

Valhalla Scientific Inc
4100 Series Digital u-Ohmmeter Specifications

4100ATC | 4150ATC | 4165 | 4165-1344

General

The specifications for the 4100 Series of Ohmmeters are listed in the following paragraphs. In all cases the specifications are valid for full Kelvin Four-Terminal measurements using connections having less than 20 milliohms of lead resistance per wire.

Accuracy

The accuracy specifications listed below are valid following a 30 minute warm-up at an ambient temperature between 15°C and 35°C for a period of 1 year following calibration, and include the effects of line voltage variations within the allowed range.

Model 4100ATC				
Range	Maximum Input	Resolution	Test Current	Accuracy
.2Ω	.19999 Ω	10μΩ	1 A	±0.02% of rdg ±2 digits
2Ω	1.9999 Ω	100μΩ	100 mA	±0.02% of rdg ±2 digits
20Ω	19.999 Ω	1mΩ	10 mA	±0.02% of rdg ±2 digits
200Ω	199.99 Ω	10mΩ	1 mA	±0.02% of rdg ±2 digits
2kΩ	1.9999 kΩ	100mΩ	100 μA	±0.02% of rdg ±2 digits
20kΩ	19.999 kΩ	1Ω	10 μA	±0.02% of rdg ±2 digits

Full Scale Test Voltage: 200mV

Model 4150ATC				
Range	Maximum Input	Resolution	Test Current	Accuracy
20mΩ	19.999 mΩ	1μΩ	1 A	±0.03% of rdg ±3 digits
200mΩ	199.99 mΩ	10μΩ	100 mA	±0.03% of rdg ±3 digits
2Ω	1.9999 Ω	100μΩ	10 mA	±0.03% of rdg ±3 digits
20Ω	19.999 Ω	1mΩ	1 mA	±0.03% of rdg ±3 digits
200Ω	199.99 Ω	10mΩ	100 μA	±0.03% of rdg ±3 digits
2KΩ	1.9999 kΩ	100mΩ	10μA	±0.03% of rdg ±3 digits

Full Scale Test Voltage: 20mV

Model 4165				
Range	Maximum Input	Resolution	Test Current ^[1]	Accuracy
.2Ω	.19999 Ω	10μΩ	100 mA	±0.03% of rdg ±3 digits
2Ω	1.9999 Ω	100μΩ	10 mA	±0.03% of rdg ±3 digits
20Ω	19.999 Ω	1mΩ	1 mA	±0.03% of rdg ±3 digits
200Ω	199.99 Ω	10mΩ	100 μA	±0.03% of rdg ±3 digits
2kΩ	1.9999 kΩ	100mΩ	10 μA	±0.03% of rdg ±3 digits
20kΩ	19.999 kΩ	1Ω	1 μA	±0.03% of rdg ±3 digits

Full Scale Test Voltage: 20mV

[1] The Model 4165 uses reduced test currents and incorporates a user-selectable clamp on the current source for making "dry" measurements. The clamp may be set to 50mV or 2V.

Model 4165-1344				
Range	Maximum Input ^[2]	Resolution	Test Current ^[1]	Accuracy
.2Ω	.19999 Ω	10μΩ	100 mA	±0.03% of rdg ±3 digits
2Ω	1.9999 Ω	100μΩ	10 mA	±0.03% of rdg ±3 digits
20Ω	19.999 Ω	1mΩ	1 mA	±0.03% of rdg ±3 digits
200Ω	199.99 Ω	10mΩ	100 μA	±0.03% of rdg ±3 digits
2kΩ	1.9999 kΩ	100mΩ	10 μA	±0.03% of rdg ±3 digits
20kΩ	19.999 kΩ	1Ω	1 μA	±0.03% of rdg ±3 digits

Full Scale Test Voltage: 20mV

[1] The Model 4165-1344 uses reduced test currents and incorporates a user-selectable clamp on the current source for making "dry" measurements. The clamp may be set to 20mV or 2V. The 4165-1344 also has a reverse current mode that may be used to ensure a dry, true-ohms measurement.

[2] If the clamp is set to "20mV", the Maximum Input specification is changed to: 20% of range for the .2Ω range or 50% of range for all other ranges.

General Specifications

Display Type:4½ digit LED (20000 counts)
A-to-D Conversion Rate: 400 milliseconds
ATC Mode (4100 and 4150 only): Add $\pm 0.05\% + 0.001\%/^{\circ}\text{C}$ to accuracy spec
Compensator Accuracy: $\pm 0.1\%$ of rated temperature coefficient
Overrange: 100% of range (19999 counts on display)
Overrange Indication: Display flashes
Terminal Configuration: Four-wire Kelvin
Temperature Coefficient: $\pm 0.002\% /^{\circ}\text{C}$ (0-15°C and 35-50°C)
Test Current Polarity: Negative (flows Low to High). 4165-1344 is selectable.
Test Current Compliance Voltage (4100,4150): 5 volts minimum
Test Current Compliance Voltage (4165):selectable clamp at 50mV or 2V ($\pm 5\%$)
Test Current Compliance Voltage (4165-1344):selectable clamp at 20mV or 2V ($\pm 5\%$)
Settling Time: 300 milliseconds + 1 conversion to within $\pm 0.1\%$

Environmental Requirements

Common Mode Rejection Ratio: 60 db at DC to 60Hz.
Power Supply: 115VAC or 230VAC $\pm 10\%$ @ 50Hz to 400Hz; 25VA max
Operating Temperature Range: 0°C to 50°C
Storage Temperature Range: -40°C to +85°C
Humidity: 80% RH max. at 40°C (non-condensing)
Dimensions: 15"(38cm)W x 10"(26cm)D x 3½"(9cm)H
Dimensions (serial# 8-3637 and higher): 17"(43cm)W x 11½"(29.5cm)D x 4"(10cm)H
Weights: 11lbs(5kg) NET; 15lbs(7kg) SHIPPING



Weights (serial# 8-3637 and higher):.....12lbs(5.5kg) NET; 16lbs(7.5kg) SHIPPING

Recommended Calibration Intervals

The above accuracy specifications are valid for a period of 1 year following calibration, thus for maintenance of these specifications a calibration interval of 1 year is recommended. More frequent calibrations may be performed as desired.