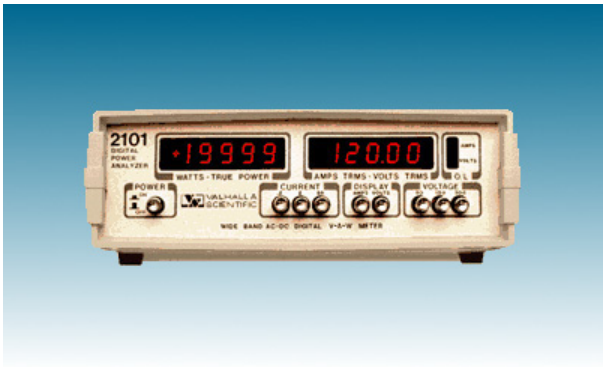
# 2100 SERIES POWER ANALYZER




**Features:**

- **Twin High Resolution Display (20,000 cnts).**
- **True Power, TRMS Volts and TRMS Amps.**
- **Accurate Reading for all Wave Form Inputs.**
- **0.1% accuracy to 5 kHz, Measures to 50 kHz.**
- **Power Factor Response – Zero to Unity.**
- **Option I/O – GPIB, RS232C & Centronics.**
- **Option C.T.'s up to 1000Amps.**

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

Valhalla Scientific Models 2100 and 2101 are 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).

Models 2100 and 2101 provide 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's 2100 2101 Power Analyzers.

Both models are nearly identical in function except for their voltage input capacity. The standard Model 2100 has voltage ranges of 150, 300, and 600 volts. The Model 2101 has voltage ranges of 30, 150, and 300 volts. The Model 2101 provides greater watts resolution when using low voltages, at the expense of a reduced maximum voltage capacity.

Variations on the basic instruments are available for specialized applications. The Model 2101L has reduced voltage ranges for greater accuracy when using low voltages. The Model 2101-20mA has reduced current ranges for greater accuracy when using low current levels. Please refer to Section 2 for details.

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# Specifications

## Range and Resolution Tables

| Model 2100 | | | | |
|---|---|---|---|---|
| | | Current Ranges | | |
| | | .2A | 2A | 20A |
| Voltage Ranges | 150V | 30.00W | 300.0W | 3000W |
| | 300V | 60.00W | 600.0W | 6000W |
| | 600V | 120.00W | 1200.0W | 12000W |
| | | Watts | | |

| Model 2101 | | | | |
|---|---|---|---|---|
| | | Current Ranges | | |
| | | .2A | 2A | 20A |
| Voltage Ranges | 30V | 6.000W | 60.00W | 600.0W |
| | 150V | 30.00W | 300.0W | 3000W |
| | 300V | 60.00W | 600.0W | 6000W |
| | | Watts | | |

| Model 2101-20mA | | | | |
|---|---|---|---|---|
| | | Current Ranges | | |
| | | 20mA | .2A | 2A |
| Voltage Ranges | 30V | .6000W | 6.000W | 60.00W |
| | 150V | 3.000W | 30.00W | 300.0W |
| | 300V | 6.000W | 60.00W | 600.0W |
| | | Watts | | |

| Model 2101L | | | | |
|---|---|---|---|---|
| | | Current Ranges | | |
| | | .2A | 2A | 20A |
| Voltage Ranges | 1.5V | .3000W | 3.000W | 30.00W |
| | 15V | 3.000W | 30.00W | 300.0W |
| | 30V | 6.000W | 60.00W | 600.0W |
| | | Watts | | |

## Accuracies

Specified accuracies are valid for a period of 1 year from the date of calibration at 25°C ±5°C, following a 30 minute warm-up.

### Voltage - AC+DC, DC Coupled

DC and 40Hz - 5 kHz: ±0.1% of reading ±6 digits
5 kHz - 10 kHz: ±0.5% of reading ±0.5% of range
10 kHz - 20 kHz: ±1% of reading ±1% of range
(20 kHz to 50 kHz add 1% error per 10 kHz)

### Current - AC+DC, DC Coupled

DC and 40Hz - 5 kHz: ±0.1% of reading ±6 digits
5 kHz - 10 kHz: ±0.5% of reading ±0.5% of range (12 Amp maximum)
10 kHz - 20 kHz: ±1% of reading ±1% of range (2 Amp maximum)
(20 kHz to 50 kHz add 1% error per 10 kHz)

### Watts - True Power (EI × cos$\Phi$)

DC and 40Hz - 5 kHz: ±0.25% of reading ±6 digits
5 kHz - 10 kHz: ±0.5% of reading ±0.5% of range
10 kHz - 20 kHz: ±1% of reading ±1% of range
(20 kHz to 50 kHz add 1% error per 10 kHz)

### 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

Max Voltage Input: Models 2100, 2101, 2101-20mA = 600VDC or RMS, $\pm 1500V_{PEAK}$

(Without damage) Model 2101L = 30VDC or $AC_{RMS}$, $\pm 60V_{PEAK}$

Max Current Input: Models 2100, 2101, 2101L = $\pm 35A_{PEAK}$, 20ADC or RMS continuous; 100ADC or RMS for 16 msec without damage. Model 2101-20mA = $\pm 3.5A_{PEAK}$, 2ADC or RMS continuous; 5ADC or RMS for 16 msec without damage

Volt. Input Impedance: Models 2100, 2101, 2101-20mA = 600KΩ. Model 2101L = 45kΩ

Current Shunt Imp.: Models 2100, 2101, 2101L = .01Ω Model 2101-20mA = 0.1Ω

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 and Physical Specifications

Temperature Range: 0°C to 50°C operating; -20°C to 70°C storage

Temp. 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 (6 lbs) shipping

Source/Load Connections: 4-terminal heavy-duty input jacks

### Available Options

Option I-100, I-150, I-1000: Current Transformer
Option X21: Load Power Adaptor Cord
Option CC4: Carrying Case
Option R4: Rack Mount Adaptor Kit
Option DMX: Multiplexed BCD Output
Model 1020A: Digital Interface Module
2101-20mA: Reduced Current Ranges
2101L: Reduced Voltage Ranges