Handheld Tools

For Electronic, Electrical and Industrial Process Testing



Keysight Handheld Tools

- Remote link solution
- Thermal imager
- Insulation resistance tester
- Digital multimeters
- Digital oscilloscopes
- Clamp meters
- Multifunction calibrator / meter
- Capacitance / LCR meters

Software and Accessories

- Software
- Accessories compatible chart
- Optional accessories

KEYSIGHT TECHNOLOGIES

Keysight Handheld Test Tools

Keysight Remote Link Solution

The remote link is Keysight Technologies, Inc. next generation wireless connectivity. With the new U1117A Infrared (IR)-to-*Bluetooth*® adapter and U1115A remote logging display, you can safely measure, view and log test measurements with an extended range of up to 100 meters. You can now log and monitor data on more display devices such as iOS / Android-based smart devices or on a Windows-based PC. By simply attaching the U1177A / U1117A IR-to-*Bluetooth* adapter to the IR port of a Keysight handheld meter, you'll get instant wireless *Bluetooth* connection setup.







Features

- Extended measurement distance of up to 100 meters
- View readings of up to four handheld meters simultaneously
- Compatible across all existing Keysight U1200 series handheld meters
- 60,000 points interval logging*
- Download logged data to a PC via *Bluetooth* connection*
- Micro USB external power port*
- Indoor and outdoor viewing modes*

* U1115A

Specifications of the Keysight Remote Link Solution

For the U1177A IR-to-*Bluetooth* adapter

Model No.	U1177A	U1117A	U1115A
General			
Operating temperature	–20 to 55 °C, up to 80% at 40 °C RH	–20 to 55 °C, up to 80% at 40 °C RH	–20 to 55 °C, up to 80% at 40 °C RH
Storage compliance	–40 to 70 °C, up to 95% at 40 °C RH	–40 to 70 °C, up to 95% at 40 °C RH	–40 to 70 °C, up to 95% at 40 °C RH
Power consumption	Maximum 130 mVA for two 1.5 V AAA batteries	Maximum 561 mVA for two 1.5 V AAA batteries	Maximum 1 VA for three AA batteries Maximum 5 V +10%, 250 mA for external power Auto Power Off mode, current consumption 3 mA
Battery type (included)	2 x AAA alkaline	2 x AAA alkaline	3 x AA alkaline
Battery life	30 hours	20 hours	20 hours
Dimension (H x W x D)	39.0 x 71.0 x 37.0 mm	39.0 x 71.0 x 37.0 mm	92.0 x 107.9 x 33.5 mm
Weight	60 g	60 g	< 238 g
Bluetooth	*Bluetooth* Version 2.1 + EDR compliant, SPP profile, Class 2 device (with 10 meters connection range)	*Bluetooth* Version 2.1 + EDR compliant, SPP profile, Class 1 device (with approximately 100 meters connection range)	*Bluetooth* Version 2.1 + EDR compliant, SPP profile, Class 1 device (with approximately 100 meters connection range)
Compatibility			
Device	Keysight U1200 Series handheld meters, Keysight U1450A/60A Series insulation resistance tester[1], Keysight U1115A remote logging display	Keysight U1200 Series handheld meters, Keysight U1450A/60A Series Insulation Resistance Tester[1], Keysight U1115A remote logging display	Keysight U1200 Series handheld meters, Keysight U1117A IR-to-*Bluetooth* adapter, Keysight U1177A IR-to-*Bluetooth* adapter
PC software	Keysight handheld meter logger	Keysight handheld meter logger	Keysight handheld meter logger
Mobile application	Keysight mobile meter, Keysight mobile logger, Keysight insulation tester	Keysight mobile meter, Keysight mobile logger, Keysight insulation tester	N/A
Other devices	Android smartphone/tablet, Windows-based PC (with *Bluetooth* enabled)	iPhone, iPad, iPod touch, Android smartphone/tablet, Windows-based PC (with *Bluetooth* enabled)	Windows-based PC (with *Bluetooth* enabled)

1. U1177A *IR-Bluetooth* adapter is compatible with the U1450A/U1460A Series to establish wireless connectivity on a PC or Android smart devices. U1117A *IR-Bluetooth* adapter is compatible with the U1450A/U1460A Series to establish wireless connectivity on a PC or iOS/ Android smart devices. U1115A is not compatible with the U1450A/U1460A Series.

For complete specifications, please refer to data sheet 5991-4298EN.

Web link www.keysight.com/find/hhgowireless

Thermal Imager

U5850 Series True*IR* Thermal Imagers

Detect abnormalities sooner with higher resolution thermal images within the camera. The U5850 series True*IR* thermal imagers give you an in-camera fine resolution of 320x240 pixels from a 160x120 pixels detector. Our solution provides clearer, sharper thermal images so problems can be detected faster. Now you can easily capture, save and monitor temperature changes overtime with a good 0.07 °C thermal sensitivity. What's more, you can capture more images without straining your hands with the ergonomically designed True*IR* thermal imager.



U5855A True*IR* thermal imagers
ECN 2015 Impact Award Winner
Cooling and Thermal management

Features

- Identify abnormalities faster with four times more in-camera fine resolution
- Monitor temperature changes through image logging and temperature trending capabilities
- Ability to focus on objects as close as 10 cm away
- Compact, lightweight, ergonomic
- High temperature range (up to 1200 °C)
- Easy-to-use customizable color palette
- Configurable quick access buttons to easily change settings with one hand

Specifications of the U5850A Series True*IR* Thermal Imagers

Parameter	U5855A	U5856A	U5857A
Basic performance			
Temperature measurement range	–20 ~ 350 °C	–20 ~ 650 °C	–20 ~ 1200 °C
Range 1	–20 to 120 °C	–20 to 120 °C	–20 to 120 °C
Range 2	0 to 350 °C	23 to 650 °C[1]	0 to 350 °C
Range 3	N/A	N/A	250 to 1200 °C[2]
Thermal sensitivity			
Range 1	0.07 °C (at 30 °C)	0.07 °C (at 30 °C)	0.07 °C (at 30 °C)
Range 2	0.1 °C (at 30 °C)	0.5 °C (at 30 °C)	0.1 °C (at 30 °C)
Range 3	N/A	N/A	0.5 °C (at 250 °C)
Accuracy[3]	± 2 °C or ± 2% (whichever is greater) At 0 ~ 40 °C ambient temperature		
Detector type	Uncooled Focal Plane Array (α-Si)		
Detector resolution	160 x 120 pixels		
Fine resolution (in-camera)	320 x 240 (IR pixels) ★		
Spectral range	8 to 14 µm		
Frame rate	9 Hz		
Field of view (FOV)	28° (H) × 21° (V)		
Spatial resolution (IFOV)	3.1 mrad; 2.1, with fine resolution		
Focal distance	10 cm to infinity ★		
Focus mechanism	Manual focus		
Image processing and enhancement			
Correction parameters	Emissivity <ε>, reflected temperature <RT>, object distance <OD>, ambient temperature <AT>, relative humidity <Hum>, transmission <τ>		
Emissivity correction	0.1 to 1.0 Predefined emissivity table		
Digital zoom	Zoom ratio: 4× continuous ★		
Color palette	Rainbow, Iron, Hot Iron, Iris, Grayscale, Inverted Grayscale, Custom	Rainbow, Lava, Iron, Hot Iron, Iris, Olive, Medical, Grayscale, Inverted Grayscale, Custom	Rainbow, Lava, Iron, Hot Iron, Iris, Olive, Medical, Grayscale, Inverted Grayscale, Custom
Camera mode	IR image, visible image, picture in picture, blend		

1. Lower limit temperature at 0 °C, Guaranteed lower temperature at 23 °C.
2. Lower limit temperature at 0 °C, Guaranteed lower temperature at 250 °C
3. Minimum distance with accuracy, 10 cm to 50 cm: ± 4 °C or ± 4%

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5991-4297EN

Specifications of the U5850 Series True*IR* Thermal Imagers, continued

Measurements and alarm	
Measurements	Center spot, 3x moveable spots, max/min tracking, delta temperature, 3x moveable boxes (with min/max/avg)
Color alarm Alarm zones Background	High/low temperature in all areas Above/below/inside/outside Hot white/Hot black
Supplemental characteristics	
Storage device	Supports up to 32 GB SDHC memory card with class 4 and above
Image format IR image Visible image	 Radiometric JPEG JPEG
Image logging	Logs IR, visible or fusion images at a defined interval (7 to 3600 seconds)
State storage memory	Three user-configurable stored states
Tagging/annotation	3 photo tags, note tag, note tag from template (downloadable from the Keysight Web site)
I/O	USB 2.0 mass storage
	NTSC/PAL via video RCA cable
Language	English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish, Simplified Chinese, Traditional Chinese
Built-in quick start tutorial	Available
Product characteristics	
Power supply	
Power adapter	Line voltage range: 50/60 Hz, 100 – 240 VAC (Auto/Universal voltage), 1.2 A MAINS supply voltage fluctuations not to exceed ±10% of the nominal voltage Output voltage: 12 VDC, 3 A Installation Category I (Isolated ELV supply source – connected to MAINS through an AC/DC power adapter)
Battery	Li-ion rechargeable battery, 7.4 VDC, 2500 mAh Operating time: 4 hours
Display	3.5" TFT
Visible camera	3.1 MP
Built-in LED torch	Available
lim	Class 2
Warm-up time	2 minutes
Operating environment	
Temperature	–15 to 50 °C
Humidity	50% RH to 95% RH at 40 °C
Storage compliance	
Temperature	–40 to 70 °C
Humidity	95% RH at 40 °C
Altitude	Up to 2000 m
Pollution degree	2
Safety compliance	Laser safety: IEC 60825-1/EN 60825-1 (Laser Class 2) IEC 61010-1/EN 61010-1
EMC compliance	IEC 61326-1/EN61326-1 CISPR11/EN55011, Group 1 Class A Canada: ICES/NMB-001: Issue 4, June 2006 Australia/New Zealand: AS/NZS CISPR 11
Shock	Tested to IEC 60068-2-27 Ed. 3.0
Vibration	Tested to IEC 60068-2-6
Tripod mount thread	ISO 1222:2010 Standard screw thread, 1/4 - 20 UNC
Drop test	2 m
Protection class	2
IP rating	IP 54
Dimension (W x H x D)	95 × 250 × 85 mm
Weight	0.746 kg (with battery)
Calibration cycle	1 year

1. Minimum distance with accuracy, 10 cm to 50 cm: ± 4 °C or ± 4%
   For complete specifications, please refer to data sheet 5991-4297EN

Web Link

www.keysight.com/find/truelRimager

How to?

Using Fine Resolution to Improve Thermal Images
http://literature.cdn.keysight.com/litweb/pdf/5991-4606EN.pdf
HV Cable Insulation Resistance Testing for Hybrid Vehicles
http://literature.cdn.keysight.com/litweb/pdf/5991-4682EN.pdf

Insulation Resistance Testers

U1450A/U1460A Series Insulation Resistance Testers

Accomplish more in a day's work with the Keysight U1450A/U1460A Series insulation resistance testers. You can now perform tests remotely using a Windows-based PC or iOS/Android smart devices by simply adding *Bluetooth* connectivity to these handhelds. Also, get your works done efficiently with the error-free automated report generation using the complimentary reporting software. These handhelds are certified to IP 67, robust tools built to withstand drops of up to three meters (10 feet) with the wide operating temperature range of –40 to 55 °C, letting you make measurements with confidence even in extreme harsh environments. What's more, with the U1453A and U1461A you can test unique applications with the adjustable test voltages range of 10 V to 1.1 kV.

Features

- Wireless insulation resistance testing via PC and smart phone/tablet applications
- Automatic test report generation
- 50 V / 100 V / 250 V / 500 V / 1000 V test voltages
- Measure up to 260 GΩ
- Timed / PI / DAR test
- Adjustable test output voltage from 10 V to 1.1 kV[1]
- 4.5-digit DMM with OLED display, basic[2] and full featured[3]
- IP 67 certified, three meters (10 feet) drop proof
- CAT III 1000 V / CAT IV 600 V

1. U1453A/U1461A
2. U1453A
3. U1461A



Specifications of the U1450A/U1460A Series Insulation Resistance Testers

Series	U1450 Series			U1460 Series	
Model No.	**U1451A**	**U1452A**	**U1452AT**	**U1453A**	**U1461A**
Display type	LCD	LCD	LCD	OLED ★	OLED ★
Basic Features					
Insulation test voltage range	250 V, 500 V, 1,000 V	50 V, 100 V, 250 V, 500 V, 1,000 V ★	50 V, 100 V	50 V, 100 V, 250 V, 500 V, 1,000 V ★	50 V, 100 V, 250 V, 500 V, 1,000 V ★
Insulation resistance range	66 GΩ	260 GΩ	66 GΩ	260 GΩ	260 GΩ
Earth bond resistance measurement	60 Ω to 60 KΩ	60 Ω to 60 KΩ	60 Ω to 60 KΩ	6 Ω to 60 KΩ ★	6 Ω to 60 KΩ ★
Timed, PI, DAR	Timed only	√	√	√	√
Adjustable insulation test voltages	N/A	N/A	N/A	10 V to 1.1 KV	10 V to 1.1 KV
Live circuit test inhibit (30 V, 50 V, 75 V)	√	√	√	√	√
Calculate cable length by capacitance	√	√	√	√	√
Automatic discharge for capacitive circuits under test	√	√	√	√	√

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5991-4290EN

Specifications of the U1450A/U1460A Insulation Resistance Testers, continued

Series	U1450 Series			U1460 Series	
Model no.	**U1451A**	**U1452A**	**U1452AT**	**U1453A**	**U1461A**
Data management					
Remote testing and report generation[1]	√ ★	√ ★	√ ★	√ ★	√ ★
Digital multimeter (DMM) features					
DMM display resolution (counts)	6,600	6,600	6,600	66,000[2] / 6,600	66,000[2] / 6,600
AC specification	Calibrated for sine wave	Calibrated for sine wave	Calibrated for sine wave	True RMS	True RMS ★
Measurements	AC/DC voltage, resistance, continuity, capacitance	AC/DC voltage, resistance, continuity, capacitance	AC/DC voltage, resistance, continuity, capacitance	AC/DC voltage, resistance, continuity, capacitance, diode test	AC/DC voltage (V, mV), AC/DC current (µA, mA), resistance, continuity, capacitance, diode test, temperature
DMM special features					
Low pass filter (LPF)	N/A	N/A	N/A	N/A	√
Non-contact AC voltage detection (Vsense)	N/A	N/A	N/A	N/A	√
General					
IP rating	IP 67 ★	IP 67 ★	IP 67 ★	IP 67 ★	IP 67 ★
Drop test	3 meters (10 ft) ★	3 meters (10 ft) ★	3 meters (10 ft) ★	3 meters (10 ft) ★	3 meters (10 ft) ★
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	CAT III 1000 V / CAT IV 600 V	CAT III 1000 V / CAT IV 600 V
Operating temperature	–20 to +55 °C	–20 to +55 °C	–20 to +55 °C	–40 to +55 °C ★	–40 to +55 °C ★
Battery life	270 hours	270 hours	270 hours	160 hours	160 hours

1. Requires the Keysight Handheld Logger software for Windows PC, or the Keysight Insulation Tester app for iOS/Android smart devices
2. User selectable display resolution in MENU default is 6,600 counts

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5991-4290EN.

Web Link

www.keysight.com/find/insulationtesters

How to?

Preventive Maintenance Test with Insulation Resistance Test
http://literature.cdn.keysight.com/litweb/pdf/5991-4026EN.pdf
HV Cable Insulation Resistance Testing for Hybrid Vehicles
http://literature.cdn.keysight.com/litweb/pdf/5992-0289EN.pdf

Digital Multimeters

From electronics troubleshooting to installation and maintenance of machinery, Keysight handheld digital multimeters (DMMS) are designed to withstand the harsh working conditions and improve safety. Each DMM is compatible with the U1177A/U1117A Infrared (IR)-to-*Bluetooth* adapter that offers wireless remote connectivity solution. Our ranges of handheld DMMs are also equipped with smart features to help you quickly detect problems and obtain accurate measurements.

General Purpose and Electrical HHDMMs

Recommended for	**Electrical, HVAC and utilities**			**Installation and maintenance of machinery, electrical systems**			
Series model no.	**U1230 Series**			**U1240 Series**		**U1240C Series**	
Display	**U1231A**	**U1232A**	**U1233A**	**U1241B**	**U1241B**	**U1241C**	**U1242C**
Display resolution (counts)	6,000			10,000			
Dual display	N/A			N/A		N/A	
Analog bar-graph	Yes			Yes		Yes	
Back-light	Yes			Yes ★ (two intensity levels)		Yes	
Basic features							
AC bandwidth	1 kHz			2 kHz			
True RMS	AC			AC		AC switchable to average sense (U1242C)	
Auto/manual ranging	Yes			Yes		Yes	
Measurements							
Voltage AC/DC: range	600 mV to 600 V			1 V to 1000 V		100 mV to 1000 V	
Current AC/DC: range	N/A	60 µA to 10 A		1000 µA to 10 A		1000 µA to 10 A	
Resistance: range	600 Ω to 60 MΩ			1 kΩ to 100 MΩ		100 Ω to 100 MΩ	
Frequency: range	99.99 Hz to 99.99 kHz			100 Hz to 1000 kHz		100 Hz to 10 MHz	
Capacitance: range	1000 nF to 10 mF			1000 nF to 10 mF		1000 nF to 10 mF	
Temperature: type, range	N/A		K: –40 to 1372 °C	K: –40 to 1000 °C	K: –40 to 1000 °C J: –40 to 1000 °C	K: –200 to 1372 °C	K: –200 to 1372 °C J: –210 to 1200 °C
Continuity with beeper	Yes			Yes		Yes	
Diode test	Yes			Yes		Yes	
Data management							
Min/max recording	Yes			Yes		Yes	
Display hold	Yes			Yes		Yes	
Peak hold	Yes			N/A		N/A	
Manual data logging	Yes			Yes		Yes	
Null	Yes			Yes		Yes	
Connectivity	IR-USB / *Bluetooth*			IR-USB / *Bluetooth*		IR-USB / *Bluetooth*	
% scale of 4–20 mA	N/A			Yes		Yes	
Operating temperature	–10 to 55 °C 0 to 80% RH					–20 to 55 °C 0 to 80% RH	
Altitude	2000 m					3000 m	
Measurement category	CAT III 600 V			CAT III 1000 V / CAT IV 600 V			
Battery type (included)	4 x 1.5 V AAA						
Battery life	500 hours			300 hours		400 hours	
Advanced functions ★	Built-in flashlight Continuity alert with flashing backlight			Switch counter			Harmonic ratio, Vsense, Z_{LOW}, low pass filter, dual and differential temperature (T1-T2)
			Vsense: non-contact voltage detect		Harmonic ratio, dual and differential temperature (T1-T2)		

★ Represents key specifications/features

Industrial and Electronics HHDMMs

Recommended for	Electronics troubleshooting			Industrial					
Series model no.	U1250 series			U1270 Series				U1280 Series	
Display	U1251B	U1252B	U1253B	U1271A	U1272A	U1273A	U1273AX	U1281A	U1282A
Display resolution (counts)	50,000			30,000				60,000	
Dual display	Yes			Yes				Yes	
Analog bar-graph	Yes			Yes				Yes	
Back-light	OLED wdisplay ★			Yes		OLED wdisplay ★		Yes	
Basic features									
AC bandwidth	30 kHz	100 kHz		100 kHz				30 kHz	100 kHz
True RMS	AC	AC + DC		AC + DC				AC + DC	
Auto/manual ranging	Yes			Yes				Yes	
Measurements									
Voltage AC/DC: range	50 mV to 1000 V			300 mV to 1000 V	30 mV to 1000 V			60 mV to 1000 V	
Current AC/DC: range	500 µA to 10 µA			300 µA to 10 A				600 µA to 10 A	
Resistance: range	500 Ω to 500 MΩ			300 Ω to 100 MΩ	30 Ω to 300 MΩ			600 Ω to 60 MΩ	60 Ω to 600 MΩ
Frequency: range				99.999 Hz to 999.99 kHz				99.999 Hz to 9.9999 MHz	
Capacitance: range	10 nF to 10 mF								
Temperature: type, range	K: –200 to 1372 °C	K: –200 to 1372 °C J: –210 to 1200 °C		K: –200 to 1372 °C	K: –200 to 1372 °C J: –210 to 1200 °C			–200 to 1372 °C	
Continuity with beeper	Yes			Yes				Yes	
Diode test	Yes			Yes				Yes	
Data management									
Min/max recording	Yes			Yes				Yes	
Display hold	Yes			Yes				Yes	
Peak hold	Yes			Yes				Yes	
Manual datalogging	Yes			Yes				Yes	
Null	Yes			Yes				Yes	
Connectivity	IR-USB / *Bluetooth*			IR-USB / *Bluetooth*				IR-USB / *Bluetooth*	
% scale of 4–20 mA	Yes			Yes					
Operating temperature	–20 to 55 °C 0 to 80% RH						–40 to 55 °C 0 to 80% RH	–20 to 55 °C 0 to 80% RH	–20 to 55 °C 0 to 80% RH
Altitude	2000 m			3000 m				3000 m	
Measurement category	CAT III 1000 V / CAT IV 600 V								
Battery type (included)	9 V	8.4 V (rechargeable)		4 x 1.5 V AAA			4 x 1.5 V AAA (lithium)	4 x 1.5 V AA	
Battery life	72 hours	36 hours	8 hours	300 hours		30-60 hours	50-100 hours	800 hours	
Advanced functions		20 MHz Frequency counter, square wave output		Low pass filter					Harmonic ratio, Vsense, Z_{LOW}, low pass filter, dual and differential temperature (T1-T2)
					Smart ohm to remove residual voltage, Z_{LOW} low impedance mode to reduce stray voltage				

★ Represents key specifications/features

Digital Multimeters, continued

U1230 Series Handheld Digital Multimeter

Whether it is dark, noisy or even dangerous, the U1230 Series handheld digital multimeter keeps you equipped with features that anticipate worst-case scenarios. The ergonomic shaped handheld allows you to single-handedly illuminate the test area with a built-in flashlight while selecting measurement functions using the rotary dial. Vsense performs non-contact voltage detection while continuity detection is made easy with the audible beeper alert and flashing backlight display. With the U1230 Series, you work better in the conditions you are in.



Features

- Built-in LED flashlight to illuminate test area
- Flashing backlight as additional visual alert during continuity tests in noisy areas
- Vsense performs non-contact voltage detection
- Data logging capability (stores up to 10 readings)
- IR-to-USB connectivity to transfer data to PC for record
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

Specifications of the U1230 Series Digital Multimeters

		U1231A	U1232A	U1233A
Basic features				
Display resolution		6,000	6,000	6,000
Auto/manual ranging		Yes	Yes	Yes
Analog bar graph		Yes	Yes	Yes
Backlight		Yes	Yes	Yes
AC bandwidth		45 Hz to 1 kHz	45 Hz to 1 kHz	45 Hz to 1 kHz
True RMS		Yes	Yes	Yes
Measurements				
Voltage DC	Range	600 mV to 600 V	600 mV to 600 V	600 mV to 600 V
	Accuracy	0.5% + 2 cnts	0.5% + 2 cnts	0.5% + 2 cnts
Voltage AC	Range	600 mV to 600 V	600 mV to 600 V	600 mV to 600 V
	Accuracy	1.0% + 3 cnts	1.0% + 3 cnts	1.0% + 3 cnts
	Bandwidth	45 Hz to 1 kHz	45 Hz to 1 kHz	45 Hz to 1 kHz
Current DC	Range	N/A	60 µA to 10 A	60 µA to 10 A
	Accuracy	N/A	1.0% + 2 cnts	1.0% + 2 cnts
Current AC	Range	N/A	60 µA to 10 A	60 µA to 10 A
	Accuracy	N/A	1.5% + 3 cnts	1.5% + 3 cnts
	Bandwidth	N/A	45 to 500 Hz	45 to 500 Hz

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5990-7550EN

Specifications of the U1230 Series Digital Multimeters, continued

		U1231A	U1232A	U1233A
Measurements, continued				
Resistance	Range	600 Ω to 60 MΩ	600 Ω to 60 MΩ	600 Ω to 60 MΩ
	Accuracy	0.9% + 3 cnts	0.9% + 3 cnts	0.9% + 3 cnts
Frequency	Range	99.99 Hz to 99.99 kHz	99.99 Hz to 99.99 kHz	99.99 Hz to 99.99 kHz
	Accuracy	0.1% + 2 cnts	0.1% + 2 cnts	0.1% + 2 cnts
Capacitance	Range	1000 nF to 10 mF	1000 nF to 10 mF	1000 nF to 10 mF
	Accuracy	1.9% + 2 cnts	1.9% + 2 cnts	1.9% + 2 cnts
Temperature	Range	N/A	N/A	–40 to 1372 °C
	Accuracy	N/A	N/A	1% + 1 °C
Diode test		Yes	Yes	Yes
Data management				
Min/max recording		Yes	Yes	Yes
Trigger hold		Yes	Yes	Yes
Auto hold		Yes	Yes	Yes
Manual datalogging		Yes (Up to 10 readings)	Yes (Up to 10 readings)	Yes (Up to 10 readings)
Null		Yes	Yes	Yes
Connectivity		IR-USB / *Bluetooth*	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*
Special features				
Built-in flashlight		Yes ★	Yes ★	Yes ★
Beep + backlight alert for continuity		Yes ★	Yes ★	Yes ★
Vsense for non-contact voltage detection		N/A	N/A	Yes ★
Z_{LOW}- low impedance mode		Yes ★	Yes ★	Yes ★
Safety and regulatory				
IP rating		IP 42	IP 42	IP 42
Over-voltage safety protection		CAT III 600 V	CAT III 600 V	CAT III 600 V
EN/IEC 610101-1:2001 compliance		Yes	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance		Yes	Yes	Yes
General				
Operating temperature	–10 to 55 °C, 0 to 80% RH	–10 to 55 °C, 0 to 80% RH	–10 to 55 °C, 0 to 80% RH	
Battery (included)	4 x 1.5 V alkaline battery	4 x 1.5 V alkaline battery	4 x 1.5 V alkaline battery	
Battery life	500 hours	500 hours	500 hours	
Dimensions (H x W x D)	169 × 86 × 52 mm	169 × 86 × 52 mm	169 × 86 × 52 mm	

For complete specifications, please refer to data sheet 5990-7550EN

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5990-7550EN

Web Link

www.keysight.com/find/U1230DMM

How to?

Select a handheld DMM that is right for you

http://literature.cdn.keysight.com/litweb/pdf/5990-5197EN.pdf

Think safety when selecting a handheld multimeter

http://literature.cdn.keysight.com/litweb/pdf/5990-4578EN.pdf

U1240B Series Handheld Digital Multimeters

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 U1240B Series 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
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

Specifications of the U1240B Series Digital Multimeters

	U1241B	U1242B
Display		
Counts	10,000	10,000
Analog bar graph	Yes	Yes
Backlight	Dual-intensity ★	Dual-intensity ★
Basic features		
True RMS	AC	AC
Basic DCV accuracy	0.09%	0.09%
Auto/manual ranging	Yes	Yes
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 range	1000 nF to 10 mF	1000 nF to 10 mF
Temperature	1000 °C, K-type thermocouple	1000 °C, K-type thermocouple, T1/T2/T1-T2
Continuity with beeper	Yes	Yes
Diode test	Yes	Yes
% scale of 4–20 mA	Yes	Yes
Harmonic ratio	N/A	Yes ★
Switch counter	Yes ★	Yes ★

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5989-7040EN

Specifications of the U1240B Series Digital Multimeters, continued

	U1241B	U1242B
Data management		
Min/max/avg recording	Yes	Yes
Data hold	Yes	Yes
Null	Yes	Yes
Connectivity	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*
Data logging	N/A	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 to 55 °C	–10 to 55 °C
Battery (included)	4 x AAA	4 x AAA
Battery life	300 hours	300 hours
Dimensions (H x W x D)	193.8 x 92.2 x 58.0 mm	193.8 x 92.2 x 58.0 mm

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5989-7040EN

Web Link

www.keysight.com/find/handhelddmm

How to?

Detect harmonics in AC signals

http://literature.cdn.keysight.com/litweb/pdf/5989-7687EN.pdf

Select a handheld DMM that is right for you

http://literature.cdn.keysight.com/litweb/pdf/5990-5197EN.pdf

U1240C Series Handheld Digital Multimeters

For technicians or industrial test engineers, their ultimate goal is to keep the production line running seamlessly to prevent unplanned shutdown. The strong and solid U1240C Series handheld digital multimeters (DMMs) are the tools you need to work efficiently. Certified to IP 67 and tested to withstand up to 3-meter (10 feet) drop to suit harsh working environments, these durable DMMs can even work longer for you with up to 400 hours of battery life. Better yet, you can optimize productivity with the unique remote data logging functionality designed to run seamlessly with the DMM. Perform test confidently and efficiently – everything you need to get the job done.



Features

- 10,000-count dual display
- Up to 0.09% basic DCV accuracy
- Longer battery life up to 400 hours
- Certified to IP 67 for water and dust protection
- Tested to withstand a 3-meter (10-ft) drop
- CAT IV 600 V / CAT III 1000 V overvoltage protection
- Built-in harmonic ratio[1], Z_{LOW}, Low Impedance mode[1], Vsense[1] for non-contact voltage detection, T1 – T2 differential temperature[1] measurement
- Built-in flashlight
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

1. U1242C only

Specifications of the U1240C Series Digital Multimeters

		U1241C	U1242C
Basic features			
Display resolution		10,000	10,000
Auto/manual ranging		Yes	Yes
Analog bar graph		Yes	Yes
Backlight		Yes ★	Yes ★
AC bandwidth		2 kHz	2 kHz
True RMS		AC (Switchable to averaging sense)	AC (Switchable to averaging sense)
Measurements			
Voltage DC	Range	100 mV to 1000 V	100 mV to 1000 V
	Accuracy	0.09% + 2 cnts	0.09% + 2 cnts
Voltage AC	Range	100 mV to 1000 V	100 mV to 1000 V
	Accuracy	1% + 3 cnts	1% + 3 cnts
Current DC	Range	1000 µA to 10 A	1000 µA to 10 A
	Accuracy	0.1% + 2 cnts	0.1% + 2 cnts
Current AC	Range	1000 µA to 10 A	1000 µA to 10 A
	Accuracy	1% + 3 cnts	1% + 3 cnts

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5992-0848EN

Specifications of the U1240C Series Digital Multimeters

		U1241C	U1242C
Measurements, continued			
Resistance	Range	1000 Ω to 100 MΩ	100 Ω to 100 MΩ
	Accuracy	0.2% + 2 cnts	0.2% + 2 cnts
Frequency	Range	100 Hz to 10 MHz	100 Hz to 10 MHz
	Accuracy	0.02% + 1 cnts	0.02% + 1 cnts
Capacitance	Range	1000 nF to 10 mF	1000 nF to 10 mF
	Accuracy	1% + 5 cnts	1% + 5 cnts
Temperature (K-type thermocouple)	Range	–200 to 1372 °C	–200 to 1372 °C
	Accuracy	1% + 1 °C	1% + 1 °C
Continuity with beeper		Yes	Yes
Diode test		Yes	Yes
Data management			
Min/Max recording		Yes	Yes
Display hold		Yes	Yes
Auto hold		Yes	Yes
Null		*Yes*	*Yes*
PC-Connectivity		Infrared (IR)-USB; IR-*Bluetooth* (optional with U1117A)	Infrared (IR)-USB; IR-*Bluetooth* (optional with U1117A)
Special features			
Harmonic ratio			Yes ★
Vsense: non-contact voltage detect			Yes ★
Z_{LOW} - Low impedance mode			Yes ★
T1 - T2 differential temperature measurement			Yes ★
Safety and regulatory			
Safety protection		CAT III 1000 V / CAT IV 600 V	CAT III 1000 V / CAT IV 600 V
EN/IEC 61010-2-030: 2010 compliance		Yes	Yes
EN/IEC 61010-1: 2010 compliance		Yes	Yes
General			
IP rating		IP 67 ★	IP 67 ★
Drop test		3 meters (10 ft) ★	3 meters (10 ft) ★
Operating temperature		–20 to 55 °C 0 to 80% RH	–20 to 55 °C 0 to 80% RH
Battery (included)		4 x 1.5 V AAA	4 x 1.5 V AAA
Battery life		400 hours ★	400 hours ★
Calibration		One year, or; Two years (with 1.5 times of one year specification)	One year, or; Two years (with 1.5 times of one year specification)

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5992-0848EN

Web Link

www.keysight.com/find/handhelddmm

How to?

Monitoring the control panel temperature

http://literature.cdn.keysight.com/litweb/pdf/5992-1123EN.pdf

U1250 Series handheld Digital Multimeters

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 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
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

* with 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

Specifications of the U1250 Series Digital Multimeters

	U1251B	U1252B	U1253B
Display			
Organic LED	N/A	N/A	Yes
Dual display	Yes	Yes	Yes
Counts	50,000 (both displays) ★	50,000 (both displays) ★	50,000 (both displays) ★
Analog bar graph	Yes	Yes	Yes
Backlight	Yes	Yes	N/A
Basic features			
True RMS	AC	AC+DC	AC+DC
Basic DCV accuracy	0.03%	0.025%	0.025%
Auto/manual ranging	Yes	Yes	Yes
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	10nF to 100 mF	10nF to 100 mF ★	10nF to 100 mF ★
Temperature	1372 °C, K-type thermocouple ★	1372 °C, J/K-type thermocouple ★	1372 °C, J/K-type thermocouple ★
Continuity with beeper	Yes	Yes	Yes
Diode test	Yes	Yes	Yes
% scale of 4–20 mA	Yes	Yes	Yes
dB	Yes	Yes	Yes
Frequency counter	N/A	Yes ★	Yes ★
Smoothing function	N/A	N/A	Yes ★

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5989-5509EN

Specifications of the U1250 Series Digital Multimeters, continued

	U1251B	U1252B	U1253B
Signal generation			
Square-wave generator	N/A	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	Yes	Yes	Yes
Peak recording	Yes	Yes	Yes
Data hold	Yes	Yes	Yes
Null	Yes	Yes	Yes
Connectivity	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*
Data logging (requires IR-to-USB cable U1173A for connection to PC)	Internal: 100 manual, 200 interval points	Internal: 100 manual, 200 interval points	Internal: 100 manual, 1000 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	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 to 55 °C	–20 to 55 °C	–20 to 55 °C
Battery (included)	Alkaline 9 V	8.4 V Ni-MH rechargeable	8.4 V Ni-MH rechargeable
Battery life	70 hours	30 hours	7 hours
I/O	IR-USB	IR-USB	IR-USB
Dimensions (H x W x D)	203.5 x 94.4 x 59.0 mm	203.5 x 94.4 x 59.0 mm	203.5 x 94.4 x 59.0 mm

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5989-5509EN

Web Link

www.keysight.com/find/handhelddmm

How to?

Think safety when selecting a handheld multimeter

http://literature.cdn.keysight.com/litweb/pdf/5990-4578EN.pdf

Select a handheld DMM that is right for you

http://literature.cdn.keysight.com/litweb/pdf/5990-5197EN.pdf

U1270 Series Handheld Digital Multimeters

The U1273AX, the latest addition to the U1270 Series is capable of operating down to –40 °C in temperature. Even in extremely cold conditions, the U1273AX handheld DMM delivers immediate and accurate results — no warm-up time required.

All models are ergonomically-built providing useful functions such as Z_{LOW}, which eliminates stray voltages, and Smart Ohm that minimizes false readings from residual voltage induced by leakage current. All of this is designed into a case that fulfills the needs of today's industrial handheld users.





Features

- OLED display with 2000:1 contrast ratio and 160 degree viewing angle[1,2]
- 30,000 counts resolution
- Measure up to 1000 V AC and DC
- Measure up to 10 A (20 A for 30 s)
- Resistance, diode test, temperature, capacitance
- Z_{LOW} - Low impedance mode[1,2,3] and Low Pass Filter
- –40 to 55 °C operating temperature[2]
- Up to 3000 m operating altitude
- Data logging to instrument and PC
- Water and dust resistance (IP 54)
- CAT III 1000 V / CAT IV 600 V safety rating
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

1. U1273A 2. U1273AX 3. U1272A

Specifications of the U1270 Series Digital Multimeters

		U1271A	U1272A	U1273A	U1273AX
Basic features					
Display resolution		30,000	30,000	30,000	30,000
Display type		LCD	LCD	OLED	OLED
Auto/manual ranging		Yes	Yes	Yes	Yes
Analog bar graph		Yes	Yes	Yes	Yes
Backlight		Yes	Yes	Yes	Yes
AC bandwidth		20 kHz	100 kHz	100 kHz	100 kHz
True RMS		AC	AC + DC	AC + DC	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	30 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	30 mV to 1000 V 0.6% + 20 cnts 45 Hz to 100 kHz	30 mV to 1000 V 0.6% + 20 cnts 45 Hz to 100 kHz
Current DC	Range Accuracy	300 µA to 10 A 0.2% + 5 cnts	300 µA to 10 A 0.2% + 5 cnts	300 µA to 10 A 0.2% + 5 cnts	300 µA to 10 A 0.2% + 5 cnts
Current AC	Range Accuracy Bandwidth	300 µA to 10 A 0.9% + 25 cnts 45 Hz to 2 kHz	300 µA to 10 A 0.6% + 25 cnts 45 Hz to 2 kHz	300 µA to 10 A 0.6% + 25 cnts 45 Hz to 2 kHz	300 µA to 10 A 0.6% + 25 cnts 45 Hz to 2 kHz
Resistance	Range Accuracy	300 Ω to 100 MΩ 0.2% + 5 cnts	30 Ω to 300 MΩ 0.2% + 5 cnts	30 Ω to 300 MΩ 0.2% + 5 cnts	30 Ω to 300 MΩ 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	99.999 Hz to 999.99 kHz 0.005% + 5 cnts	99.999 Hz to 999.99 kHz 0.005% + 5 cnts

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

Specifications of the U1270 Series Digital Multimeters, continued

		U1271A	U1272A	U1273A	U1273AX
Measurements, continued					
Capacitance	Range Accuracy	10 nF to 10 mF 1% + 2 cnts	10 nF to 10 mF 1% + 2 cnts	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: –210 to 1200 °C 1% + 1 °C	K: –200 to 1372 °C J: –210 to 1200 °C 1% + 1 °C	K: –200 to 1372 °C J: –210 to 1200 °C 1% + 1 °C
Continuity with beeper		Yes	Yes	Yes	Yes
Diode test		Yes	Yes	Yes	Yes
Data management					
Min/max recording		Yes	Yes	Yes	Yes
Display hold		Yes	Yes	Yes	Yes
Peak hold		Yes	Yes	Yes	Yes
Manual datalogging		Yes	Yes	Yes	Yes
Null		Yes	Yes	Yes	Yes
Connectivity		IR-USB / *Bluetooth*	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*	IR-USB / *Bluetooth*
% scale of 4–20 mA		Yes	Yes	Yes	Yes
Special features					
OLED display		–	–	Yes ★	Yes ★
Beep + visual alert		Yes	Yes	Yes	Yes
Low pass filter (LPF)		Yes ★	Yes ★	Yes ★	Yes ★
Z_{LOW} - low impedance mode		N/A	Yes ★	Yes ★	Yes ★
Smart Ω		N/A	Yes ★	Yes ★	Yes ★
Qik-V		Yes	N/A	N/A	N/A
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	CAT III 1000 V, CAT IV 600 V
EN/IEC 61010-1:2001 compliance		Yes	Yes	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance		Yes	Yes	Yes	Yes
General					
Operating temperature		–20 to 55 °C, 0 to 80% RH	–20 to 55 °C, 0 to 80% RH	–40 to 55 °C, 0 to 80% RH	–40 to 55 °C, 0 to 80% RH ★
Altitude		3000 m	3000 m	3000 m	3000 m
Battery (included)		4 x AAA alkaline	4 x AAA alkaline	4 x AAA lithium	4 x AAA lithium
Battery life		300 hours	30–60 hours	50–100 hours	50–100 hours
Dimensions (H x W x D)		207.0 x 92.0 x 59.0 mm	207.0 x 92.0 x 59.0 mm	207.0 x 92.0 x 59.0 mm	207.0 x 92.0 x 59.0 mm

★ Represents key specifications/features For complete specifications, please refer to data sheet 5990-6425EN

Web Link

www.keysight.com/find/handhelddmm
www.keysight.com/find/U1273AX

How to?

Test for stray voltage using the U1272A

http://literature.cdn.keysight.com/litweb/pdf/5990-6517EN.pdf

Ground resistance measurement with Smart Ohm

http://literature.cdn.keysight.com/litweb/pdf/5990-7323EN.pdf

U1280 Series Handheld Digital Multimeters

Gain the confidence to achieve trustworthy measurements thanks to the precision, accuracy and repeatability of the Keysight U1280 series handheld digital multimeters (DMM). Get the precise measurements you'd need with 60,000-count display resolution and 0.025% accuracy. With the Handheld Meter Logger software, swiftly capture individual measurements, generate reports and log trends with the touch of a button. Plus, with up to 800 hours of battery life, you can count on your DMM to perform when you need it.

NEW



CAT III 1000 V
CAT IV 600 V



Features

- 60,000-count dual display
- Up to 0.025% basic DCV accuracy
- Longer battery life up to 800 hours
- Certified to IP 67 for water and dust protection
- Tested to withstand a 3-meter (10-ft) drop
- CAT IV 600 V / CAT III 1000 V overvoltage protection
- Built-in Vsense[1] for non-contact voltage detection
- Square wave output[1] for generating pulse width modulation (PWM) signal
- Frequency counter[1]
- Low pass filter[1]
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth* adapter to get instant wireless *Bluetooth* connection

1. U1282A only

Specifications of the U1280C Series Digital Multimeters

		U1281A	U1282A
Basic features			
Display resolution		60,000 ★	60,000 ★
Auto/manual ranging		Yes	Yes
Analog bar graph		Yes	Yes
Backlight		Yes ★	Yes ★
AC bandwidth		30 kHz	100 kHz
True RMS		AC + DC	AC + DC
Measurements			
Voltage DC	Range	60 mV to 1000 V	60 mV to 1000 V
	Accuracy	0.025% + 5 cnts	0.025% + 5 cnts
Voltage AC	Range	60 mV to 1000 V	60 mV to 1000 V
	Accuracy	0.3% + 25 cnts	0.3% + 25 cnts
Current DC	Range	600 µA to 10 A	600 µA to 10 A
	Accuracy	0.05% + 5 cnts	0.05% + 5 cnts
Current AC	Range	600 µA to 10 A	600 µA to 10 A
	Accuracy	0.6% + 25 cnts	0.6% + 25 cnts

★ Represents key specifications/features For complete specifications, please refer to data sheet 5992-0847EN

Specifications of the U1280C Series Digital Multimeters, continued

		U1281A	U1282A
Measurements, continued			
Resistance	Range	600 Ω to 60 MΩ	60 Ω to 600 MΩ
	Accuracy	0.05% + 2 cnts	0.05% + 2 cnts
Frequency	Range	99.999 Hz to 9.9999 MHz	99.999 Hz to 9.9999 MHz
	Accuracy	0.005% + 3 cnts	0.005% + 3 cnts
Capacitance	Range	10 nF to 100 mF	10 nF to 100 mF
	Accuracy	1% + 5 cnts	1% + 5 cnts
Temperature (K-type thermocouple)	Range	–200 to 1372 °C	–200 to 1372 °C
	Accuracy	1% + 1 °C	1% + 1 °C
Continuity with beeper and LED light		Yes ★	Yes ★
Diode test		Yes	Yes
Data management			
Min/Max recording		Yes	Yes
Display hold		Yes	Yes
Auto hold		Yes	Yes
Null		Yes	Yes
PC-connectivity		Infrared (IR)-USB; *IR-Bluetooth* (optional with U1117A)	Infrared (IR)-USB; *IR-Bluetooth* (optional with U1117A)
Special features			
Square wave output			Yes ★
Vsense: non-contact voltage detect			Yes ★
Frequency counter			Yes ★
Low pass filter			Yes ★
Safety and regulatory			
Safety protection		CAT III 1000 V / CAT IV 600 V	CAT III 1000 V / CAT IV 600 V
EN/IEC 61010-2-030: 2010 compliance		Yes	Yes
EN/IEC 61010-1: 2010 compliance		Yes	Yes
General			
IP rating		IP 67 ★	IP 67 ★
Drop test		3 meters (10 ft) ★	3 meters (10 ft) ★
Operating temperature		–20 to 55 °C 0 to 80% R.H	–20 to 55 °C 0 to 80% RH
Battery (included)		4 x 1.5 V AA	4 x 1.5 V AA
Battery life		800 hours ★	800 hours ★
Calibration		One year, or; Two years (with 1.5 times of one year specification)	One year, or; Two years (with 1.5 times of one year specification)

★ Represents key specifications/features For complete specifications, please refer to data sheet 5992-0847EN

Web Link

www.keysight.com/find/handhelddmm

How to?

Maintenance of electronic factory equipment and process line

http://literature.cdn.keysight.com/litweb/pdf/5992-1112EN.pdf

Digital Oscilloscopes

Our handheld scopes are designed to be used across a wide range of applications and troubleshooting tasks.
Each model comes with different specifications to tailor to your needs, and are safety certified for safer measurements.

Model no.	U1610A	U1620A
Vertical system: scope channels		
Bandwidth (–3 dB)	100 MHz	200 MHz
DC vertical gain accuracy	± 4% of full scale Full scale is equivalent to 8 div	
Acquisition: scope channels		
Maximum sample rate Single channel operation Dual channel operation	 1 GSa/s interleave 500 MSa/s each channel	 2 GSa/s interleave 1 GSa/s each channel
Vertical resolution	8-bits	
Maximum recording length Single channel operation Dual channel operation	 120 Kpts interleave 60 Kpts each channel	 2 Mpts interleave 1 Mpts each channel
Vertical system: scope channels		
Rise time	3.50 ns typical	1.75 ns typical
Maximum input	CAT III 600 Vrms (with 10:1 probe) CAT III 300 Vrms (direct / 1:1 probe)	
Bandwith limit	10 KHz and 20 MHz (selectable)	
Channel-to-channel isolation	Yes, CAT III 600 V Vrms	
Probe attentuation factors	1x, 10x, 100x	
Horizontal system		
Range	5 ns/div to 50 s/div	2 ns/div to 50 s/div
Modes	Main, zoom, XY, roll	
Trigger system		
Sources	Channel 1, Channel 2, External	
Modes	Normal, Single, Auto	
Types	Edge, Glitch, TV, Nth Edge, CAN, LIN	
Auto measurements	Delay, duty cycle (+/–), fall/rise time, frequency, period, phase shift, T-max,T-min, width (+/–), amplitude, average, base, crest, cycle mean, maximum,minimum, overshoot, peak-to-peak, preshoot, standard deviation, top, Vrms (AC/DC), active/apparent/reactive power, power factor	
Waveform math functions	CH1 + CH2, CH1 – CH2, CH2 – CH1, CH1 × CH2, CH1/CH2, CH2/CH1, d/dt (CH1),d/dt (CH2), ∫(CH1)dt, ∫(CH2)dt, FFT	
Digital multimeter measurement		
Voltage AC/DC range	1000 mV to 1000 V	
Resistance range	1000 Ω to 100 MΩ	
Capacitance range	1000 nF to 10 mF	
Diode range	1 V	
Temperature range	–50 to 1000 °C	
Frequency	100 Hz to 1000 KHz	
AC current range	N/A	
Measurement characteristic		
Resolution	10,000 counts	
Continuity	Continuous beep when resistance < 10 Ω	
Datalogger	Yes	

Digital Oscilloscopes, continued

Model no.	U1610A	U1620A
General		
Display	5.7-inch VGA TFT Color LCD (sunlight viewable)	
Resolution	640 x 480 pixels	
IP rating	IP41	
Save/recall	10 setups and waveforms can be saved and recalled internally	
Battery type	Li-ion rechargeable battery pack, 10.8 V	
Battery life	3 hours	
I/O	USB 2.0 full speed host/client port	
Dimension (H x W x D)	183 x 270 x 65 mm	
Weight	< 2.5 kg	
UI language	10 selectable languages	
Advanced functions	3 viewing modes (indoor, outdoor, night-vision), VGA TFT LCD screen, dual windows zoom	

U1610A/U1620A Handheld Digital Oscilloscopes

Keysight's U1610A/U1620A is the world's first handheld oscilloscope with a VGA display. With a bandwidth of 100/200 MHz, the handheld oscilloscope offers a floating measurement capability with two CAT III 600 V isolated channels. With up to 2 GSa/s sampling rate and 2 Mpts memory depth, it captures more waveforms from signals such as pulse width modulated circuit, in-rush, transient, and motor start up sequences. The benchtop-like display and dual window zoom function allow you to easily identify problem areas and zoom in for more detailed analysis. Now, you can view signals in detail and detect glitches easily.



Features

- 100/200 MHz bandwidth with two isolated channels
- 5.7-inch VGA TFT LCD display with 3 selectable viewing modes (indoor, outdoor and night vision)
- Up to 2 Mpts memory depth and 2 GSa/s sampling rate allows detailed analysis of captured glitches
- 10,000-count resolution on DMM display
- Channel-to-channel isolation with CAT III 600 V safety ratings
- Data logging capability and USB connectivity
- Up to 10 selectable languages on the User Interface (UI)

Specifications of the U1610A/U1620A Digital Oscilloscope

	U1610A	U1620A
Display		
General	5.7-inch color VGA TFT LCD ★	5.7-inch color VGA TFT LCD ★
Counts (DMM function)	10,000	10,000
Scope		
Channels	2	2
Bandwidth (–3 dB)	100 MHz	200 MHz
Maximum sampling rate Single channel operation Dual channel operation	 1 GSa/s interleave 500 MSa/s each channel	 2 GSa/s interleave 1 GSa/s each channel
Maximum recording length Single channel operation Dual channel operation	 120 Kpts interleave 60 Kpts each channel	 2 Mpts interleave 1 Mpts each channel
Cursor and zoom functions	Yes	Yes
Waveform math	CH1 + CH2, CH1 – CH2, CH2 – CH1, CH1 × CH2, CH1/CH2, CH2/CH1, d/dt (CH1), d/dt (CH2), ∫(CH1)dt, ∫(CH2)dt, FFT	CH1 + CH2, CH1 – CH2, CH2 – CH1, CH1 × CH2, CH1/CH2, CH2/CH1, d/dt (CH1), d/dt (CH2), ∫(CH1)dt, ∫(CH2)dt, FFT
FFT	Yes	Yes
Automatic measurements	Up to 24 measurements	Up to 24 measurements
Coupling	DC, AC	DC, AC
Input impedance	1 MΩ ± 1% ≈ 22 pF ± 3 Pf	1 MΩ ± 1% ≈ 22 pF ± 3 Pf
Range	5 ns/div to 50 s/div	2 ns/div to 50 s/div
Resolution	8-bits	8-bits
Rise time	3.50 ns typical	1.75 ns typical
Trigger types	Edge, Glitch, TV, Nth Edge, CAN, LIN	Edge, Glitch, TV, Nth Edge, CAN, LIN
Trigger modes	Normal, Single, Auto	Normal, Single, Auto
Internal scope storage	10 setups and waveforms can be saved and recalled internally	10 setups and waveforms can be saved and recalled internally

★ Represents key specifications/features For complete specifications, please refer to data sheet 5990-9523EN

Specifications of the U1610A/U1620A Digital Oscilloscope, continued

	U1610A	U1620A
DMM		
True RMS	Yes	Yes
Voltage AC/DC	1000.0 mV to 1000.0 V	1000.0 mV to 1000.0 V
Current AC/DC	40 A / 400 A[1]	40 A / 400 A[1]
Resistance	1000.00 Ω to 100.00 MΩ	1000.00 Ω to 100.00 MΩ
Capacitance	1000.0 nF to 10.000 mF	1000.0 nF to 10.000 mF
Temperature	–40 to 1000 °C	–40 to 1000 °C
Continuity with beeper	Yes	Yes
Diode test	1 V	1 V
Data logger		
Min/max/avg recording	Yes	Yes
Data logging (requires bundled USB 2.0 full-speed cable for connection to PC)	Yes	Yes
Time span	8 days	8 days
Safety and regulatory		
Over-voltage safety protection	CAT III 600 Vrms[1]	CAT III 600 Vrms[2]
EN/IEC 61010-1:2001 compliance	Yes	Yes
CSA C22.2 No. 61010-1:2004 compliance	Yes	Yes
IP rating	IP 41	IP 41
General		
Operating temperature	0 to 50 °C (with battery only) 0 to 40 °C (with power adapter)	0 to 50 °C (with battery only) 0 to 40 °C (with power adapter)
Battery (included)	Yes	Yes
Weight	< 2.5 kgs	< 2.5 kgs
Battery life	3 hours	3 hours
I/O	USB 2.0 full speed host/client port	USB 2.0 full speed host/client port
Dimensions (H x W x D)	183 x 270 x 65 mm	183 x 270 x 65 mm
Special features		
Indoor, outdoor, night vision mode	Yes ★	Yes ★
UI language	10 selectable languages ★	10 selectable languages ★

1. Use U1583B for current measurement
2. 10:1 probe for CAT III 600 V

★ Represents key specifications/features For complete specifications, please refer to data sheet 5990-9523EN

Web Link

www.keysight.com/find/U1600

Clamp Meters

Our clamp meters are designed to address the toughest electrical challenges without compromising on safety. Certified with safety ratings and equipped with a wealth of features – you are now ready to make measurements with more confidence.

Recommended for	**Installation and maintenance of power distribution and supplies**			**Commercial or residential electrical installation and maintenance**			
Series	**U1210 Series**			**U1190 Series**			
Model no.	**U1211A**	**U1212A**	**U1213A**	**U1191A**	**U1192A**	**U1193A**	**U1194A**
Display							
Display resolution (counts)	4,000			6,000			
Dual display	Yes			No			
Analog bar-graph	Yes			No			
Back-light	Yes			Yes			
Basic features							
AC bandwidth	400 Hz		2 kHz	500 Hz			
RMS Method	True RMS AC	AC	AC + DC	Average responding		True RMS	
Auto/manual ranging	Yes			Auto ranging only			
Measurements							
Voltage AC/DC: range	4 to 1000 V			600 V	60 to 600 V		
Current AC/DC: range	ACI: 40 to 1000 A ★	40 to 1000 A ★		ACI: 400 A	ACI: 60 to 400 A	ACI: 60 µA to 600 A	ACI: 60 µA to 600 A DCI: 60 µA to 600 A
Resistance: range	400 Ω to 4 kΩ		400 Ω to 40 MΩ	600 Ω to 60 kΩ			
Frequency: range	99.99 Hz to 999.9 kHz			N/A	99.99 Hz to 99.99 kHz		
Capacitance: range	400 to 4000 µF		4 to 4000 µF	N/A	600 µF to 6 mF		
Temperature: type, range	N/A	K: –200 to 1372 °C		N/A			
Continuity with beeper	Yes			Yes			
Diode test	Yes			Yes			
Data management							
Min/max recording	Yes			Yes			
Display hold	Yes			Yes			
Peak hold	Yes			N/A			
Null	Yes			Yes			
Connectivity	*Bluetooth*			N/A			
General							
Operating temperature	–10 to 50 °C, 0 to 80% RH			–10 to 50 °C, 0 to 80% RH			
Measurement category	CAT III 1000 V / CAT IV 600 V			CAT III 600 V / CAT IV 300 V			
Battery type (included)	9 V			1.5 V			
Battery life	60 hours			200 hours			
Dimensions (H x W x D)	273.0 x 106.0 x 43.0 mm			225.0 x 77.1 x 38.6 mm			
Clamp opening	52 mm / 2 inches			31 mm		37 mm	
Advanced functions	Auto power off			Wire separator, Auto power off ★	Wire separator, built-in flashlight, Vsense, Auto power off ★		

★ Represents key specifications/features.

U1190 Series Clamp Meters

Keysight's U1190 Series clamp meters are packed with a wealth of features to help you work more efficiently and more safely. Housed in robust cases, each model comes with an innovative wire separator that helps you isolate and measure individual wires in a bundle. The built-in LED flashlight illuminates your test area and Vsense performs non-contact voltage detection. The clamp meters are also certified with both CAT III 600 V and CAT IV 300 V ratings to cover wider measurement categories.



CAT III 1000 V
CAT IV 600 V

Features

- Unique wire separator to separate wires from a bundle
- Vsense to perform non-contact voltage detection[1]
- Built-in LED flashlight to illuminate test area[1]
- Current measurement up to 600 A[2]
- Digital multimeter (DMM) with Resistance, Capacitance[1], DCV, ACV, DCµA[3], ACµA[3], Continuity and Diode test measurements
- CAT III 600 V / CAT IV 300 V safety ratings

1. Only for U1192A, U1193A and U1194A
2. Only for U1193A and U1194A
3. Only for U1194A

Specifications of the U1190 Series Clamp Meters

	U1191A	U1192A	U1193A	U1194A
Basic features				
Counts	6,000	6,000	6,000	6,000
RMS method	Average responding	Average responding	True RMS	True RMS
Measurement range				
DC voltage	600 V	60 to 600 V	60 to 600 V	60 to 600 V
AC voltage	600 V	60 to 600 V	60 to 600 V	60 to 600 V
DC A current	N/A	N/A	N/A	60 to 600 A
DC µA current	N/A	N/A	N/A	60 to 600 µA
AC current	400 A	40 to 600 A	60 to 600 A	60 to 600 A
AC µA current	N/A	N/A	N/A	60 to 600 µA
Resistance	600 Ω to 6 kΩ	600 Ω to 60 kΩ	600 Ω to 60 kΩ	600 Ω to 60 kΩ
Capacitance	N/A	600 µF to 6 mF	600 µF to 6 mF	600 µF to 6 mF
Diode	1.5 V	1.5 V	1.5 V	1.5 V
Continuity	600 Ω	600 Ω	600 Ω	600 Ω
Temperature	N/A	N/A	N/A	K-type: –40 to 1200 °C
Frequency	N/A	99.99 Hz to 99.99 kHz	99.99 Hz to 99.99 kHz	99.99 Hz to 99.99 kHz
Data management				
Data hold	Yes	Yes	Yes	Yes
Null	Yes	Yes	Yes	Yes
MAX/MIN/AVG	Yes	Yes	Yes	Yes
Auto/Range	Yes	Yes	Yes	Yes
Other features				
Backlight	Yes	Yes	Yes	Yes
Auto power OFF	Yes	Yes	Yes	Yes
Wire separator	Yes ★	Yes ★	Yes ★	Yes ★
Built-in flashlight	No	Yes ★	Yes ★	Yes ★
Vsense	No	Yes ★	Yes ★	Yes ★

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5990-8646EN

Specifications of the U1190 Series Clamp Meters, continued

	U1191A	U1192A	U1193A	U1194A
Safety and regulatory				
Over-voltage safety protection	CAT III 600 V / CAT IV 300 V	CAT III 600 V / CAT IV 300 V	CAT III 600 V / CAT IV 300 V	CAT III 600 V / CAT IV 300 V
EN/IEC 61010-1, CE, CSA compliance	Yes	Yes	Yes	Yes
General				
Operating temperature	–10 to 50 °C, 0 to 80% RH	–10 to 50 °C, 0 to 80% RH	–10 to 50 °C, 0 to 80% RH	–10 to 50 °C, 0 to 80% RH
Battery (included)	1.5 V	1.5 V	1.5 V	1.5 V
Battery life	200 hours	200 hours	200 hours	200 hours
Dimensions (H x W x D)	225.0 x 77.1 x 38.6 mm	225.0 x 77.1 x 38.6 mm	238.0 x 77.1 x 38.6 mm	238.0 x 77.1 x 38.6 mm
Clamp opening	31 mm	31 mm	37 mm	37 mm
Clamping diameter	27 mm	27 mm	35 mm	35 mm

For complete specifications, please refer to data sheet 5990-8646EN

Web Link

www.keysight.com/find/clampmeter

U1210 Series Handheld Clamp Meters

Measurements of electrical distribution cables can be challenging and risky. For cables up to two inches in diameter, the Keysight 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
- For Keysight Remote Link solution, add on optional U1117A Infrared (IR)-to-*Bluetooth*® *adapter to* get instant wireless *Bluetooth* connection

Specifications of the U1210 Series Clamp Meters

	U1211A	U1212A	U1213A
Display			
Dual display	Yes	Yes	Yes
Counts	4000	4000	4000
Bar-graph	12 segments	12 segments	12 segments
Backlit	Yes	Yes	Yes
Auto power OFF	Yes	Yes	Yes
Basic features			
True RMS	AC	AC/DC	AC+DC
Auto/manual ranging	Yes	Yes	Yes
Measurements			
Voltage DC range	400 to 1000 V (0.5%)	400 to 1000 V (0.5%)	4 to 1000 V (0.2%)
Voltage AC range	400 to 1000 V (1.0%)	400 to 1000 V (1.0%)	4 to 1000 V (1.0%)
Current DC range	N/A	40 to 1000 A (1.5%)	40 to 1000 A (1.5%)
Current AC range	40 to 1000 A (1.0%) ★	40 to 1000 A (2.0%) ★	40 to 1000 A (2.0%) ★
Resistance range	400 Ω to 4 kΩ (0.5%)	400 Ω to 4 kΩ (0.5%) ★	400 Ω to 4 MΩ (0.3%) ★
Capacitance range	400 to 4000 uF (2.0%)	400 to 4000 µF (2.0%)	4 to 4000 µF (1.0%)
Diode	Yes	Yes	Yes
Temperature	N/A	K-type: –200 to 1372 °C	K-type: –200 to 1372 °C
Frequency	Yes	Yes	Yes
Duty cycle	N/A	N/A	Yes
Data management			
Data hold	Yes	Yes	Yes
Null	Yes	Yes	Yes
MAX/MIN/AVG	Yes	Yes	Yes
Peak hold	Yes	Yes	Yes
Connectivity	*Bluetooth*	*Bluetooth*	*Bluetooth*
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 to 50 °C	–10 to 50 °C	–10 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
Dimensions (H x W x D)	273.0 x 106.0 x 43.0 mm	260.0 x 106.0 x 43.0 mm	260.0 x 106.0 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

Web Link

www.keysight.com/find/clampmeter

How to ?

Troubleshoot three-phase AC motors with U1210 Series handheld clamp meters

http://literature.cdn.keysight.com/litweb/pdf/5990-5192EN.pdf

Multi-Function Calibrator/Meter

U1401B Handheld Multi-function Calibrator/Meter



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 Keysight 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 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

Specifications of the U1401B Multi-function Calibrator/Meter

	U1401B
Display	
Dual display	Yes
Counts	50,000
Backlight	Yes
Source	
Voltage	± 15 V
Current	± 25 mA
Square-wave	0.5 Hz to 4.8 kHz, selectable Hz and % ★
Auto scan and ramp	Yes
Simultaneous operation with MEASURE function	Yes ★
Measure	
True RMS	AC+DC
Basic DCV accuracy	0.03% + 5 counts
Auto/manual ranging	Yes
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	Yes
Diode test	Yes
% scale of 0–20 mA, 4–20 mA	Yes
Simultaneous operation with SOURCE function	Yes ★

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5990-3459EN

Specifications of the U1401B Multi-function Calibrator/Meter, continued

	U1401B
Data management	
Min/max/avg recording	Yes
Peak recording	Yes
Data hold	Yes
Data logging to PC (requires IR-to-USB cable U5481B for connection to PC)	Yes
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 to 40 °C
Battery (included)	9.6 V Ni-MH rechargeable
Battery life	80 hours
I/O	IR-USB
Dimensions (H x W x D)	192.0 x 90.0 x 54.0 mm

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

Web Link

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

How to?

Easily perform process control calibration U1401A

http://literature.cdn.keysight.com/litweb/pdf/5990-3932EN.pdf

Capacitance/LCR Meters

U1700 Series handheld capacitance/LCR meters



Keysight's U1730C Series handheld LCR meters allow you to measure at frequencies as high as 100 kHz – a capability typically found only in benchtop meters. Get measurements done faster using the one-touch automatic identification function button which displays component type and more detailed component analysis such as Z, ESR, and DCR. Ideal for testing on the go, these LCR meters operate on a battery that lasts up to 16 hours. With the U1730C Series that is built for your convenience, you can perform quick and basic LCR measurements at an affordable price.

Features

- 20,000 counts resolution
- 0.2% basic accuracy
- Wide LCR ranges with three to five selectable test frequencies (up to 100 kHz for U1733C)
- Auto identification (Ai) automatically determines and displays component type and measurements
- Detailed component analysis with DCR, ESR, Z, D, Q, and θ functions
- Battery life of 16 hours/AC-powered
- IR-to-USB connectivity for data logging to PC

Specifications of the U1700 Series Capacitance/LCR Meters

	U1701B	U1731C	U1732C	U1733C
Display				
Dual display	Yes	Yes	Yes	Yes
Counts	11,000	20,000	20,000	20,000
Backlight	Yes	N/A	Yes	Yes
Measurements				
Capacitance range	1000 pF to 199.99 mF	200 pF to 20 mF	20 pF to 20 mF	20 pF to 20 mF
Inductance range	N/A	200 µH to 2000 H	20 µH to 2000 H	20 µH to 2000 H
Resistance range	N/A	2 Ω to 200 MΩ	2 Ω to 200 MΩ	2 Ω to 200 MΩ
Dissipation factor (DF)	N/A	Yes	Yes	Yes
Quality factor (QF)	N/A	Yes	Yes	Yes
Phase angle (θ) measurement	N/A	Yes	Yes	Yes
Tolerance mode	1%, 5%, 10%, 20% ★	1%, 5%, 10%, 20% ★	1%, 5%, 10%, 20% ★	1%, 5%, 10%, 20% ★
Compare mode	25 sets of non-volatile ★ High/Low limit settings	N/A	N/A	N/A
Test method/frequency	DC charge/discharge	100 Hz, 120 Hz, 1 kHz	100 Hz, 120 Hz, 1 kHz, 10 kHz	100 Hz, 120 Hz, ★ 1 kHz, 10 kHz, 100 kHz
Data management				
Min/max/avg recording	Yes	Yes	Yes	Yes
Data hold	Yes	Yes	Yes	Yes
Data logging to PC (requires IR-to-USB cable U5481A for connection to PC)	Yes	Yes	Yes	Yes
Safety and regulatory				
EN/IEC 61010-1:2001 compliance	Yes	Yes	Yes	Yes
General				
Operating temperature	0 to 50 °C	–10 to 55 °C, 0 to 80% RH	–10 to 55 °C, 0 to 80% RH	–10 to 55 °C, 0 to 80% RH
Battery (included)	Alkaline 9 V AC power adapter and cord available as option	Yes	Yes	Yes
Battery life	80 hours	16 hours	16 hours	16 hours
I/O	IR-to-USB	IR-to-USB	IR-to-USB	IR-to-USB
Dimensions (H x W x D)	184 x 87 x 41 mm	184 x 87 x 41 mm	184 x 87 x 41 mm	184 x 87 x 41 mm

★ Represents key specifications/features. For complete specifications, please refer to data sheet 5990-7778EN

Web Link

www.keysight.com/find/handheldlcr

Software and Accessories

Software

Accomplish more in a day's work with Keysight Handheld Tools using Keysight's free handheld PC software and mobile applications. Together with Keysight's Remote Link Solution, you can perform remote measurements, data logging and monitoring activities on Windows-based PC or iOS/Android-based devices.

Keysight Mobile Meter Application

Key features

Perform measurements with Keysight U1200 Series using iOS/Android-based devices

- Log and monitor up to three measurements simultaneously without the need to be physically present
- Make measurements from a safe distance
- Eliminates the need to walk back and forth between measurement points
- Save money, time and achieve higher work productivity



iOS



Android

Keysight Mobile Logger Application

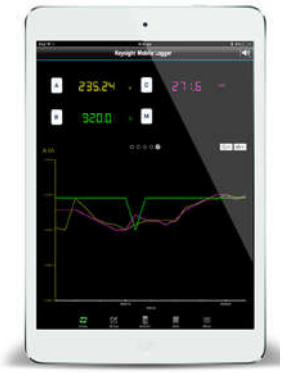
Key features

Perform measurements with Keysight U1200 Series using iOS/Android-based devices

- Capture data streams or plot trending graphs
- Used for analysis to identify intermittent behavior or detect drifts
- Email functions, Short Message Service (SMS), pan and zoom function via iOS/Android device's touch screen
- Create mathematical functions and plot the trend

Keysight Mobile Meter and Keysight Mobile Logger for iOS and Android can be downloaded from any of the following location.

- Keysight Website: **www.keysight.com/find/hhmeterapp**
- Google Play: **https://market.android.com**
- App Store: **https://itunes.apple.com**



iOS



Android

Keysight Insulation Tester Application

Key features

Perform measurements and generate report with U1450A/U1460A Series using iOS/Android-based devices

- Acquire and analyze insulation resistance data from a distance
- Eliminates manual data entry errors for report generation
- Fastest way to generate accurate test reports
- Log data and provide trending graphs to identify intermittent problems (multimeter functionality)
- Saves money, time and achieve higher work productivity



Remote testing and report generation interface



Data logging interface

Keysight Insulation Tester application for iOS and Android can be downloaded from any of the following location.

- Keysight Website: **www.keysight.com/find/insulationtesterapp**
- Google Play: **https://market.android.com**
- App Store: **https://itunes.apple.com**

Keysight Handheld Meter Logger Software

Key features

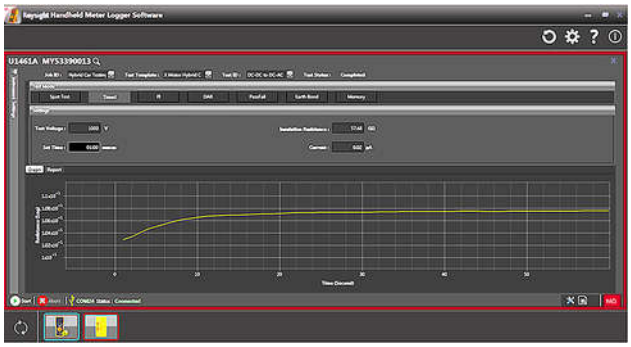
Perform measurements with U1210 Series, U1230 Series, U1240B Series*, U1240C Series, U1250 Series, U1270 Series, U1280 Series, and U1450A/U1460A** using Windows-based PC

- Connect up to 10 handheld meters – 5x IR-to-*Bluetooth* Adapter (U1177A, U1117A) and 5x IR-USB Cable (U1173B)
- Meter view (live measurements) and Logger view (graph with zoom and pan) mode
- Manage multi-session data logging within the software and export the data to other software (Microsoft Excel)

* For the U1240B Series, you also need to purchase the U1179A IR Connectivity Bracket to enable IR connectivity
** Only allows one connection at a time

Keysight Handheld Meter Logger software for PC can be downloaded from **www.keysight.com/find/hhmeterlogger**

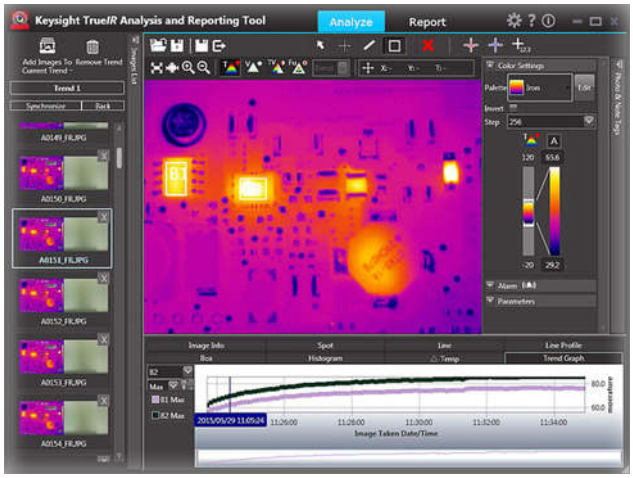




Keysight Handheld Meter Logger software interface on PC

True*IR* Analysis and Reporting Tool

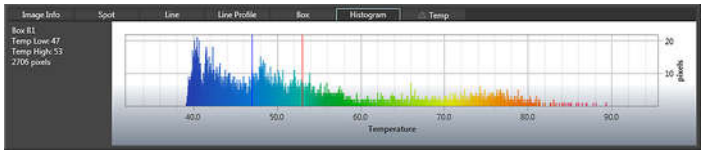
Import, analyze, edit and present your thermal images to your clients swiftly with True*IR* Analysis and Reporting Tool. With this PC software, you could change color settings and corrective parameters, add color alarm, or pick and choose any of the six measurement analysis tools or diagrams to help you present findings to your customer clearly. Also, generate reports quickly with the help of ready templates and then customize them accordingly based on your clients' requirements.

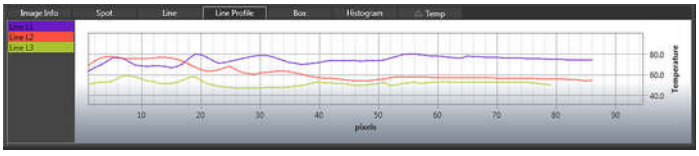


True*IR* Analysis and Reporting Tool with trending capability

Key features

- Change color settings, corrective parameters like ambient temperature, atmospheric temperature and local emissivity of spot, box or line.
- Supports synchronization of *IR* images for temperature trending analysis.
- Create custom color palettes that is suitable for your applications.
- Set color alarm
- Choose between six measurement analysis tools or diagrams like spot, line, line profile, box, histogram and delta temperature.
- Capable of displaying thermal image, visual image, thermal-visual side-by-side, or fusion images as well as its associated photo or note tags
- Generate reports in Microsoft Words or PDF, based on available templates
- Eleven local languages to choose from – English, Spanish, Italian, French, German, Portuguese, simplified Chinese, traditional Chinese, Japanese, Korean and Russian





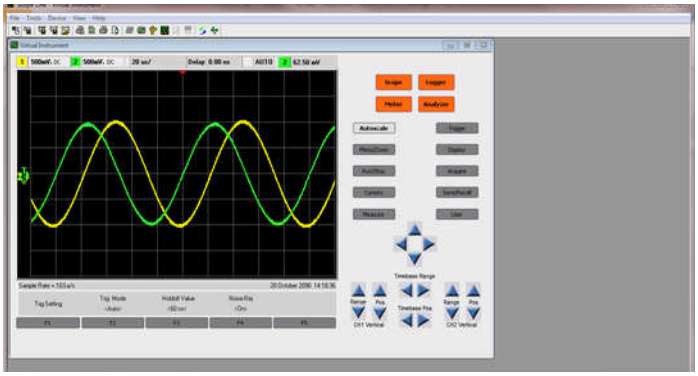
Sample of measurements analysis diagrams

True*IR* Analysis and Reporting Tool is downloadable for free from
www.keysight.com/find/TrueIR_ART

Scope Link Software

The Scope Link software allows users to remotely access U1610A and U1620A handheld oscilloscope from a PC via USB connection to monitor or log data on a real-time basis. With its incorporated feature, the software allows users to create a test report based on the saved waveform.





Scope Link software GUI

Scope Link software is downloadable for free from
www.keysight.com/find/scopelink

Accessories

Accessories Compatibility Chart

Ordering number	Description	Thermal imager	Insulation resistance tester	Clamp meters	Digital multimeter							Digital oscilloscope	Multi-function calibrator/ meter	Capacitance/ LCR meters
		U5850 series	U1450/60 Series	U1190 Series	U1200 Series							U1600 Series	U1401B	U1700 Series
					U1210 Series	U1230 Series	U1240B Series	U1240C Series	U1250 Series	U1270 Series	U1280 Series			
Remote connectivity														
U1115A	Remote logging display				■	■	■	■	■	■	■			
U1117A	Infrared (IR)-to-*Bluetooth* adapter		■		■	■	■	■	■	■	■			
U1177A	Infrared (IR)-to-*Bluetooth* adapter		■		■	■	■	■	■	■	■			
U1173B	IR-to-USB cable		■		■	■	■	■	■	■	■			
U5481B	IR-to-USB cable												■	■
Kits														
U1161A	Extended test lead kit		■	■	■	■	■	■	■	■	■	■	■	
U1168A	Standard test lead kit		■	■	■	■	■	■	■	■	■	■	■	
U1180A	Thermocopule adapter+lead kit		■ U1461A				■ U1242B	■ U1242C	■ U1252B, U1253B	■ U1272A, U1273A, U1273AX	■ U1282A			
U1580A	DMM terminal test lead set		■	■	■	■	■	■	■	■	■	■	■	
Probes / leads / clamp														
U1162A	Alligator clips		■	■	■	■	■	■	■	■	■	■	■	
U1163A	SMT grabbers		■	■	■	■	■	■	■	■	■	■	■	
U1164A	Fine-tip test probes		■	■	■	■	■	■	■	■	■	■	■	
U1169A	Test probe leads		■	■	■	■	■	■	■	■	■	■	■	
U1176A	Probe clip light		■	■	■	■	■	■	■	■	■	■	■	■
U1583B	AC current clamp					■	■	■	■	■	■	■		
U1781A	Alligator clip leads		■											■
U1782B	SMD tweezer													■
U5402A	Yellow test lead for mA simulation												■	
U5403A	Remote switch probe		■											
U5404A	Remote test probe										■			

Accessories Compatibility Chart, continued

Ordering number	Description	Thermal imager	Insulation resistance tester	Clamp meters		Digital multimeter						Digital oscilloscope	Multi-function calibrator/ meter	Capacitance/ LCR meters
		U5850 series	U1450/60 Series	U1190 Series	U1200 Series							U1600 Series	U1401B	U1700 Series
					U1210 Series	U1230 Series	U1240B Series	U1240C Series	U1250 Series	U1270 Series	U1280 Series			
Probes / adapters / leads for temperature measurement														
U1179A	IR connectivity bracket						■							
U1181A	Immersion temperature probe		■ U1461A	■ U1194A	■ U1212A/ 13A	■ U1233A	■	■	■	■	■			
U1182A	Industrial surface temperature probe		■ U1461A	■ U1194A	■ U1212A/ 13A	■ U1233A	■	■	■	■	■			
U1183A	Air temperature probe		■ U1461A	■ U1194A	■ U1212A/ 13A	■ U1233A	■	■	■	■	■			
U1184A	Temperature probe adapter		■ U1461A	■ U1194A	■ U1212A/ 13A	■ U1233A	■	■	■	■	■			
U1185A	Thermocouple (J-type) & temperature probe adapter		■ U1461A				■ U1242B	■ U1242C	■ U1252B, U1253B	■ U1272A, U1273A, U1272AX	■ U1282B			
U1186A	Themocouple (K-Type) & temperature probe adapter		■ U1461A	■ U1194A	■ U1212A/ 13A	■ U1233A	■	■	■	■	■		■	
U1586B	Temperature module		■ U1461A			■ U1233A			■	■		■		
Probes / clips for scope-only functions														
U1554A	Hook clip for probe tip											■		
U1560A	Scope probe x 1:1 CAT III 300 V											■		
U1561A	Scope probe x 10:1 CAT III 600 V											■		
U1562A	Scope probe x 100:1 CAT III 600 V											■		
Carrying case / hanging kit														
U1171A	Magnetic hanging kit					■	■	■	■	■	■			
U1172A	Transit case (aluminium-clad)					■	■	■	■	■	■			
U1174A	Soft carrying case					■	■	■	■	■				■
U1175A	Soft carrying case				■									
U1178A	Soft carrying case			■										

Accessories Compatibility Chart, continued

Ordering number	Description	Thermal imager	Insulation resistance tester	Clamp meters	Digital multimeter							Digital oscilloscope	Multi-function calibrator/ meter	Capacitance/ LCR meters
		U5850 Series	U1450/60 Series	U1190 Series	U1200 Series							U1600 Series	U1401B	U1700 Series
					U1210 Series	U1230 Series	U1240B Series	U1240C Series	U1250 Series	U1270 Series	U1280 Series			
Carrying case / hanging kit, continued														
U1590A	Soft carrying case (PVC leather)													
U1595A	Rugged carrying case			■	■	■	■	■	■	■	■			
U1593A	Protective rubber sleeve		■ U1461A											
U1594A	Hard carrying case		■ U1461A								■			
U5491A	Carrying case (PVC leather)												■	
U5771A	Rugged carrying case, hard	■												
U5772A	Adjustable hand strap	■												
Power / cables														
U1170A	Battery charger adapter								■					
U1570A	AC power adapter and cord													
U1571A	Ni-MH battery pack													
U1572A	Li-ion battery pack													
U1573A	Desktop charger & Li-ion battery pack													
U1574A	AC/DC adapter													
U1575A	Desktop charger													
U1577A	USB 2.0 cable													
U1780A	AC power adapter and cord													■
U5751A	AC power adapter (with power cord)	■												
U5752A	Rechargeable Li-ion battery	■												
U5753A	External battery charger (2-bay)	■												

Optional Accessories



U1115A Remote logging display

- Comes with soft carrying case and USB-to-micro USB cable
- Operated by three 1.5 V AA batteries
- For use with U1177A/U1117A Infrared (IR)-to-*Bluetooth* adapter
- Compatible with Keysight U1200 Series handheld meters



U1117A Infrared (IR)-to-*Bluetooth* adapter

- Dimension (H x W x D): 39 x 71 x 37 mm
- Operated by two 1.5 V AAA batteries
- Compatible with U1210 Series clamp meters, U1450A/60A Series, and all handheld DMMs



U1161A Extended test lead kit

- Extended test leads: 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
- Medium-sized alligator clips: CAT III 1000 V, CAT IV 600 V, 15 A



U1162A Alligator clips

- One pair of insulated alligator clips (red and black). Recommended for use with Keysight standard test leads. Rated CAT III 1000 V, CAT IV 600 V, 15 A



U1163A SMT grabbers

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



U1168B Standard test lead kit

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probe (19-mm tips): CAT II 1000 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, CAT IV 600 V, 15 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



U1169A Test probe leads

- Test leads: CAT III 1000 V, CAT IV 600 V, 15 A
- Test probe (19-mm tips): CAT II 1000 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 charging adapter

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



U1171A Magnetic hanging kit

- For use with handheld DMMs



U1173B Handheld digital multimeter PC connectivity cable

- For remote control and data logging to PC
- Max. baud rate: 19,200 bits per second
- Compatible with Keysight U1200 Series handheld meters and U1450A/60A Series



U1174A Handheld digital multimeter, soft carrying case

- The convenient way to carry your DMM and essential accessories
- Dimension (H x W x D): 9 x 5 x 3 inches



U1175A Soft carrying case, 4-5/7 In. D, black

- Ideal for the U1210 Series handheld clamp meters
- Dimension (H x W x D): 290 x 120 x 85 mm



U1176A 3-inch LED probe clip light

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



U1177A Infrared (IR)-to-*Bluetooth* adapter

- Dimension (H x W x D): 71 x 39 x 37 mm
- Operated by two 1.5 V AAA batteries
- Compatible with Keysight U1200 Series handheld meters and U1450A/60A Series



U1178A Handheld clamp meter, soft carrying case

- Ideal for the U1190 Series handheld clamp meters
- Dimensions (H x W x D): 245 x 120 x 50 mm



U1179A IR connectivity bracket for U1240 Series handheld digital multimeters

- Compatible only with the U1240 Series handheld digital multimeters
- Enables wireless remote connectivity when paired with the U1177A or to a PC with U1173B



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



U1181A Immersion temperature probe

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

Optional Accessories, continued



U1182A Industrial surface temperature probe
- Type-K T/C for use on still surfaces
- Measurement range: –50 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 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 Thermocouple (J-type) and temperature probe adapter
- T/C adapter J/K-type
- T/C bead J-type: –20 to 200 °C



U1186A Thermocouple (K-type) and temperature probe adapter
- T/C adapter J/K-type
- T/C bead K-type: –20 to 200 °C



U1554A Hook clip for probe tip
- Rated CAT II 1000 V, CAT III 600 V



U1560A Passive probe, 1:1, 45 MHz, 1.2 m
- Include ground alligator clip and hook clip, rated CAT III 300 V



U1561A Passive probe, 10:1, 250 MHz, 1.2 m
- Include ground alligator clip and hook clip, rated CAT III 600 V



U1562A Passive probe, 100:1, 300 MHz, 1.2 m
- Include ground alligator clip and hook clip, rated CAT III 600 V



U1571A Ni-MH battery pack
- 4500 mA, 7.2 V



U1572A Li-ion battery pack
- 4800 mAh, 10.8 V
- Compatible with U1610A/20A handheld oscilloscope



U1573A Desktop charger & Li-ion battery pack
- 4,800 mAh, 10.8 V
- For use with U1610A/20A handheld oscilloscope



U1574A AC/DC adapter
- Include AC power cord based on country
- For use with U1610A/20A handheld oscilloscope



U1575A Desktop charger
- 2-output 3 A battery charger
- Dimension (H x W x D): 2.30 x 4.89 x 6.89 inches
- For use with U1610A/20A handheld oscilloscope



U1577A USB 2.0 Cable (Type-A Plug to Type-A Plug)
- For remote control and data logging to PC



U1580A DMM terminal test lead set
- Test leads: 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
- Alligator clips: CAT III 1000 V, CAT IV 600 V, 15 A



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 handheld DMMs and oscilloscopes



U1586B Temperature module
- Measures –50 ~ 1000 °C
- K-type bead probe provided for use with DMMs



U1590A Carrying case – soft
- Dimension (H x W x D): 9.6 x 13.0 x 4.5 inches
- PVC leather material



U1591A Soft carrying case
- Dimension (H x W x D): 12.6 x 15.7 x 3.9 inches
- Soft carrying case with backpack and shoulder strap
- Ideal for the U1610/20A handheld oscilloscope



U1593A Protective rubber sleeve
- For use with U1450A/60A Series insulation resistance tester
- Snap-on holster absorbs shocks and protects the tester



U1594A Hard carrying case
- Dimension (H x W x D): 13.8 x 11.4 x 3.9 inches
- Hard carrying with two compartments
- Ideal for carrying the U1450A/60A Series insulation resistance tester with accessories



U1595A Rugged carrying case
- High quality, water and dust proof carrying case designed to store up to two handheld and accessories

Optional Accessories, continued



U1731P Combo kit
- Includes one U1731C handheld and four accessories:
- U5491A soft carrying case
- U5481B IR-USB cable
- U1780A AC adapter
- U1782B SMD tweezer



U1732P Combo kit
- Includes one U1732C handheld and four accessories:
- U5491A soft carrying case
- U5481B IR-USB cable
- U1780A AC adapter
- U1782B SMD tweezer



U1733P Combo kit
- Includes one U1733C handheld and four accessories:
- U5491A soft carrying case
- U5481B IR-USB cable
- U1780A AC adapter
- U1782B SMD tweezer



U1780A AC Power adapter for handheld component testers
- 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



U1782B SMD tweezer
- Measurement Accuracy for Capacitance (Tweezers Open) < 0.7pF, Resistance (Tweezers Short) < 0.5Ω, Inductance (Tweezers Short) < 1.2 µH
- Guard ends to be connected to guard terminals of meter for better noise immunity



U5402A Yellow test lead
- For use with handheld multifunction calibrator/meter



U5403A Remote test probe
- For use with U1450A/60A Series insulation resistance tester
- Probe with remote switch
- CAT III 1000 V, CAT IV 600 V rated, 15 A



U5404A Remote switch probe for U1280 Series
- Measure and save measurement with a single touch of button



U5481B IR-to-USB PC connectivity 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 U1401B multifunction calibrator/meter



U5491A Soft carrying case
- Dimension (H x W x D): 8.9 x 12.2 x 3.1 inches
- PVC leather material
- Ideal for handheld multifunction calibrator/meter or instruments of similar size



U5751A Power adapter with power cord
- For use with TrueIR thermal imager
- Bundled with regional power cord



U5752A Rechargeable Li-ion battery
- Compatible with TrueIR thermal imager
- Each battery lasts ~4 hours with each charge



U5753A External battery charger (2-bay)
- For charging of U5752A rechargeable Li-ion battery
- Allows simultaneous charging of up to two batteries



U5761A Video RCA to RCA interface cable, 2 m
- Video RCA to RCA interface cable for external video output
- Length: 2 meters



U5762A USB Standard-A to Mini Type-B interface cable, 1 m
- USB standard-A to mini type-B interface cable for data transfer
- Length: 1 meter



U5771A Rugged hard carrying case
- High quality, water and dust proof
- Dimension (H x W x D): 377.15 x 430.8 x 168.0 mm
- Able to hold a unit TrueIR thermal imager, with compartments for two battery pack, an external battery charger, two SD cards, power adapter and accessories



U5772A Adjustable hand strap
- Compatible with TrueIR thermal imager for better grip
- Easily adjustable for right-handed or left-handed use

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