

# VALHALLA SCIENTIFIC – MODEL 2105

## LOW COST WIDE RANGE POWER ANALYZER

### *Low Cost, Excellent Value Bench-Top Power Analyzers*

Valhalla Scientific Model 2105 is accurate, reliable low-cost power measurement devices designed to aid engineering, production test, and quality assurance departments in determination of product power consumption from DC and AC power sources. The instruments feature dual independent digital displays. The left display provides a continuous indication of true power in watts. The right display is switch selectable between amperes (true RMS) or volts (true RMS).

The Model 2105 provides a fast and convenient method of determining product efficiency, power factor, and true RMS current draw. Phase angle relationships may be calculated through manipulation of the displayed quantities.

The design of these models permits them to make accurate power measurements even in the most difficult applications. Switching mode power supplies, SCR controlled circuits and pulsed DC devices are just a few of the applications requiring the true power measurement capability of the Valhalla 2105 Power Analyzer.

### **Features:**

- Up to 20 Amps/phase direct (self contained shunt 0.1%)
- Expandable to 1000 amps (optional, see I-1000 C.T.)
- True Power Measurements,  $V \cos \phi$
- High Accuracy Measurement: 0.15% DC to 5KHz
- Bandwidth ~ DC, 40 Hz to 50 KHz
- Zero to Unity Power Factor Response
- Accurate Regardless of Waveform Distortion
- Certificate of N.I.S.T. traceability included at no extra charge



A quick and easy way to connect our load to the 2105 is via the “X-21” Load Extension Cord. Approximately three feet in length for each half, this convenient adaptor cord plugs directly into a standard 115V AC power outlet and mates with the 2105 via heavy duty banana jacks.



### **Valhalla Scientific, Inc.**

8318 Miramar Mall, San Diego CA 92121  
Ph: 800-548-9806 | Fx: 858-457-0127  
E-mail: [valhalla@valhallascientific.com](mailto:valhalla@valhallascientific.com)  
Web: [www.valhallascientific.com](http://www.valhallascientific.com)

**Specifications**

**Range & Resolution Table**

		Current Ranges		
		.2000A	2.000A	20.00A
Voltage Ranges	30.00V	6.000W	60.00W	600.0W
	150.00V	30.00W	300.0W	3000W
	300.0V	60.00W	600.0W	6000W
	600.0V	120.00W	1200.0W	12000W
<b>Watts</b>				

**Accuracies**

**Voltage – AC+DC, DC Coupled**

**DC & 40Hz - 1kHz:** ±0.1% of reading ±6 digits  
**1kHz - 5kHz:** ±0.2% of reading ± 0.2% of range  
**5kHz - 10kHz:** ±0.5% of reading ± 0.5% of range  
**10kHz – 20kHz:** ±1.25% of reading ±1.25% of range  
 (Usable above 20kHz to 50kHz with typically an additional 1% error per 10kHz)

**Watts – True Power (EI A cosΦ)**

**DC & 40Hz - 5kHz:** ±0.25% of reading ±6 digits  
**5kHz - 10kHz:** ±0.5% of reading ± 0.5% of range (12A Max)  
**10kHz – 20kHz:** ±1% of reading ±1% of range (2A Max)  
 (Usable above 20kHz to 50kHz with typically an additional 1% error per 10kHz)

**Current – AC+DC, DC Coupled**

**DC & 40Hz - 5kHz:** ±0.1% of reading ±6 digits  
**5kHz - 10kHz:** ±0.5% of reading ± 0.5% of range (12A Max)  
**10kHz – 20kHz:** ±1% of reading ±1% of range (2A Max)  
 (Usable above 20kHz to 50kHz with typically an additional 1% error per 10kHz)

**Operating Specifications**

**Crest Factor Response:** 50:1 for minimum RMS input, linearly decreasing to 2.5:1 for full scale RMS input  
**Minimum Inputs:** 5% of voltage and current ranges for specified accuracies  
**Maximum Voltage Input (without damage):** 600VDC or RMS, ±1500V<sub>PEAK</sub>  
**Maximum Current Input:** ±35A<sub>PEAK</sub>, 20ADC or RMS continuous; 100ADC or RMS for 16msec without damage  
**Voltage Impedance:** 600kΩ  
**Current Shunt Impedance:** 0.01Ω  
**Max Common Mode:** ±1500V peak, neutral to earth  
**Peak Indicators:** Illuminate at 2.5 x full scale for voltage and current  
**Overrange:** 150% of full scale for DC, up to “maximum input” specification

**Environmental & Physical Specifications**

**Temperature Range:** 0°C to 50°C operating; -20°C to 70°C storage  
**Temperature Coefficient:** ±0.025% of range per °C from 0°C-20°C and 30°C-50°C  
**Power Consumption:** 105-125Vac or 210-250Vac, 50-400Hz; 25VA maximum  
**Dimensions:** 25cm W x 27cm D x 8cm H (10" W x 10.5" D x 3" H)  
**Weights:** 1.7kg (3.5 lbs) net; 3kg (6lbs) shipping  
**Source/Load Connections:** 4- terminal heavy-duty input jacks

<b>ACCESSORIES</b>	
<b>I-100</b>	This "clamp-on" type current transformer extends the AC current measurement capability on the 2105 to 100 amps RMS. The 100:1 output ratio is 2% accurate from 45Hz to 1000Hz. The device accommodates up to 2" diameter conductors.
<b>I-150</b>	This "clamp-on" type current transformer extends the AC current measurement capability on the 2105 to 150 amps RMS. The 1000:1 output ratio is 2% accurate from 50Hz to 60Hz, and 3% accurate at 60Hz to 10 kHz. The device accommodates up to 2" diameter conductors.
<b>I-1000</b>	This "clamp-on" type current transformer extends the AC current measurement capability on the 2105 to 1000 amps RMS. The 1000:1 output ratio is 2% accurate from 50Hz to 1000Hz. The device accommodates up to 2" diameter conductors.
<b>X-21</b>	This cable is specifically designed for use with the 2105 Power Analyzer. It allows for quick and easy connection and testing of loads that use a standard AC plug (i.e. televisions, toasters, microwaves, radios, hair dryers, etc.). The entire cable is 6 feet in length and accommodates supply currents up to 20 amperes.
<b>CC4</b>	This item is a meter and accessory carrying case designed to protect the Power Analyzer when moved from one location to another. The case is made of black vinyl and includes a shoulder strap.
<b>R4</b>	This item adapts the Power Analyzer for installation in a standard 19" equipment rack.