DC Resistance Meters
2840 Series





Touch screen to zoom, select, and enter values



The 2840 Series DC resistance meters feature high accuracy and resolution measurements in the milliohm range. Both meters are ideally suited for measuring contact resistance of relays, switches, and PCB traces, typically outside the resistance range of multimeters. The vivid 4.3-inch TFT LCD color touch screen and keypad provide intuitive operation.

The 2841 model adds extended range, accuracy, temperature measurement and functions. Measure low resistivity materials with offset voltage compensation to reduce the influence of thermal EMF. Cable error detection displays a message when one of the terminals is open, which helps identify defective test leads or poor contact that can cause unreliable measurements.

The 2841 includes two temperature compensation functions: correction (TC) and conversion (Δt). The TC function corrects for ambient temperature changes that cause different resistance measurements of the same component. The temperature conversion (Δt) function can be used to evaluate a coil's resistance before and after operation to calculate a temperature change. These additional features make the 2841 ideal for evaluating coils, motor windings, transformers, actuators and conductive materials.

Both meters feature low power resistance testing (LPR) modes and variable measurement speeds that are suited for a wide range of applications. The handler interface with high-speed measurement capabilities enable the 2840 Series to evaluate a large quantity of components and be integrated into an automated test system.

Model	2840	2841
Display Range	1 μΩ to 20 kΩ	0.1 μΩ to 100 MΩ
Basic Accuracy	0.1%	0.01%
Measurement Resolution	1 μΩ	0.1 μΩ
Displayed Digits	4 1/2	5 1/2
Functions	R and LPR	R, R-T, T, LPR, LPR-T
Resistance Measurement Ranges	7 + Auto	11 + Auto
Temperature Compensation	-	√
Number of Results Bins	3	10

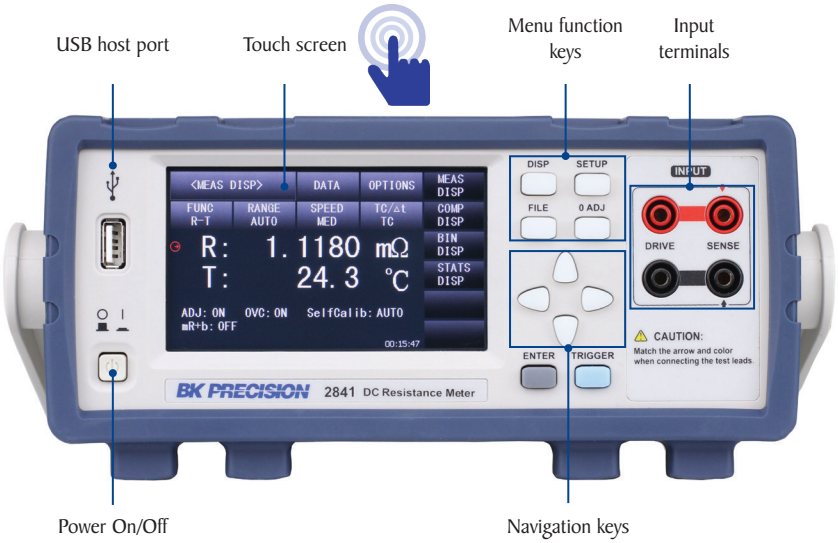
Features & Benefits

- 4.3-inch color touch screen
- 4-wire Kelvin test leads included
- Temperature measurement with correction*
- Low power resistance mode to protect DUT
- Manual or auto ranging
- Adjustable measurement speed for fast readout or better accuracy
- Fast measurement speed up to 20 ms/reading to increase manufacturing throughput
- Offset voltage compensation (OVC)*
- Cable compensation (0 ADJ)
- BIN comparator function to sort components in up to 10* bin locations
- Bin-sorting with statistical measurement
- Store/recall 30 instrument settings
- Screen capture to USB drive
- Selectable power line filter
- Trigger delay
- Handler interface for easy integration with a component handler
- Standard RS232, USB (USBTMC and virtual COM), and LAN* interfaces

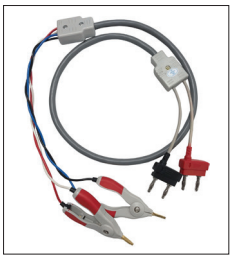
* model 2841 only

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Front panel



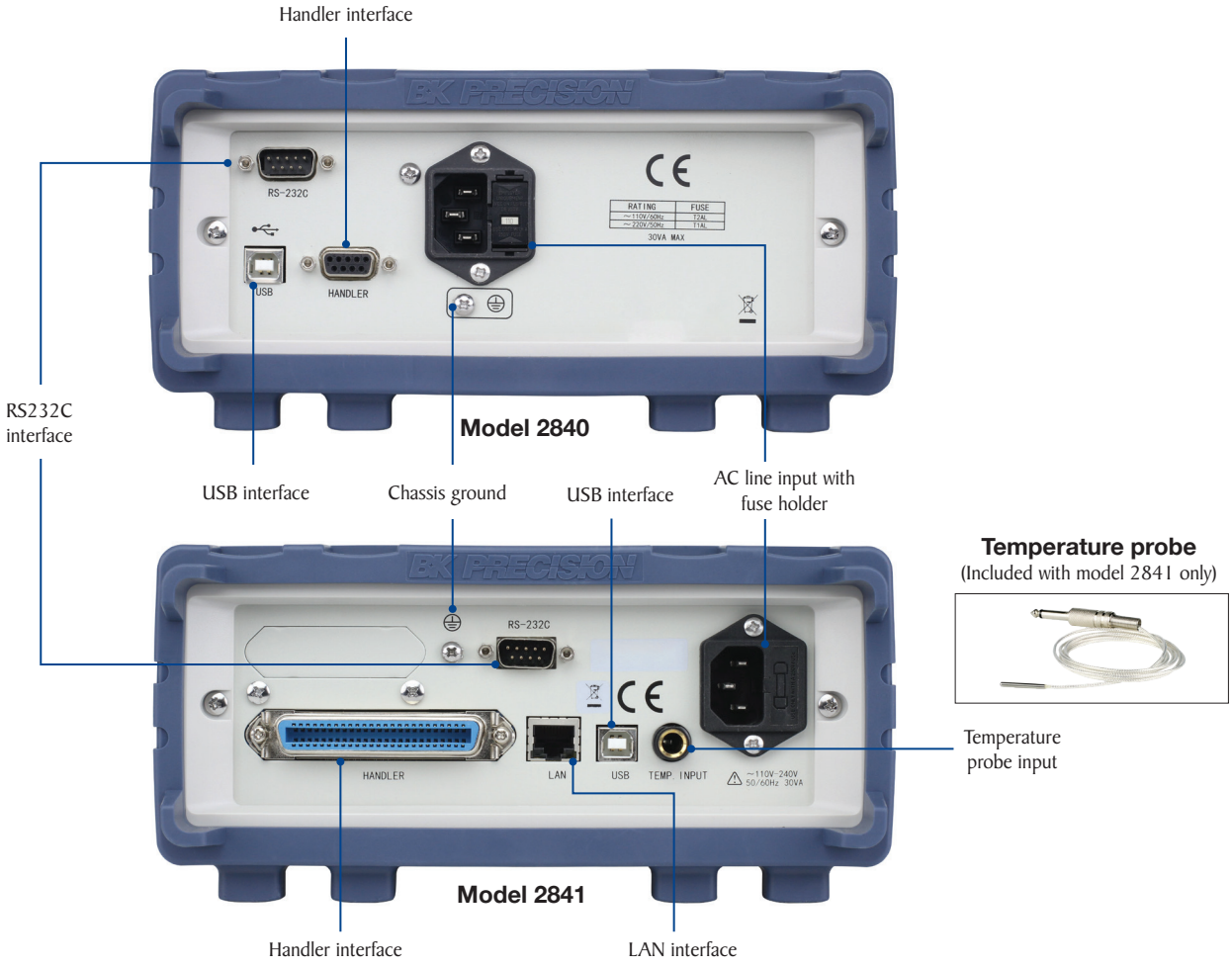
Kelvin test leads
(Included with both models)



Intuitive user interface

The touch screen and keys both provide a convenient interface for setting parameters quickly and precisely. Both models also support one touch zoom to enhance the readability of displayed measurements.

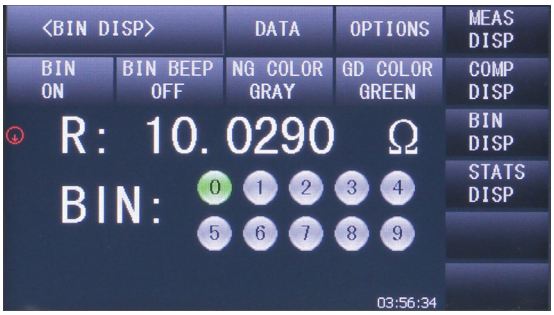
Rear panel



Temperature probe
(Included with model 2841 only)

Powerful features

Bin sorting function

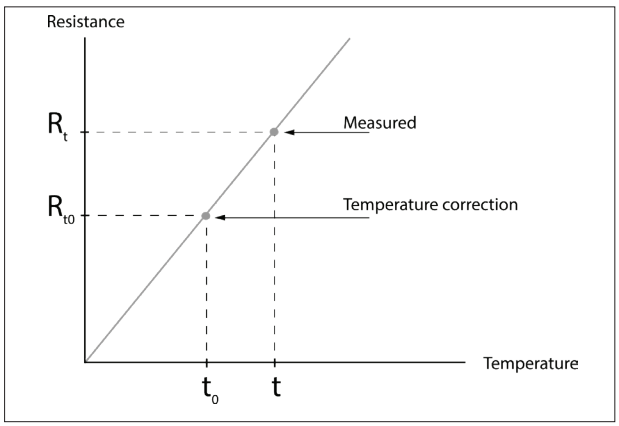


Quickly sort components using the 10 bins of the 2841 or 3 bins of the 2840. The results can be displayed on the screen or output via the handler interface. High and low limits for each bin can be set up in absolute or tolerance mode.

Offset voltage compensation (OVC)

OVC switches the polarity and averages the forward and reverse polarity readings. This enables accurate measurements by minimizing the adverse effects of thermal EMFs or small biases in a circuit (e.g., from a capacitor's dielectric absorption when measuring a PCB trace).

Temperature correction



The 2841 can compensate for temperature changes with a component's known temperature coefficient of resistivity. This allows for increased comparison accuracy between components that are measured at different temperatures.

LPR (Lower Power Resistance) measurement

In standard resistance measurement mode (LPR OFF), the large drive current (1 A max.) may damage sensitive components or circuits. LPR mode protects the DUT by limiting the maximum power being applied.

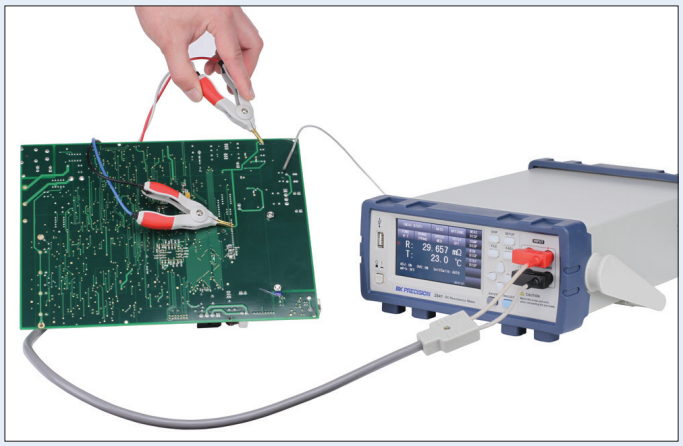
Applications

Component testing



Measure the resistance of motor and transformer windings, relay and switch contacts, and other conductive materials and components. 4-wire Kelvin test leads included with both models.

Circuit board testing



The resistance meters' high accuracy make them suitable for measuring trace resistances and finding shorts on PCBs.

Specifications

Specifications are valid after temperature stabilization period of 15 minutes over an ambient temperature range of 23 °C ± 5 °C.

Resistance Measurements

Model 2840				
LPR OFF				
Resistance Range	**Current**	**Resolution**	**Accuracy (rdg% + digits)[1]**	**Maximum Open Terminal Voltage**
20 mΩ	1 A	1 μΩ	0.1 + 3	0.7 V
200 mΩ	100 mA	10 μΩ	0.1 + 2	
2 Ω		100 μΩ		
20 Ω	10 mA	1 mΩ		3 V
200 Ω	1 mA	10 mΩ		
2 kΩ	100 μA	100 mΩ		
20 kΩ		1 Ω		
LPR ON				
2 Ω	10 mA	100 μΩ	0.2 + 5	40 mV
20 Ω	1 mA	1 mΩ		
200 Ω	100 μA	10 mΩ		
2 kΩ	10 μA	100 mΩ		

Accuracy = (measurement value x rdg) + (least significant digit)
[1] - Test speed set to Slow2

Model 2841				
LPR OFF				
Resistance range [3]	**Current**	**Resolution**	**Accuracy (rdg% + FS%)**	**Maximum Open Terminal Voltage**
20 mΩ	1 A	0.1 μΩ	0.25+0.015	5 V
200 mΩ[2]		1 μΩ	0.25+0.006	
200 mΩ[2]	100 mA	1 μΩ	0.35+0.01	2.6 V
2 Ω		10 μΩ	0.035+0.004	
20 Ω	10 mA	100 μΩ	0.025+0.004	
200 Ω		1 mΩ	0.01+0.002	
2 kΩ	1 mA	10 mΩ	0.01+0.0015	
20 kΩ	100 μA	100 mΩ	0.01+0.002	
100 kΩ		1 Ω	0.01+0.003	13 V
1 MΩ	10 μA	10 Ω	0.02+0.001	
10 MΩ	1 μA	100 Ω	0.1+0.006	
100 MΩ	100 nA	1 kΩ	0.5+0.02	
LPR ON				
2 Ω	10 mA	100 μΩ	0.05+0.001	60 mV
20 Ω	1 mA	1 mΩ		
200 Ω	100 μA	10 mΩ		
2 kΩ	10 μA	100 mΩ		

Accuracy = (measurement value x rdg%) + (resistance range x FS%)
[2] - Current for the 200 mΩ range can be selected in the measurement setup menu.
[3] - Measurement display is 5 1/2 digits for ranges 20 mΩ to 20 kΩ, 5 digits for ranges 100 kΩ to 100 MΩ

Temperature Measurements (Model 2841 only)

Pt500			
Temperature range	**Resolution**	**Accuracy in six months**	**Accuracy in one year**
-10.0 °C to 39.9 °C	0.1 °C	±0.30%rdg ± 0.5 °C	±0.45%rdg ± 0.8 °C
40.0 °C to 99.9 °C	0.1 °C	±0.30%rdg ± 1.0 °C	±0.45%rdg ± 1.5 °C

Accuracy = 0.3% x measured value ± 0.5 °C

Analog Input			
Input voltage range	**Temperature range display**	**Resolution**	**Accuracy**
0 to 2 V	-99.9 °C to 999.9 °C	1 mV	±1% T_R ± 3 mV

Accuracy = 1% x (T_R – T_{0V}) + 0.3% x (T_{1V} - T_{0V})
T_{1V}: The temperature measured under input voltage of 1 V.
T_{0V}: The temperature measured under input voltage of 0 V.
T_R: The current measured temperature.

Specifications

Model		2840		2841
Measurement Function				
Resistance Measurement Time (typical)[1]	FAST	10 ms		7 ms
	MED	25 ms		22 ms
	SLOW1	115 ms		102 ms
	SLOW2	455 ms		402 ms
Temperature Measurement Time		-		100 ± 10 ms
Measuring Terminals		4 terminals		
Averaging		1 to 255		
Range Mode		Auto and Manual		
Trigger Mode		Internal, Manual, External, Bus		
mR + b Mode		Apply a multiplier (m) and offset (b) to the measurement (R). (2841 model only)		
LPR Mode		Ranges 20 Ω, 200 Ω, 2 kΩ, maximum open terminal voltage: 60 mV		
Statistical Measurement Function		AVG, MAX, MIN, OSD (Overall standard deviation), SSD (Sample standard deviation), Process capacity index (Cp, Cpk)		
Comparator (bin sorting) Function				
Comparator	Signal output	IN, HI, LO		
	Beep mode	OFF, IN, HI, LO		
	Limit setup mode	Absolute value high/low limit, Percentage high/low limit + nominal value		
Bin Sorting		3 bins, absolute value/percentage		10 bins, absolute value/percentage
General				
AC input	Voltage	110 VAC	220 VAC	110 to 240 VAC ± 10 %
	Frequency	60 Hz	50 Hz	50 to 60 Hz
	Power Consumption	< 30 VA		
Display		4.3", 480 x 272 TFT Color (24-bit) LCD touch screen		
Remote Interface		USB (USBTMC or virtual COM), RS232		USB (USBTMC or virtual COM), RS232, LAN
Handler Interface		9-pin connector		50-pin connector
Storage Memory		Save/recall 30 instrument settings		
Operating Temperature		0 °C to 40 °C, ≤ 80% RH		
Storage Temperature		5 °C to 40 °C, ≤ 85% RH		
Dimensions (W x H x D)		8.46" x 3.5" x 14.17" (215 mm × 89 mm × 360 mm)		
Weight		8.6 lbs (3.9 kg)		6.45 lbs (2.92 kg)
Warranty		3-Years		
Included Accessories		AC power cord, user manual (downloadable), Kelvin test leads (TLDK1), temperature probe TPTC2 (model 2841 only), test report and certificate of calibration		

[1] - When DISPLAY is OFF; when DISPLAY is ON, 20 ms should be added.

About B&K Precision

For more than 70 years, B&K Precision has provided reliable and value-priced test and measurement instruments worldwide.

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B&K Precision group member Independent service center Service center location

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