitance	0.1 nF to 10 mF ★	0.1 nF to 10 mF ★
Temperature	1000 °C, K-type thermocouple	1000 °C, K-type thermocouple, T1/T2/T1-T2 ★
Continuity with beeper	•	•
Diode test	•	•
4-20 mA % scale	•	•
Harmonic ratio	—	• ★
Switch countert	• ★	• ★
Data management		
Min/Max/Avg recording	•	•
Data Hold	•	•
Null	•	•
Data logging	—	100 manual, 200 interval points ★
Safety and Regulatory		
Over-voltage safety protection	CAT III 1000 V/CAT IV 600 V	CAT III 1000 V/CAT IV 600 V
EN/IEC 61010-1:2001 compliance	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes
General		
Operating temperature	–10 °C to 55 °C	–10 °C to 55 °C
Battery (included)	4 x AAA	4 x AAA
Battery life	300 hours	300 hours
Warranty	3 years	3 years
Dimensions (HxWxD)	193.8 mm x 92.2 mm x 58.0 mm	193.8 mm x 92.2 mm x 58.0 mm

★ represents key specifications/features

For complete specifications, please refer to data sheet 5989-7040EN

Recommended Accessories



U1162A Alligator clips



U1583B AC current clamp



U1169A Test probe leads



U1171A Magnetic hanging kit



U1186A K-type thermocouple and adapter



U1174A Soft carrying case

Web Link

www.agilent.com/find/handhelddmm



How to ?

Detect Harmonics in AC signals

<http://cp.literature.agilent.com/litweb/pdf/5989-7687EN.pdf>

Select a Handheld DMM that is right for you

<http://cp.literature.agilent.com/litweb/pdf/5990-5197EN.pdf>

U1250 Series - Handheld Digital Multimeters

Be well equipped from the start

The process of isolating faults is always unpredictable—so it's good to be equipped with a versatile DMM that simplifies analysis, accelerates glitch detection and makes it easier to probe hard-to-reach points. The U1250 Series gets even better with the new U1253A/U1253B DMM and its razor-sharp OLED display: You'll get crystal-clear readings indoors, even in dark, off-angle situations. Optimize electronics troubleshooting with the accuracy, capabilities, and accessories you need to get started in no time.

Features

- High contrast ratio of 2000:1 and wide viewing angle of 160°*
- 50,000 counts high resolution and up to 0.025% low error rate
- Built-in square-wave generator and frequency counter
- Includes all essential accessories for electronics troubleshooting
- Smoothing function to stabilize erratic readings*
- Data logging to instrument and PC

* with U1253A/U1253B



*A testament to innovation
and credibility, 2006*



*Best Value Portable
Test Equipment, 2006*



*General-purpose instruments
category, 2009*



*Category Winner, EC&M Product
of the Year competition, 2009*

Applications with the U1250 Series Handheld Digital Multimeters

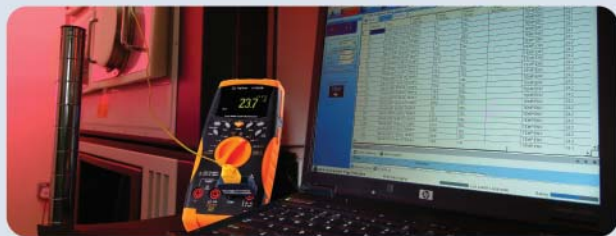
Automated data logging to PC for long, continuous measurements

Qualification and troubleshooting of a device-under-test (DUT) often require long periods of testing, over either different temperatures or parameter settings. A common test would be voltage measurements at room, hot and cold temperatures. In such cases, it's more convenient and efficient to automate recording of measurements while you perform other tasks that are at hand. It's even better if you can record as many data points as required without worrying about the storage capacity of the measuring equipment.

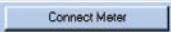
Whatever your measurements, the U1250 Series lets you make easy automated data logging with virtually unlimited saves to PC—so you can be assured that faults are recorded dependably and analyzed sooner.



Event logging setup in minutes—with bundled GUI data-logging software

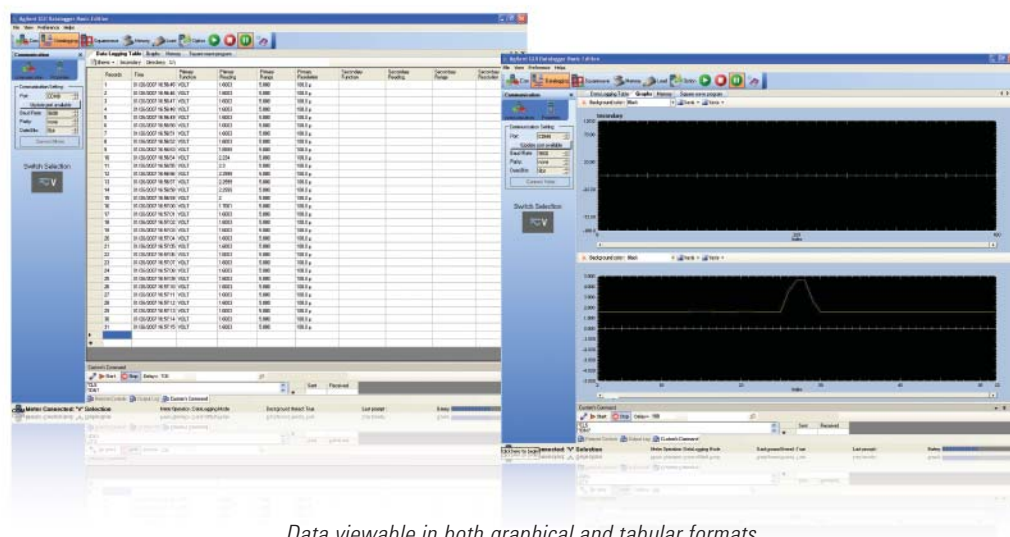
- 1 Connect the optional U1173A IR-USB cable to your U1250 Series DMM and PC



- 2 Open up the GUI data-logging interface

- 3 Click on 

- 4 Click on  and then  to start data logging



Data viewable in both graphical and tabular formats



What others say

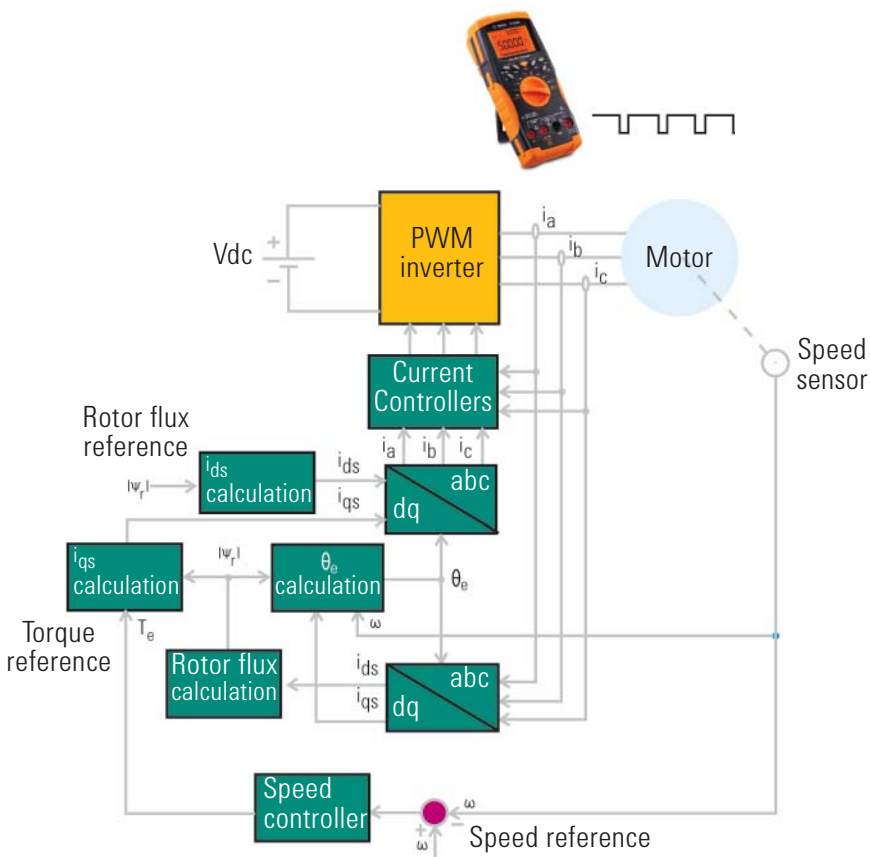
"I can view rapidly changing readings easily with the U1252A's speedy update rate. Its stable voltage/current/resistance readings offer accurate results, particularly for microvolt measurements of load cells."

James G. DuPuy, Service Engineer, Brechbuler Scales Inc. manufacturer of industrial weighing systems and scales

Built-in square-wave generator for designing and troubleshooting motor drivers

In the motor-driver circuit shown, a signal from the pulse-width modulation (PWM) inverter drives the motor and is fed back to the speed controller circuit. In design and troubleshooting applications, these pulses are generated externally—usually with a function generator or pulse generator—and injected into the circuit to simulate actual pulses from the inverter.

With the U1250 Series, you can easily configure the square-wave output of the U1252A/U1252B to generate simple PWM signals—conveniently in one portable, lightweight instrument.



What others say

"We used square-wave output from the DMM for operational checks of digital circuits around an FPGA to verify the power source of a satellite tracking device and the reception signal from GPS. The U1252A makes our job easier by providing multiple measurements and very accurate results."

Hashiguchi, Engineer, ELM Inc., Japan – developer of satellite tracking and other system devices

Specifications of the U1250 Series Digital Multimeters

	U1251A/U1251B	U1252A/U1252B	U1253A/U1253B
Display			
Organic LED	—	—	• ★
Dual display	•	•	•
Counts	50,000 (both displays) ★	50,000 (both displays) ★	50,000 (both displays) ★
Analog bar graph	•	•	•
Backlight	•	•	N/A
Basic features			
True RMS	AC	AC+DC	AC+DC
Basic DCV accuracy	0.03%	0.025%	0.025%
Auto/Manual ranging	•	•	•
Measurements			
Voltage AC/DC	1000 V	1000 V	1000 V
Current AC/DC	10 A	10 A	10 A
Resistance	50 MΩ	500 MΩ	500 MΩ
Frequency	1 MHz	20 MHz	20 MHz
Capacitance	0.001 nF to 100 mF	0.001 nF to 100 mF ★	0.001 nF to 100 mF ★
Temperature	1372 °C, K-type thermocouple ★	1372 °C, J/K-type thermocouple ★	1372 °C, J/K-type thermocouple ★
Continuity with beeper	•	•	•
Diode test	•	•	•
4-20 mA % scale	•	•	•
dB	•	•	•
Frequency counter	—	• ★	• ★
Smoothing function	—	—	• ★
Signal generation			
Square-wave generator	—	0.5 Hz to 4.8 kHz, selectable Hz and % ★	0.5 Hz to 4.8 kHz, selectable Hz and % ★
Data management			
Min/Max/Avg recording	•	•	•
Peak recording	•	•	•
Data Hold	•	•	•
Null	•	•	•
Data logging (requires IR-to-USB cable U1173A for connection to PC)	Internal: 100 manual, 200 interval points To PC: virtually unlimited ★	Internal: 100 manual, 200 interval points To PC: virtually unlimited ★	Internal: 100 manual, 1000 interval points To PC: virtually unlimited ★
Safety and Regulatory			
Over-voltage safety protection	CAT III 1000 V/CAT IV 600 V	CAT III 1000 V/CAT IV 600 V	CAT III 1000 V/CAT IV 600 V
EN/IEC 61010-1:2001 compliance	Yes	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes	Yes
General			
Operating temperature	–20 °C to 50 °C	–20 °C to 50 °C	–20 °C to 50 °C
Battery (included)	Alkaline 9 V	7.2 V Ni-MH rechargeable ★	7.2 V Ni-MH rechargeable ★
Battery life	72 hours	36 hours	8 hours
I/O	IR-USB	IR-USB	IR-USB
Warranty	3 years	3 years	3 years
Dimensions (HxWxD)	203.5 mm x 94.4 mm x 59.0 mm	203.5 mm x 94.4 mm x 59.0 mm	203.5 mm x 94.4 mm x 59.0 mm

★ represents key specifications/features

For complete specifications, please refer to data sheet 5989-5509EN

Recommended Accessories



U1174A Soft carrying case



U1173A IR-to-USB cable



U1180A Thermocouple adapter/lead kit

Web Link

www.agilent.com/find/handhelddmm



How to ?

Get the Best Out of the U1250 series handheld DMM

<http://cp.literature.agilent.com/litweb/pdf/5989-7937EN.pdf>

Generate PWM Waveform Using U1252A DMM

<http://cp.literature.agilent.com/litweb/pdf/5989-6673EN.pdf>

Think Safety when Selecting a Handheld Multimeter

<http://cp.literature.agilent.com/litweb/pdf/5990-4578EN.pdf>

Select a Handheld DMM that is right for you

<http://cp.literature.agilent.com/litweb/pdf/5990-5197EN.pdf>

U1210 Series – Handheld Clamp Meters

Handle big currents – safely

Measurements of electrical distribution cables can be challenging and risky. For cables up to two inches in diameter, the Agilent U1210 Series handheld clamp meters enable high-current measurements without breaking the circuit. Unlike most clamp meters, they also include DMM capabilities—resistance, capacitance, frequency and temperature—to simplify troubleshooting during installation and maintenance. Best of all, they provide an extra layer of protection with CAT IV 600 V and CAT III 1000 V safety ratings.

Features

- Large clamp opening of 52 mm or 2 inches
- High measurement capability of up to 1000 A for AC, DC or AC+DC
- CAT III 1000 V/CAT IV 600 V safety rating
- Includes full-featured DMM with resistance, capacitance, frequency and temperature functions
- High resolution measurements - measure current as low as 0.01 A
- Peak hold capability



Applications with U1210 series Handheld Clamp Meters

Large jaw opening and high-current measurement capability - for installation and maintenance of high-current distribution systems and cables

Current measurements at power distribution sites can be challenging as cables are usually large as they contain high current sources. The need of current measurement methods that are safe and easy add complexity to the task of acquiring accurate current data. Conventionally, a current conductor has to be disconnected to allow probe insertion and this is not only hazardous when high currents are involved, but not convenient as well.



With a two-inch (52 mm) jaw opening, the U1210 Series handheld clamp meters simplify current measurements for thick cables, without breaking the circuit. The clamp meters provide the ability to handle big currents, with current measurement capability of up to 1000 A (AC, DC, AC+DC). This series also enables high resolution measurements, with the ability to measure currents as low as 0.01 mA. You are able to measure in-rush current as well with the clamp meters' peak hold feature.



4-mm-tip probes

The U1210 Series clamp meters offer dual-ranging mode – manual and auto, min/max recording capability and large dual display for additional accessibility when it comes to data collection or analysis.

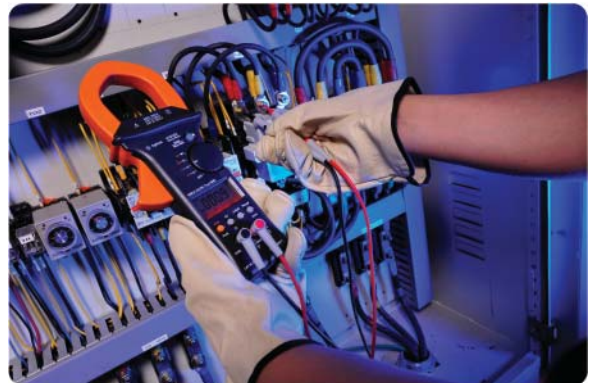
Each clamp meter provides an extra layer of protection with CAT IV 600 V and CAT III 1000 V safety ratings. When performing a measurement with the multimeter, test probes with 4-mm tips (which is bundled with each clamp meter) can be used to further prevent dangerous arc flash if the tips are inadvertently shorted together during probing.

Full-featured digital multimeter functions – make more than just current measurements

The U1210 Series clamp meters are versatile handheld test tools that combine a current clamp with a digital multimeter (DMM).

The U1210 Series provides basic functions of a multimeter with wide measurement ranges to cater for a broad range of applications: ACA, DCV, ACV, OHM, audible continuity, capacitance, diode and frequency tests.

These meters also provide auto-ranging capability, built-in peak hold for in-rush current measurement, temperature and capacitance measurement capability, large backlight display and one-hand operation.



Specifications of the U1210 Series Clamp Meters

	U1211A	U1212A	U1213A
Display			
Dual Display	•	•	•
Counts	4000	4000	4000
Bar-graph	12 segments	12 segments	12 segments
Backlit	•	•	•
Auto power OFF	•	•	•
Basic Features			
True RMS	AC	AC	AC+DC
Auto/Manual Ranging	•	•	•
Measurements			
Voltage DC	0.1 V - 1000 V (0.5%)	0.1 V - 1000 V (0.5%)	1 mV - 1000 V (0.2%)
Voltage AC	0.1 V - 1000 V (1.0%)	0.1 V - 1000 V (1.0%)	1 mV - 1000 V (1.0%)
Current DC	—	0.01 A - 1000 A (1.5%) ★	0.01 A - 1000 A (1.5%) ★
Current AC	0.1 A - 1000 A (1.0%) ★	0.1 A - 1000 A (2.0%) ★	0.01 A - 1000 A (2.0%) ★
Resistance	4 kΩ (0.5%)	4 kΩ (0.5%)	40 MΩ (0.3%)
Capacitance	0.1 μF - 4000 μF (2.0%)	0.1 μF - 4000 μF (2.0%)	1 nF - 4000 μF (1.0%)
Diode	•	•	•
Temperature	—	K-type (-200 to 1372 °C)	K-type (-200 to 1372 °C)
Frequency	•	•	•
Duty cycle	—	—	•
Data Management			
Data Hold	•	•	•
Null	•	•	•
MAX/MIN/AVG	•	•	•
Peak Hold	•	•	•
Safety and Regulatory			
Over-voltage safety protection	CAT III 1000 V/CAT IV 600 V	CAT III 1000 V/CAT IV 600 V	CAT III 1000 V/CAT IV 600 V
EN/IEC 61010-1:2001 compliance	Yes	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes	Yes
General			
Operating temperature	-10 °C to 50 °C	-10 °C to 50 °C	-10 °C to 50 °C
Clamp Opening	2 inches ★	2 inches ★	2 inches ★
Battery (included)	Alkaline 9 V	Alkaline 9 V	Alkaline 9 V
Battery life	60 hours	60 hours	60 hours
Warranty	3 years	3 years	3 years
Dimensions (HxWxD)	273.0 mm x 106.0 mm x 43.0 mm	260.0 mm x 106.0 mm x 43.0 mm	260.0 mm x 106.0 mm x 43.0 mm

Accuracy information shown in brackets is the best accuracy throughout the range.

★ represents key specifications/features

For complete specifications, please refer to data sheet 5990-3459EN

Recommended Accessories



U1168A Standard test lead kit



U1180A Thermocouple adapter/lead kit



U1175A Carrying case

Web Link

www.agilent.com/find/clampmeter



How to ?

Troubleshoot Three-Phase AC Motors with U1210 series Handheld Clamp Meters

<http://cp.literature.agilent.com/litweb/pdf/5990-5192EN.pdf>

Digital Oscilloscopes

U1600 Series - Handheld Digital Oscilloscopes

Make high performance measurements on the go

A scope with a color waveform display. A DMM for basic measurements. A data logger to record DMM readings to a PC. All three capabilities are in one instrument—the U1600 Series of handheld digital oscilloscopes. Designed to address the portability needs of various installation and maintenance applications, these scopes enable clear waveform viewing, easy waveform analysis and quick isolation of signal glitches. With high-performance features loaded into one robust package, mobile troubleshooting is a breeze.

Features

- Built-in DMM and data logger
- Large 4.5-inch color display
- 200 MSa/s high sampling rate and deep memory
- Built-in Quick Help, available in multiple languages
- Data logging to instrument and PC
- Convenient data download to USB flash drive*

* with Option 001



No. 1 Product of the Year
as voted by readers—2006



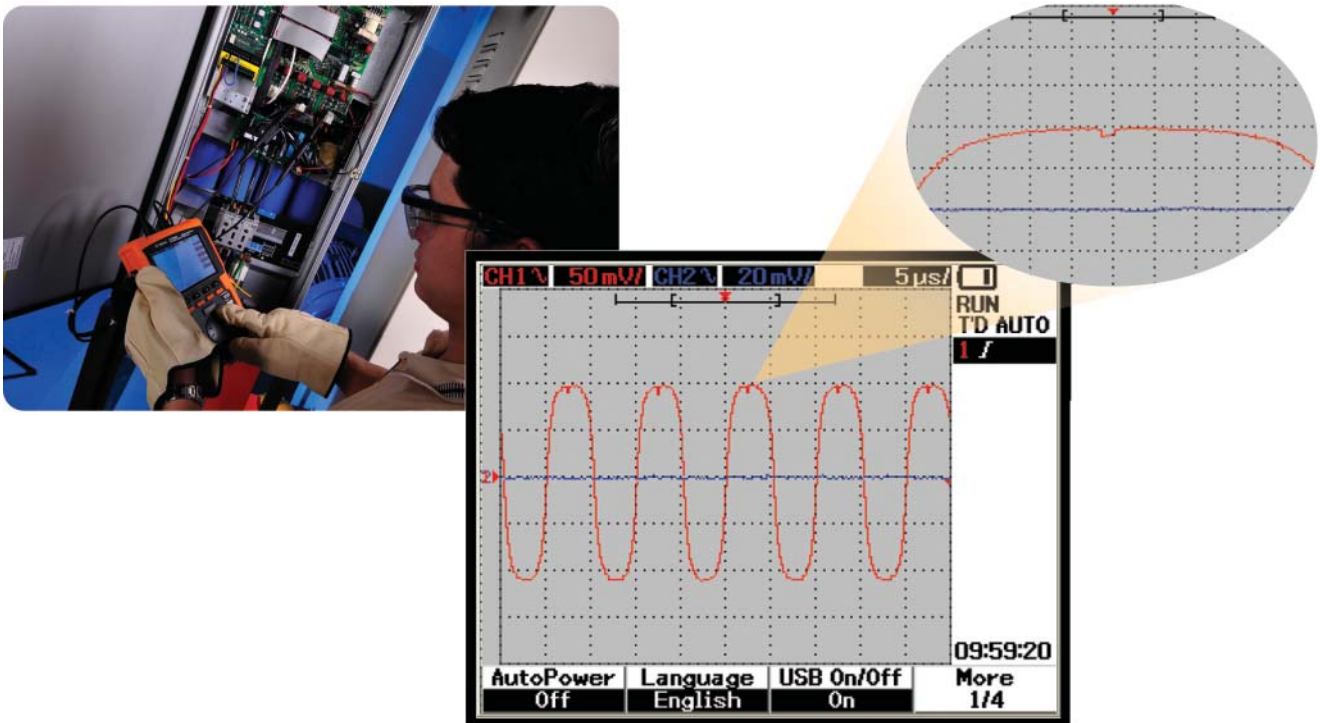
Applications with the U1600 Series Handheld Digital Oscilloscopes

Fast sampling, deep memory—so you won't miss a glitch

Whether a machine is down for repair or maintenance, returning it to service as quickly as possible is crucial. With the U1600 Series, you can carry a scope to the problem knowing you can make measurements without an AC outlet.

One common fault in the printed circuit board assembly (PCA) of such machines is glitches caused by factors ranging from component wear-and-tear to an unclear power source. Effectively capturing these glitches requires a scope with a high sampling rate and deep memory.

The U1600 Series provides 20 MHz and 40 MHz bandwidths with up to 200 MSa/s real-time sampling rate. With its deep memory, you can zoom in on a particular segment of a signal to view even the most subtle details. The scopes also offer advanced triggering types such as edge, pulse width, pattern and video to assist in quick isolation of critical events.

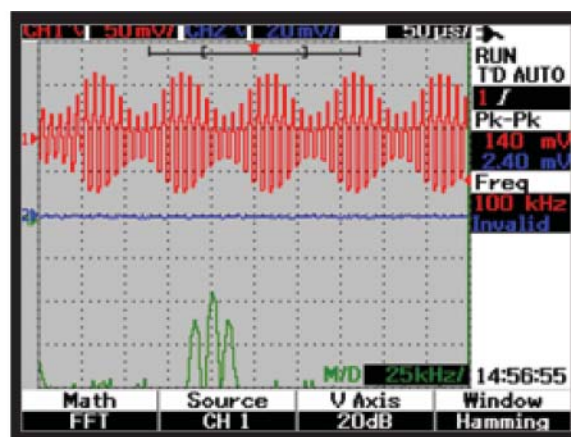


Advanced FFT and waveform math follow wherever you go

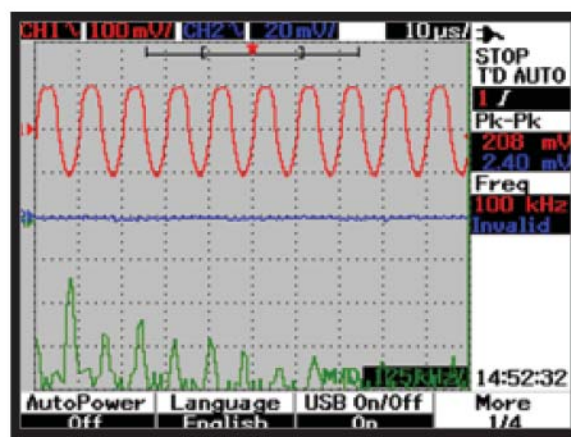
Time is especially precious on the manufacturing line. When a test system fails, quick troubleshooting and analysis is needed to get the line running again as soon as possible.

The portable, lightweight U1600 Series is more convenient than conventional benchtop oscilloscopes. Its small form adds versatility when measuring hard-to-reach points in the test system, and its large color LCD display enables clear viewing of waveforms.

Analysis of complex waveforms is easy with the U1600 Series' dual waveform math (DWM) and fast Fourier transform (FFT) functions. The FFT function provides a frequency-domain view of measurements in four windowing techniques: Rectangular, Hanning, Hamming and Blackman-Harris.



An FFT of the upper waveform reveals three spectral lines that represent the carrier frequency and its sidebands, enabling informative analysis of amplitude-modulated signals.



Although the sine-wave signal seems flawless in the time domain, doing an FFT reveals the presence of harmonic distortion, which is seen as integer-multiple spectral components in the frequency domain.

Specifications of the U1600 Series Digital Oscilloscopes

	U1602A/U1602B	U1604A/U1604B
Display		
General	4.5" color LCD ★	4.5" color LCD ★
Counts (DMM function)	6000	6000
SCOPE		
Channels	2	2
Bandwidth (–3 dB)	DC to 20 MHz	DC to 40 MHz
Maximum sampling rate	100 MSa/s per channel (50 s/div to 250 ns/div) ★ 200 MSa/s single channel and interleaved (125 ns/div) ★	100 MSa/s per channel (50 s/div to 250 ns/div) ★ 200 MSa/s single channel and interleaved (125 ns/div) ★
Maximum recording length	11,100 points for U1602A and 125,000 points for U1602B, viewable on screen with zoom function ★	11,100 points for U1604A and 125,000 points for U1604B, viewable on screen with zoom function ★
Cursor and Zoom functions	•	•
Waveform math	•	•
FFT	–	Rectangular, Hamming, Hanning, Blackman-Harris ★
Automatic measurements	Up to 22 measurements	Up to 22 measurements
Coupling	AC, DC, GND	AC, DC, GND
Input impedance	1 MΩ < 20 pF	1 MΩ < 20 pF
Range	50 ns to 50 s/div	10 ns to 50 s/div
Resolution	2 ns	400 ps
Rise time	< 17.5 ns	< 8.8 ns
Trigger types	Edge, Pattern, Pulse width, Video	Edge, Pattern, Pulse width, Video
Trigger modes	Auto, Normal, Single	Auto, Normal, Single
Internal scope storage	Up to 10 setups and traces	Up to 10 setups and traces
DMM		
True RMS	AC+DC	AC+DC
Voltage AC/DC	600 V	600 V
Current AC/DC	600 A	600 A
Resistance	60 MΩ	60 MΩ
Capacitance	0.01 nF to 300 μF	0.01 nF to 300 μF
Temperature	6000 °C, K-type thermocouple	6000 °C, K-type thermocouple
Continuity with beeper	•	•
Diode test	•	•
DATA LOGGER		
Min/Max/Avg recording	•	•
Data logging (requires bundled USB 2.0 full-speed cable for connection to PC)	Internal: 250 points To PC: virtually unlimited	Internal: 250 points To PC: virtually unlimited
Time span	150 seconds to 20 days (auto range)	150 seconds to 20 days (auto range)

	U1602A/U1602B	U1604A/U1604B
Safety and Regulatory		
Over-voltage safety protection	CAT III 300 V	CAT III 300 V
EN/IEC 61010-1:2001 compliance	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes
General		
Operating temperature	0 °C to 50 °C	0 °C to 50 °C
Battery (included)	Rechargeable Ni-MH	Rechargeable Ni-MH
Battery life	4 hours	4 hours
I/O	<ul style="list-style-type: none"> • USB 2.0 full-speed client for data transfers to PC • USB 2.0 full-speed host for data transfers to USB flash drive (Option 001) 	<ul style="list-style-type: none"> • USB 2.0 full-speed client for data transfers to PC • USB 2.0 full-speed host for data transfers to USB flash drive (Option 001)
Warranty	3 years	3 years
Dimensions (HxWxD)	241.0 mm x 138.0 mm x 66.0 mm	241.0 mm x 138.0 mm x 66.0 mm

★ represents key specifications/features

For complete specifications, please refer to data sheet 5989-5576EN

Recommended Accessories



U1590A Soft carrying case



U1561A 10:1 Scope probe



U1562A 100:1 Scope probe



U1580A DMM terminal test lead set



U1571A Ni-MH battery pack

Web Link

www.agilent.com/find/handheldscope



How to ?

Perform Metal Scrap Sorting Machine Installation with U1600A Series

<http://cp.literature.agilent.com/litweb/pdf/5989-9786EN.pdf>

Multi-function Calibrator/Meter

U1401A/U1401B – Handheld Multi-function Calibrator/Meter

Calibrate while you measure with just one tool

More often than not, the calibration of process control parts requires simultaneous measurements with a DMM. Carry two tools in one—and calibrate while you measure—with the Agilent U1401A/U1401B handheld multi-function calibrator/meter. Now you can travel light, whether you're doing calibration for validation, troubleshooting, or service and maintenance. Slip the robust U1401A/U1401B in its sturdy carrying case and you're ready to go.

Features

- 50,000-count resolution on dual display
- Simultaneous source and measure capabilities
- Bipolar voltage and current, square-wave, auto scan and ramp outputs
- Full-span DMM measurement and recording functions
- Built-in charging capability



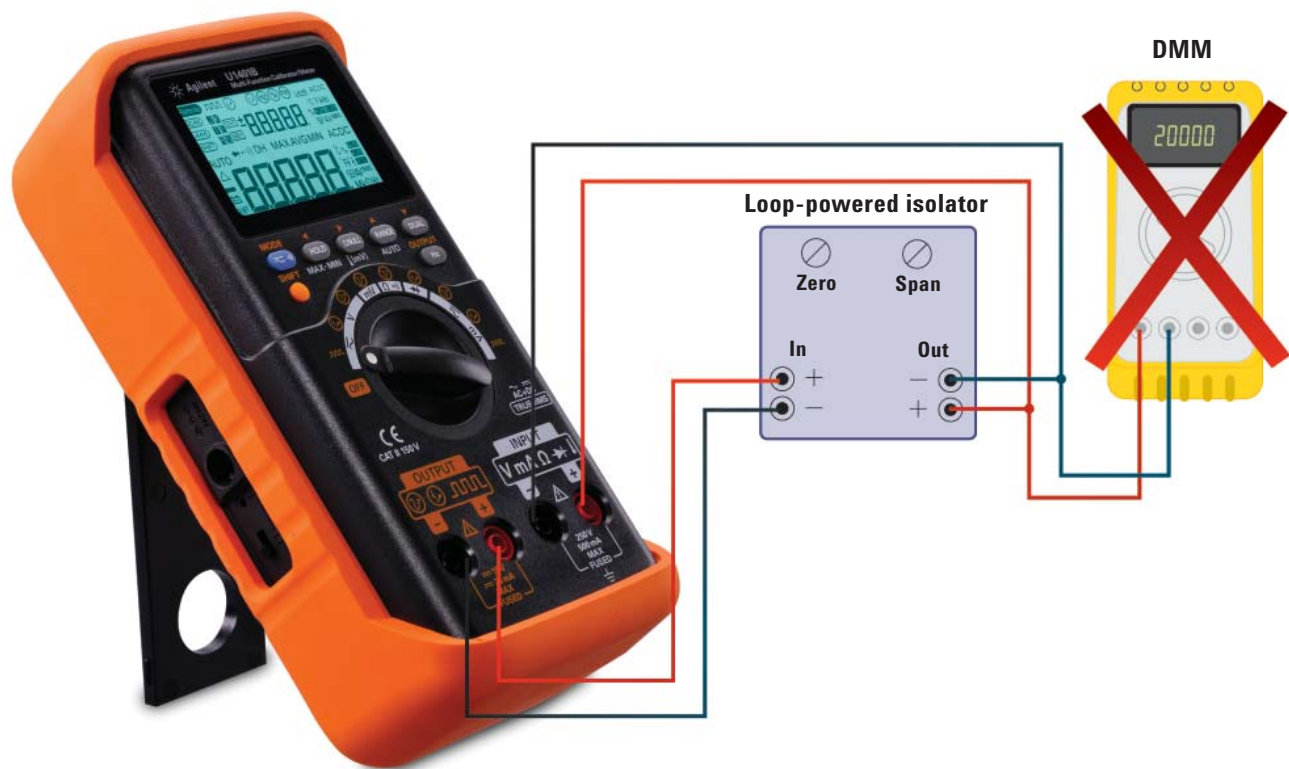
Applications with the U1401A/U1401B Multi-Function Calibrator/Meter

Simultaneous source and measure with just one tool

Commonly used in today's process control systems are signal conditioners and loop-powered isolators. These typically involve high-accuracy signals and demand periodic calibration to ensure optimum performance.

Calibration requires sourcing a known signal into the device and measuring its output. For instance, calibration of a loop-powered isolator with 4-20 mA input/output range involves accurately simulating a known mA signal into the isolator and measuring its corresponding mA output to ensure that it is performing well within its specifications. Being well-equipped means you need to carry both a calibrator and digital multimeter (DMM) as you go about your calibration tasks.

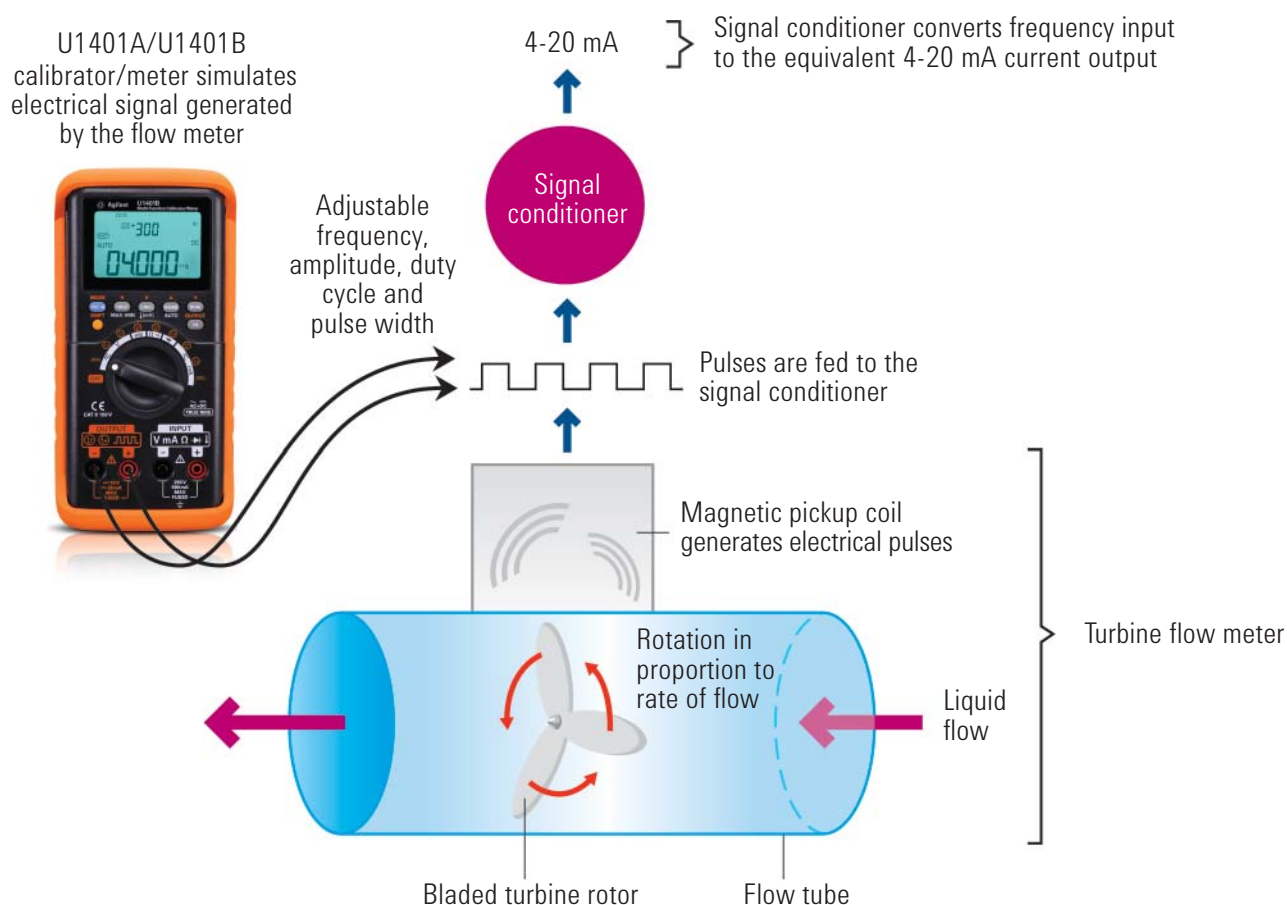
Not so with the U1401A/U1401B calibrator/meter. One tool equips you with both sourcing and measuring capabilities so you no longer need to carry a separate DMM when you're away from the bench.



Built-in pulse signal generator for calibrating flow meter systems

Flow meters output pulses with frequencies that are proportional to the rate of flow of liquid that passes through its bladed turbine rotor. These pulses are then fed to a signal conditioner. Calibration of the signal conditioner requires injecting known pulse signals into it and checking that the resulting output is what it should be.

Right on site and with the U1401A/U1401B in hand, you can conveniently simulate the flow meter's output pulses into the signal conditioner, without needing a separate function generator.



Specifications of the U1401A/U1401B Multi-function Calibrator/Meter

	U1401A/U1401B
Display	
Dual display	•
Counts	50,000
Backlight	•
Source	
Voltage	± 15 V
Current	± 25 mA
Square-wave	0.5 Hz to 4.8 kHz, selectable Hz and % ★
Auto scan and ramp	•
Simultaneous operation with MEASURE function	• ★
Measure	
True RMS	AC+DC
Basic DCV accuracy	0.03% + 5 counts
Auto/Manual ranging	•
Voltage AC/DC	250 V
Current AC/DC	500 mA
Resistance	50 MΩ
Frequency	200 kHz
Temperature	1372 °C, K-type thermocouple
Continuity with beeper	•
Diode test	•
4-20 mA, 0 to 20 mA % scale	•
Simultaneous operation with SOURCE function	• ★
Data management	
Min/Max/Avg recording	•
Peak recording	•
Data Hold	•
Data logging to PC (requires IR-to-USB cable U5481A for connection to PC)	•
Safety and Regulatory	
Over-voltage safety protection	CAT II 150 V
EN/IEC 61010-1:2001 compliance	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes
General	
Operating temperature	0 °C to 40 °C
Battery (included)	9.6 V Ni-MH rechargeable
Battery life	80 hours
I/O	IR-USB
Warranty	3 years
Dimensions (HxWxD)	192.0 mm x 90.0 mm x 54.0 mm

★ represents key specifications/features

For complete specifications, please refer to data sheet 5990-3459EN

Recommended Accessories



U5481A IR-to-USB cable



U1186A K-type thermocouple and adapter



U1160A Standard test lead kit



U1181A Immersion temperature probe



U1182A Industrial surface temperature probe



U1183A Air temperature probe

Web Link

www.agilent.com/find/handheld-calibrator-meter



How to ?

Easily Perform Process Control Calibration U1401A

<http://cp.literature.agilent.com/litweb/pdf/5990-3932EN.pdf>

Capacitance/LCR meters

U1700 Series – Handheld Capacitance/LCR meters

LCR testing without the wait

Sharing a bench LCR meter is practical, but isn't always convenient. With Agilent's new line of handheld capacitance and LCR meters, you can perform quick, basic LCR measurements at your convenience. Better yet, our handheld models extend the tradition of our industry-leading benchtop units to a lower price point. Now, everyone on your team can be equipped for passive-component testing—on the bench or on the go—without the wait.

Features

- Up to 20,000 counts resolution with dual display
- Wide capacitance measurement up to 199.99 mF*
- Wide LCR range with up to 4 test frequencies**
- Auto-calculation of phase angle, D and Q factors**
- Compare mode with 25 High/Low limit settings*
- Relative and Tolerance modes

*with U1701A/U1701B capacitance meters

**with U1731A, U1731B, U1732A or U1732B LCR meters
(phase angle calculation only with U1732A/U1732B)



Applications with the U1700 Series Capacitance/LCR Meters

SMD tweezer for testing surface-mount devices

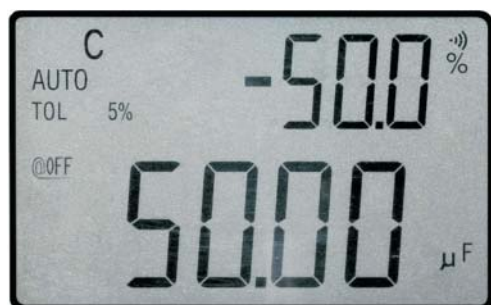


The optional U1782A SMD tweezer enables easy testing of surface-mount devices. The tweezer comes with three shrouded banana plugs and an extended reach of 770 mm. The U1700 Series' guard terminal provides your measurements with better noise immunity and accurate readings.

Tolerance and compare modes for quick component sorting

On the manufacturing floor, components may come in large batches for quick sorting to pre-defined specifications. Tolerance mode in the U1700 Series lets you zap through sorting of incoming capacitors, inductors or resistors to 1%, 5%, 10% or 20% tolerance of the specified reference value.

Additionally, compare mode in the U1701A/U1701B capacitance meter allows easy memory save/recall of up to 25 High/Low limit settings for convenient Pass/Fail screening of capacitors. This means speedier testing due to reduced set-up time and risk of manual input errors.



Tolerance mode of 1%, 5%, 10% and 20% are available in capacitance and LCR models.



Compare mode in the U1701A/U1701B reduces test set-up time for capacitor sorting.

Specifications of the U1700 Series Capacitance/LCR Meters

	U1701A/U1701B	U1731A/U1731B	U1732A/U1732B
Display			
Dual display	•	•	•
Counts	11,000	20,000	20,000
Backlight	•	–	•
Measurements			
Capacitance	0.1 pF to 199.99 mF	0.1 pF to 19.99 mF	0.01 pF to 19.99 mF
Inductance	N/A	0.1 µH to 999.9 H	0.1 µH to 999.9 H
Resistance	N/A	0.001 Ω to 9.999 MΩ	0.001 Ω to 9.999 MΩ
Dissipation factor (DF)	N/A	• ★	• ★
Quality factor (QF)	N/A	• ★	• ★
Phase angle (θ) measurement	N/A	–	•
Tolerance mode	1%, 5%, 10%, 20% ★	1%, 5%, 10% ★	1%, 5%, 10%, 20% ★
Compare mode	25 sets of non-volatile High/Low limit settings ★	–	–
Test method/frequency	DC charge/discharge	Selectable 120 Hz/1 kHz	Selectable 100 Hz/120 Hz/ 1 kHz/10 kHz
Data management			
Min/Max/Avg recording	•	•	•
Data Hold	•	•	•
Data logging to PC (requires IR-to-USB cable U5481A for connection to PC)	•	•	•
Safety and Regulatory			
EN/IEC 61010-1:2001 compliance	Yes	Yes	Yes
General			
Operating temperature	0 °C to 50 °C	0 °C to 40 °C	0 °C to 40 °C
Battery (included)	• Alkaline 9 V • AC power adapter and cord available as option	• Alkaline 9 V • AC power adapter and cord available as option	• Alkaline 9 V • AC power adapter and cord available as option
Battery life	80 hours	7 hours	7 hours
I/O	IR-USB	IR-USB	IR-USB
Warranty	3 years	3 years	3 years
Dimensions (HxWxD)	184.0 mm x 87.0 mm x 41.0 mm	184.0 mm x 87.0 mm x 41.0 mm	184.0 mm x 87.0 mm x 41.0 mm

★ represents key specifications/features

For complete specifications, please refer to data sheets 5990-3525EN (for U1701A/U1701B capacitance meter) and 5990-3458EN (for U1731A/U1731B/U1732A/U1732B LCR meter)

Recommended Accessories



U1174A Soft carrying case



U5481A IR-to-USB cable



U1782A SMD tweezer



U1780A AC power adapter

Web Link

www.agilent.com/find/handheldlcr

Accessories Compatibility Chart

Ordering Number	Description	Handheld Clamp Meters	Handheld DMMs							Handheld Scopes	Handheld Calibrator/Meter	Handheld Capacitance Meter	Handheld LCR Meters
		U1211A/ 12A/13A	U1241A/ U1241B	U1242A/ U1242B	U1251A/ U1251B	U1252A/ U1252B	U1253A/ U1253B	U1271A	U1272A	U1602A/ 04A/ U1602B/ 04B	U1401A/ U1401B	U1701A/ U1701B	U1731A/ 32A/ U1731B/ 32B

Kits

U1168A	Standard test lead kit	•	•	•	•	•	•	•	•	•	•	—	—
U1161A	Extended test lead kit	•	•	•	•	•	•	•	•	•	•	—	—
U1580A	DMM terminal test lead set	•	•	•	•	•	•	•	•	•	•	—	—
U1180A	Thermocouple adapter+lead kit	• (For U1212A /13A only)	—	•	—	•	•	—	•	—	—	—	—
N/A	Calibrator/Meter standard test lead kit	—	•	•	•	•	•	—	—	•	•	—	—

Probes/Leads/Clamp

U1162A	Alligator clips	•	•	•	•	•	•	•	•	•	•	—	—
U1163A	SMT grabbers	•	•	•	•	•	•	•	•	•	•	—	—
U1164A	Fine-tip test probes	•	•	•	•	•	•	•	•	•	•	—	—
U1169A	Test probe leads	•	•	•	•	•	•	•	•	•	•	—	—
U1583B	AC current clamp	—	•	•	•	•	•	•	•	•	—	—	—
U1781A	Alligator clip leads	—	—	—	—	—	—	—	—	—	—	•	•
U1782A	SMD tweezer	—	—	—	—	—	—	—	—	—	—	•	•
U5402A	Yellow test lead for mA simulation	—	—	—	—	—	—	—	—	—	•	—	—
N/A	Mini grabber	—	•	•	•	—	—	—	—	•	•	—	—

Ordering Number	Description	Handheld Clamp Meters	Handheld DMMs							Handheld Scopes	Handheld Calibrator/Meter	Handheld Capacitance Meter	Handheld LCR Meters
		U1211A/ 12A/13A	U1241A/ U1241B	U1242A/ U1242B	U1251A/ U1251B	U1252A/ U1252B	U1253A/ U1253B	U1271A	U1272A	U1602A/ 04A/ U1602B/ 04B	U1401A/ U1401B	U1701A/ U1701B	U1731A/ 32A/ U1731B/ 32B

Probes/Leads for Temperature Measurement

U1181A	Immersion temperature probe	• (For U1212A /13A only)	•	•	•	•	•	•	•	•	•	—	—
U1182A	Industrial surface temperature probe	• (For U1212A /13A only)	•	•	•	•	•	•	•	•	•	—	—
U1183A	Air temperature probe	• (For U1212A /13A only)	•	•	•	•	•	•	•	•	•	—	—
U1184A	Temperature probe adapter	• (For U1212A /13A only)	•	•	•	•	•	•	•	—	•	—	—
U1185A	J-type thermocouple and adapter	—	—	•	—	•	•	—	•	—	—	—	—
U1186A	K-type thermocouple and adapter	• (For U1212A /13A only)	•	•	•	•	•	•	•	•	•	—	—
U1586B	Temperature module	—	—	—	—	—	—	—	—	•	—	—	—

Probes/Clips for Scope-only Functions

U1554A	Hook clip for probe tip	—	—	—	—	—	—	—	—	•	—	—	—
U1560A	1:1 scope probe	—	—	—	—	—	—	—	—	•	—	—	—
U1561A	10:1 scope probe	—	—	—	—	—	—	—	—	•	—	—	—
U1562A	100:1 scope probe	—	—	—	—	—	—	—	—	•	—	—	—

Carrying Case/Hanging Kit

U1171A	Magnetic hanging kit	—	•	•	•	•	•	•	•	—	—	—	—
U1172A	Transit case (aluminium-clad)	—	•	•	•	•	•	•	•	—	—	—	—
U1174A	Soft carrying case	—	•	•	•	•	•	•	•	—	—	•	•
U1175A	Soft carrying case	•	—	—	—	—	—	—	—	—	—	—	—
U1590A	Soft carrying case (PVC leather)	—	—	—	—	—	—	—	—	•	—	—	—
U5491A	Carrying case (PVC leather)	—	—	—	—	—	—	—	—	—	•	—	—

Power/Cables

U1170A	Battery charger adapter	—	—	—	—	•	•	—	—	—	—	—	—
U1173A	IR-to-USB cable	—	—	—	•	•	•	•	•	—	—	—	—
U1570A	AC power adapter and cord	—	—	—	—	—	—	—	—	•	—	—	—
U1571A	Ni-MH battery pack	—	—	—	—	—	—	—	—	•	—	—	—
U1780A	AC power adapter and cord	—	—	—	—	—	—	—	—	—	—	•	•
U5481A	IR-to-USB cable	—	—	—	—	—	—	—	—	—	•	•	•

Optional accessories



U1168A Standard test lead kit

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probe (19-mm tips): Cat III 1000 V, CAT IV 600 V, 15 A
- Test probe (4-mm tips): CAT III 1000 V, CAT IV 600 V, 15 A (highly recommended for CAT IV environment)
- Alligator Clips: Cat III 1000 V, 10 A
- Fine tip test probes: Cat II 300 V, 3 A
- SMT grabber: Cat II 300 V, 3 A
- Mini grabber (black only): Cat II 300 V, 3 A



U1161A Extended test lead kit

Includes two test leads (red and black), two test probes, medium-sized alligator clips and 4-mm banana plugs.

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probes: CAT III 1000 V, 15 A
- Medium-sized alligator clips: CAT III 600 V, 10 A
- 4-mm banana plugs: CAT II 600 V, 10 A



U1162A Alligator clips

- One pair of insulated alligator clips (red and black). Recommended for use with Agilent standard test leads.
- Rated CAT III 1000 V, 10 A.



U1163A SMT grabbers

- One pair of SMT grabbers (red and black). Recommended for use with Agilent standard test leads.
- Rated CAT II 300 V, 3 A.



U1164A Fine-tip test probes

- One pair of fine-tip test probes (red and black). Recommended for use with Agilent standard test leads.
- Rated CAT II 300 V, 3 A.



U1169A Test probe leads

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probe (19-mm tips): Cat III 1000 V, CAT IV 600 V, 15 A
- Test probe (4-mm tips): CAT III 1000 V, CAT IV 600 V, 15 A (highly recommended for CAT IV environment)



U1170A Battery charger adapter

- Includes AC power cord based on country
- For use with U1252A/U1253A DMMs



U1171A Magnetic hanging kit

- For use with handheld DMMs



U1172A Transit case

The robust casing to transport your DMM and accessories

- Aluminum-clad, black panel construction
- Dimension: 18" (H) x 13" (W) x 6" (D)
- Weight: 4 kg



U1173A IR-to-USB cable

- For remote control and data logging to PC
- Max. baud rate: 19,200 bits per second
- For use with U1250 series DMMs



U1174A Soft carrying case

The convenient way to carry your DMM and essential accessories

- Dimension: 9" (H) x 5" (W) x 3" (D)



U1180A Thermocouple adapter/lead kit

Includes thermocouple adapter, thermocouple bead J-type and thermocouple bead K-type.

- T/C adapter J/K-type
- T/C bead J-type: -20 °C to 200 °C
- T/C bead K-type: -20 °C to 200 °C



U1181A Immersion temperature probe

- Type-K T/C for use in oil and other liquids
- Measurement range: -50 °C to 700 °C
- Includes adapter U1184A for connection to DMM
- Requires module U1186A for connection to scope



U1182A Industrial surface temperature probe

- Type-K T/C for use on still surfaces
- Measurement range: -50 °C to 400 °C
- Includes adapter U1184A for connection to DMM
- Requires module U1186A for connection to scope



U1183A Air temperature probe

- Type-K T/C for use in air and non-caustic gas
- Measurement range: -50 °C to 800 °C
- Includes adapter U1184A for connection to DMM
- Requires module U1186A for connection to scope



U1184A Temperature probe adapter

- Mini-connector-to-banana-plug adapter for use with DMM



U1185A J-type thermocouple and adapter

- T/C adapter J/K-type
- T/C bead J-type: -20°C to 200°C



U1186A K-type thermocouple and adapter

- T/C adapter J/K-type
- T/C bead K-type: -20°C to 200°C



U1554A Hook clip for probe tip

- Rated CAT II 1000 V, CAT III 600 V



U1560A 1:1 Scope probe

- Includes ground alligator clip and hook clip.
- Rated CAT III 300 V



U1561A 10:1 Scope probe

- Includes ground alligator clip and hook clip.
- Rated CAT III 600 V



U1562A 100:1 Scope probe

- Includes ground alligator clip and hook clip.
- Rated CAT III 600 V



U1570A AC power adapter

- Includes AC power cord based on country
- For use with U1600 series scopes



U1571A Ni-MH battery pack

- 4500 mA, 7.2 V
- For use with U1600 series scopes



U1580A DMM terminal test lead set

- Includes two DMM test leads (red and black), and three DMM alligator clips.
- Rated CAT III 1000 V



U1583B AC current clamp

- Dual range: 40 A and 400 A
- Rated CAT III 600 V
- BNC-to-banana-plug adapter provided for use with DMMs



U1586B Temperature module

- Measures -50°C ~ 1000°C
- K-type bead probe provided for use with DMMs



U1590A Soft carrying case

- Dimensions: 9.6" (H) x 13.0" (W) x 4.5" (D)
- PVC leather material
- Ideal for handheld scopes or instruments of similar size



U1780A AC power adapter

- Includes AC power cord based on country
- For use with U1700 series handheld capacitance/LCR meters



U1781A Alligator clip leads

- For use with handheld capacitance and LCR meters



U1782A SMD tweezer

- Tweezer for testing the capacitance/inductance/resistance of SMD components ($C < 200 \mu\text{F}$, $L < 20 \text{ mH}$, $R < 10 \text{ M}\Omega$)
- Guard ends for better noise immunity



U5402A Yellow test lead for mA simulation

- For use with handheld multi-function calibrator/meter



U5481A IR-to-USB cable

- For remote control and data logging to PC
- Max. baud rate: 19,200 bits per second
- For use with U1700 series handheld capacitance/LCR meters and U1401A multi-function calibrator/meter



U5491A Carrying case

- Dimensions: 8.9" (H) x 12.2" (W) x 3.1" (D)
- PVC leather material
- Ideal for handheld multi-function calibrator/meter or instruments of similar size



U1175A Carrying case

- Ideal for handheld clamp meters
- Dimension: 290 mm (H) x 120 mm (W) x 85 mm (D)



U1176A LED Probe Clip Light

- 3 inches in length
- To be clipped onto test probes to increase visibility
- Comes with one AAA battery

Contact Us

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

United States:

(tel) 800 829 4444
(fax) 800 829 4433

Canada:

(tel) 877 894 4414
(fax) 800 746 4866

China:

(tel) 800 810 0189
(fax) 800 820 2816

Europe

(tel) 31 20 547 2111

Japan:

(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:

(tel) (080) 769 0800
(fax) (080) 769 0900

Latin America:

(tel) (305) 269 7500

Taiwan

(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100
(fax) (65) 6755 0042
(email)
tm_ap@agilent.com



For other technical literature, promotion information and online product demos, visit us at:



www.agilent.com/find/clampmeter



www.agilent.com/find/handheldlcr



www.agilent.com/find/handheldscope



www.agilent.com/find/handhelddmm
Try the U1253B and U1242B online!



www.agilent.com/find/handheld-calibrator-meter

Product specifications and descriptions subject to change without notice

© Agilent Technologies, Inc. 2010
Printed in USA, November 16, 2010
5989-7340EN



Agilent Technologies