VALHALLA SCIENTIFIC – MODEL **4176 Programmable Digital micro-Ohmmeter**

he 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 fourwire 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

FEATURES:

7 Measurement Ranges from 20mΩ to 20kΩ 1µΩ Resolution on lowest range 10µA - 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

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.



4176 Specifications

Range Characteristics and Accuracy

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

Temperature Compensation Mode Accuracy³

Dango	T<25°C	T>25°C	
Kange	$(\pm \% \text{ of reading} \pm \% \text{ of range} \pm \% \text{ of } (25^{\circ}\text{C} - \text{T}))$	$(\pm \% \text{ of reading } \pm \% \text{ of range } \pm \% \text{ of } (T - 25^{\circ}C))$	
20mΩ	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
.2Ω	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
2Ω	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
20Ω	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
200Ω	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
2kΩ	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	
$20k\Omega$	$\pm 0.02 \pm 0.07 \pm 0.001$	$\pm 0.02 \pm 0.07 \pm 0.001$	

Т

<i>General Specifications</i> Display Type:	5 digits VFD	<i>Environm</i> Power Suppl
A-to-D Conversion Rate:	45 conversions/seconds	Operating Te Range:
Display Update:	5 user selections (100msec, 200msec, 300msec, 400msec, 500msec)	Storage Tem
Overload:		
20mΩ Range:	99.95% of range	
$200m\Omega$ thru $20k\Omega$:	119.95% of range	<i>Physical S</i> Humidity:
Overload Indication:	flashes "OVERLOAD"	Dimensions:
Terminal Configuration:	Four-wire Kelvin	Weights:
Test Current Polarity:	Positive (flows High to Low)	
Test Current Compliance Voltage:	5V minimum	
Settling Time	300 milliseconds	

Emi ental and Power Requirements 115VAC or 230VAC ±10% ly: @ 50Hz to 400Hz; 25VA max $0^{\circ}C$ to $50^{\circ}C$ emperature perature Range: -40°C to +85°C Specifications 80% RH max. @ 40°C (non-condensing)

.36lbs (4.7kg) NET; 15lbs (7kg) SHIPPING

17"(43cm) W x 111/2"(29.5cm)

D x 4"(10cm) H



4176 Rear Panel

¹ Test Current is $\pm 1\%$ 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.