

VALHALLA SCIENTIFIC – MODEL 4176

Programmable Digital micro-Ohmmeter

The Valhalla Scientific Model 4176 Programmable μ -Ohmmeter offers super-stable low resistance measurements for hard-to-test items such as transformers, coils, shunts, and even the resistance of wire itself. With a basic accuracy of 0.04% this model allows measurements from $1\mu\Omega$ to $36k\Omega$. The seven ranges can be activated manually or through the Auto-Range feature. For optimal accuracy, connections to the load are made via a four-wire Kelvin binding post terminal that can accept banana plugs, spade lug or wires. The instrument can be operated remotely through its talk/listen RS-232 port or through the optional IEEE and USB interface. In addition the 4176 may be used in applications where temperature compensation is a must. With just one temperature sensor (Omni Compensator), the instrument can be programmed to compensate for any temperature coefficient and to any temperature reference. The Model 4176 can also be programmed for Hi-Lo limit comparison. Three front panel LEDs allow a visual of the result and a rear panel relay closure screw terminal block can be used to implement an automated batch sorting system for components or products, operate counters, sound alarms or shut off a process. A Run/Hold function is also a standard feature of the 4176. The user can program this function as a peak hi or peak low detector. Measurements may be printed or logged and viewed in a spread sheet by using the Print/Log feature also standard with all Model 4176.

FEATURES:

7 Measurement Ranges from $20m\Omega$ to $20k\Omega$

$1\mu\Omega$ Resolution on lowest range

$10\mu A$ - 1A Constant Current

0.04% Basic Accuracy

Auto-Ranging mode

Measurement Speed: 45 readings/second

VFD Display with adjustable intensity

Four Terminal Kelvin Connection

RS-232 Interface Standard

USB Interface (Optional)

BCD Interface (Optional)

Automatic Temperature Compensation

Automatic Hi-Lo Limit Comparator

Run/Hold and Peak Detector

Print/Log Function



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4176 Specifications

Range Characteristics and Accuracy

Range	Full Scale	Resolution	Test Current ¹	Accuracy (± % of reading ± % of range)	Temperature Coefficient ²
20mΩ	20.000mΩ	1μΩ	1A	±0.02 ±0.02	±0.002%/°C
.2Ω	.30000Ω	10μΩ	1A	±0.02 ±0.02	±0.002%/°C
2Ω	3.0000Ω	100μΩ	100mA	±0.02 ±0.02	±0.002%/°C
20Ω	30.000Ω	1mΩ	10mA	±0.02 ±0.02	±0.002%/°C
200Ω	300.00Ω	10mΩ	1mA	±0.02 ±0.02	±0.002%/°C
2kΩ	3.0000kΩ	100mΩ	100μA	±0.02 ±0.02	±0.002%/°C
20kΩ	30.000kΩ	1Ω	10μA	±0.02 ±0.02	±0.002%/°C

Temperature Compensation Mode Accuracy³

Range	T<25°C	T>25°C
	(± % of reading ± % of range ± % of (25°C – T))	(± % of reading ± % of range ± % of (T – 25°C))
20mΩ	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
.2Ω	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
2Ω	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
20Ω	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
200Ω	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
2kΩ	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001
20kΩ	±0.02 ±0.07 ±0.001	±0.02 ±0.07 ±0.001

General Specifications

Display Type:	5 digits VFD
A-to-D Conversion Rate:	45 conversions/seconds
Display Update:	5 user selections (100msec, 200msec, 300msec, 400msec, 500msec)
Overload:	
20mΩ Range:	99.95% of range
200mΩ thru 20kΩ:	119.95% of range
Overload Indication:	flashes “OVERLOAD”
Terminal Configuration:	Four-wire Kelvin
Test Current Polarity:	Positive (flows High to Low)
Test Current Compliance Voltage:	5V minimum
Settling Time	300 milliseconds

Environmental and Power Requirements

Power Supply:	115VAC or 230VAC ±10% @ 50Hz to 400Hz; 25VA max
Operating Temperature Range:	0°C to 50°C
Storage Temperature Range:	-40°C to +85°C

Physical Specifications

Humidity:	80% RH max. @ 40°C (non-condensing)
Dimensions:	17"(43cm) W x 11½"(29.5cm) D x 4"(10cm) H
Weights:	.36lbs (4.7kg) NET; 15lbs (7kg) SHIPPING



4176 Rear Panel

¹ Test Current is ±1% absolute accuracy.

² Temperature coefficient specified for temperature range from 0°C to 15°C and 35°C to 50°C.

³ T indicates the temperature in °C of the test area.