[Obsolete product]

Agilent has a new name

Keysight Technologies.

Keysight Technologies Inc. is the world's leading electronic measurement company, transforming today's measurement experience through innovations in wireless, modular, and software solutions. With its HP and Agilent legacy, Keysight delivers solutions in wireless communications, aerospace and defense and semiconductor markets with world-class platforms, software and consistent measurement science.

Alldatasheet.com

Agilent U1240 Series Handheld Digital Multimeters

Data Sheet

Helping You Check and Fix More Installation and Maintenance Bugs

The Agilent U1240 Series handheld digital multimeters enable you to check more with wider measurement ranges. They feature true RMS readings on their 10,000-count displays. The adjustable backlighting allows you to complete your jobs even in subdued lighting conditions, or to simply prolong battery life. Your maintenance tasks are greatly simplified due to the built-in switch counter, harmonic ratio, dual and differential temperature capabilities, with just a press of the button. The meters have a high safety rating with CAT III 1000 V and CAT IV 600 V protection and are certified to CE and CSA standards. On top of that, the U1240 Series comes with a certificate of calibration and test report – at no extra cost.

The latest multimeters in this series; the U1241B and U1242B, now come in vivid orange cases, offering capabilities and functions equivalent to the U1240A Series.

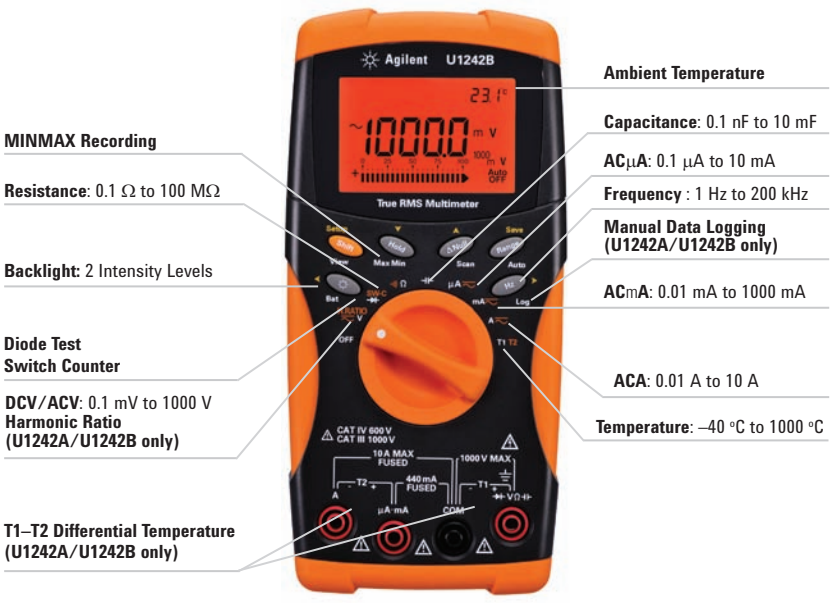
Key Features

Check more, fix more
- 10,000-count display
- 0.09% basic DCV accuracy
- True RMS AC measurement
- Basic functions — ACV, DCV, ACI, DCI, resistance, frequency, diode, continuity tests
- Advanced functions — Capacitance, temperature, MINMAX recording

Ease of use
- Adjustable backlighting — 2 intensity levels
- Manual data logging (U1242A/U1242B only)
- Built-in switch counter, harmonic ratio (U1242A/U1242B only), dual/differential temperature capabilities (U1242A/U1242B only)

Built to last
- Overmold body casing
- CAT III 1000 V and CAT IV 600 V safety protection
- Certified to CE and CSA standards
- Operating temperature: –10 °C to 55 °C

Functions and ranges at a glance



Agilent Technologies

DC SPECIFICATIONS

FUNCTION	RANGE	RESOLUTION	TEST CURRENT/ BURDEN VOLTAGE	ACCURACY ± (% of Reading + No. of Least Significant Digit)	
				U1241A/U1241B	U1242A/U1242B
VOLTAGE[1]	1000.0 mV	0.1 mV	–	0.09% + 5	
	10.000 V	0.001 V	–	0.09% + 2	
	100.00 V	0.01 V	–		
	1000.0 V	0.1 V	–	0.15% + 5	
CURRENT	1000.0 µA	0.1 µA	< 0.06 V (50 Ω)	0.1% + 3	
	10000 µA	1 µA	< 0.55 V (50 Ω)	0.1% + 3	
	100.00 mA	0.01 mA	< 0.18 V (0.5 Ω)	0.2% + 3	
	440.0 mA[2]	0.1 mA	< 0.8 V (0.5 Ω)	0.5% + 3	
	10.000 A[3]	0.001 A	< 0.4 V (0.01 Ω)	0.6% + 5	
RESISTANCE[4]	1000.0 Ω[5]	0.1 Ω	0.5 mA	0.3% + 3	
	10.000 kΩ[5]	0.001 kΩ	50 µA		
	100.00 kΩ	0.01 kΩ	4.91 µA		
	1000.0 kΩ	0.1 kΩ	447 nA		
	10.000 MΩ	0.001 MΩ	112 nA	0.8% + 3	
	100.00 MΩ[6]	0.01 MΩ	112 nA	1.5% + 3	
DIODE TEST[7]	1 V	0.001 V	approximately 0.5 mA	0.3% + 2	

AC SPECIFICATIONS

FUNCTION	RANGE	RESOLUTION	TEST CURRENT/ BURDEN VOLTAGE	ACCURACY ± (% of Reading + No. of Least Significant Digit)		
				40 Hz to 500 Hz	500 Hz to 1 kHz	1 kHz to 2 kHz
AC VOLTAGE[8][12] TRUE RMS	1000.0 mV	0.1 mV	–	1% + 5	2% + 5	–
	10.000 V	0.001 V	–		1% + 5	2% + 5
	100.00 V	0.01 V	–			
	1000.0 V	0.1 V	–			–
AC Current[9][12] TRUE RMS	1000.0 µA	0.1 µA	< 0.06 V (50 Ω)	1% + 5	1.5% + 5	–
	10000 µA	1 µA	< 0.55 V (50 Ω)			
	100.00 mA	0.01 mA	< 0.18 V (0.5 Ω)			
	440.0 mA[10]	0.1 mA	< 0.8 V (0.5 Ω)			
	10.000 A[11]	0.001 A	< 0.4 V (0.01 Ω)			

[1] Input impedance: 10 MΩ (nominal).
[2] Current can be measured up to 440 mA continuously. An additional 0.2% needs to be added to the specified accuracy if the signal measured is in the range of 440 mA to 1100 mA for 30 seconds maximum. After measuring a current of > 440 mA, leave the meter to cool down for twice the measuring time used before applying a low current measurement.
[3] Current can be measured up to 10 A continuously with a maximum operating temperature of 50 °C. An additional 0.3% needs to be added to the specified accuracy if the signal measured is in the range of 10 A to 19.999 A for 15 seconds maximum. After measuring a current of > 10 A, leave the meter to cool down for 60 seconds before applying a low current measurement.
[4] The maximum open voltage is < 2.8 V. For instant continuity, the built-in buzzer sounds when resistance is < 10.0 Ω.
[5] The accuracy of 1 kΩ and 10 kΩ is specified after Null function, which is used to substrate the test lead resistance and the thermal effect.
[6] For the range of 100 MΩ, the R.H. is specified for < 60%. The temperature coefficient will be 0.15 times of specified accuracy as > 50 MΩ.
[7] Overload protection: 1000 V RMS for circuits < 0.3 A short circuit current. The built-in buzzer sounds when reading is approximately below 50 mV and audible single tone for normal forward biased diode or semiconductor junction as 0.3 V ≤ Reading ≤ 0.8 V.
[8] Input impedance: 10 MΩ (nominal) in parallel with <100 pF, with overload protection of 1000 V RMS
[9] Crest factor ≤ 3. For non-sinusoidal waveforms with crest factor up to 3, add 2% reading + 2% full scale typical.
[10] Current can be measured from 50 mA to 440 mA continuously. An additional 0.2% needs to be added to the specified accuracy if the signal measured is in the range of 440 mA to 1100 mA for 30 seconds maximum. After measuring a current of > 440 mA, leave the meter to cool down for twice the measuring time used before application of low current measurement.
[11] Current can be measured from 0.5 A up to 10 A continuously with a maximum operating temperature of 50 °C. An additional 0.3% needs to be added to the specified accuracy if the signal measured is in the range of 10 A to 19.999 A for 15 seconds maximum. After measuring a current of >10 A, leave the meter to cool down for 60 seconds before applying a low current measurement.
[12] AC voltage and AC current specifications are AC coupled. True R.M.S. Measurement is valid from 5 % of range to 100 % of range.

TEMPERATURE SPECIFICATIONS

THERMOCOUPLE TYPE	RANGE	RESOLUTION	ACCURACY ± (% of Reading + Offset Error)
K (for U1241A, U1241B, U1242A and U1242B)	–40 to 1000 °C/ –48 to 1832 °F	0.1 °C/ 0.1 °F	1% + 1 °C/ 1% + 1.8 °F
J (for U1242A and U1242B only)	–40 to 1000 °C/ –48 to 1832 °F	0.1 °C/ 0.1 °F	1% + 1 °C/ 1% + 1.8 °F

CAPACITANCE SPECIFICATIONS

RANGE	RESOLUTION	ACCURACY ± (% of Reading + No. of Least Significant Digit)
1000.0 nF	0.1 nF	1.2% + 4
10.000 µF	0.001 µF	
100.00 µF	0.01 µF	
1000.0 µF	0.1 µF	2% + 4
10.000 mF	0.001 mF	

HARMONIC RATIO SPECIFICATIONS

RANGE	FREQUENCY	VOLTAGE
0.0% to 99.9%	40 Hz to 500 Hz	100 mVAC to 1000 VAC

SWITCH COUNTER DEFINITION

SWITCH CONDITION[1][2]	CIRCUIT SWITCH	DISPLAY[3]	SWITCH THRESHOLD
Low Level	Normally Close	Lo	< 370 Ohms
Intermittent[4]	Close to Open	Number of switch count	Low to high transition
High Level	Normally Open	Hi	> 430 Ohms
Intermittent[5]	Open to Close	Number of switch count	High to low transition

[1] Detects intermittent Opens or Closes lasting for at least 250 µsec.
[2] Test current of 0.5 mA with maximum open circuit voltage of 2.8 V is used.
[3] Maximum count reading: 199.99 M (display "OL" when achieving 2 x 10^8 and thereafter).
[4] Count only low to high transition for initial switch condition of Low.
[5] Count only high to low transition for initial switch condition of High.

FREQUENCY SPECIFICATIONS

RANGE	RESOLUTION	ACCURACY	MINIMUM INPUT FREQUENCY
100.00 Hz	0.01 Hz	0.03%+3	1 Hz
1000.0 Hz	0.1 Hz		
10.000 kHz	0.001 kHz		
100.00 kHz	0.01 kHz		
1000.0 kHz[1]	0.1 kHz		

[1] Effective frequency measurement of up to 200 kH; refer to frequency sensitivity table below for details.

FREQUENCY SENSITIVITY DURING VOLTAGE MEASUREMENT

INPUT RANGE	MINIMUM SENSITIVITY (RMS Sine Wave)	
(Maximum input for specified accuracy = 10 x Range or 1000 V)	20 Hz - 50 kHz	50 kHz to 200 kHz
1000.0 mV	0.3 V	0.6 V
10.000 V	0.5 V	1.8 V
100.00 V	5 V	10 V (<100 kHz)
1000.0 V	50 V	100 V (<100 kHz)

FREQUENCY SENSITIVITY DURING CURRENT MEASUREMENT

INPUT RANGE	MINIMUM SENSITIVITY (RMS Sine Wave) 20 Hz to 20 kHz
1000.0 µA	100 µA
10000 µA	500 µA
100.00 mA	10 mA
440.00 mA	50 mA
10.000 A	1 A

MEASURING RATE

FUNCTION	TIMES/SECOND
ACV	7
DCV (V or mV)	7
Ω	14
Diode	14
Capacitance	4 (< 100 µF)
DCA (µA, mA, A)	7
ACA (µA, mA, A)	7
Temperature	7 (single)
Frequency	1 (> 10 Hz)

GENERAL SPECIFICATIONS

DISPLAY Dual display (secondary display is intended for temperature function display only) consists of 4-digit liquid crystal display (LCD) with maximum reading of 11,000 counts. Automatic polarity indication.
POWER CONSUMPTION 0.22 VA maximum
BATTERY TYPE AND LIFE 4 single standard 1.5 V AAA batteries (Alkaline or Zinc Chloride type); 300 hours typical
OPERATING ENVIRONMENT • Full accuracy at –10 °C to 55 °C; and to 80% RH for temperatures up to 30 °C, decreasing linearly to 50% RH at 55 °C • 0 – 2000 meters per IEC 61010-1 2nd Edition CAT III, 1000 V / CAT IV, 600 V IEC 61010-1 2nd Edition
STORAGE COMPLIANCE –20 °C to 70 °C
SAFETY COMPLIANCE • IEC 61010-1:2001 / EN61010-1:2001 • Canada: CSA C22.2 No. 61010-1:2004
MEASUREMENT CATEGORY CAT III 1000 V / CAT IV 600 V Overvoltage Protection, Pollution Degree 2
EMC COMPLIANCE • CISPR 11:1990/EN55011:1990 • Canada: ICES-001:2004 • Australia/New Zealand: AS/NZS CISPR11:2004
COMMON MODE REJECTION RATIO (CMRR) > 90 dB at DC, 50/60 Hz ± 0.1% (1 kΩ unbalanced)
NORMAL MODE REJECTION RATIO (NMRR) > 60 dB at 50/60 Hz ± 0.1%
CREST FACTOR < 3.0
TEMPERATURE COEFFICIENT 0.1 × (specified accuracy) / °C (from –10 °C to 18 °C or 28 °C to 55 °C)
SHOCK and VIBRATION Tested to IEC/EN 60068-2
DIMENSIONS (HxWxD) 193.8 mm x 92.2 mm x 58.0 mm
WEIGHT 450 g with batteries 400 g without batteries
WARRANTY 3 years for main unit 3 months for standard shipped accessories

ORDERING INFORMATION



U1241A U1241B U1242A U1242B

STANDARD SHIPPED ITEMS

- Four 1.5 V AAA Alkaline Batteries
- Certificate of Calibration (CoC)
- Test Probe Leads (19-mm and 4-mm tips)
- Quick Start Guide

OPTIONAL ACCESSORIES

MEASURING ACCESSORIES (NON-TEMPERATURE)



U1160A Standard test lead kit

Includes two test leads (red and black), alligator clips, fine-tip test probes, SMT grabbers and mini grabber (black).

- Test leads: CAT III 1000 V, 15 A
- Alligator clips: CAT III 1000 V, 10 A
- Fine-tip test probes: CAT II 300 V, 3 A
- SMT grabbers: CAT II 300 V, 3 A
- Mini grabber: 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.



U1165A Test probe leads

- Rated CAT III 1000 V, 15 A



U1168A Standard test lead kit

Includes two test leads (red and black), 19-mm and 4-mm test probes, alligator clips, fine-tip test probes, SMT grabbers and mini grabber (black).

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probes (19-mm tip): CAT III 1000 V, CAT IV 600 V, 15 A
- Test probes (4-mm tip): 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: CAT II 300 V, 3 A



U1169A Test probe leads

Includes two test leads (red and black), and a pair each of 19-mm and 4-mm test probes.

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



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

MEASURING ACCESSORIES (TEMPERATURE)



U1180A Thermocouple adapter+lead kit, J and K types

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



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



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



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 J-type: –20 °C to 200 °C

CARRYING CASE



U1172A Transit case (aluminium-clad)

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



U1174A Soft carrying case

The convenient way to carry your DMM and essential accessories

- Dimension: 9″ (H) x 5″ (W) x 3″ (D)

HANGING KIT



U1171A Magnetic hanging kit

For fastening of DMM to a steel surface so both hands are free.

www.agilent.com
www.agilent.com/find/handhelddmm

Agilent Email Updates

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

www.lxistandard.org
LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.

Agilent Channel Partners

www.agilent.com/find/channelpartners
Get the best of both worlds: Agilent's measurement expertise and product breadth, combined with channel partner convenience.

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements. For information regarding self maintenance of this product, please contact your Agilent office.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

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

Americas

Canada	(877) 894 4414
Latin America	305 269 7500
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	43 (0) 1 360 277 1571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	49 (0) 7031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European Countries:
www.agilent.com/find/contactus

Revised: October 1, 2009

Product specifications and descriptions in this document subject to change without notice.

© Agilent Technologies, Inc. 2009
Printed in USA, November 30, 2009
5989-7040EN

Agilent Technologies