

# RBL & RBL488 Series



## Dynaloads Up To 1000 Volts\*, 1000 Amps

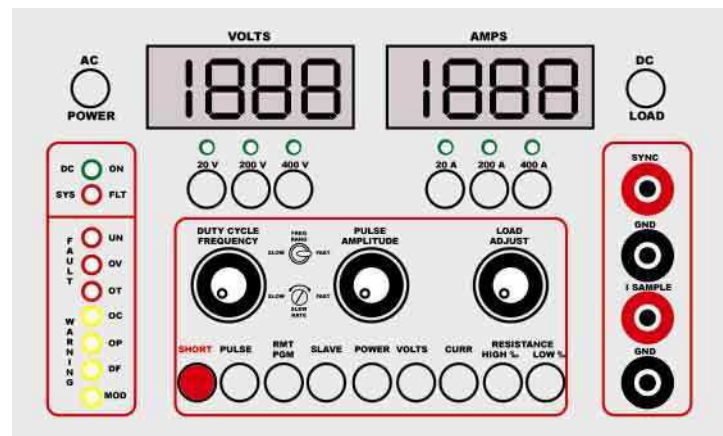


The RBL and RBL488 series single channel loads are ideal for testing of large batteries, power supplies, fuel cells and other related DC power equipment. The high range current capability and constant power feature facilitate battery testing and analysis. The ultra-fast slew rate provides unmatched power supply transient testing capabilities. The ultra-low voltage, high current capability makes the RBL and RBL488 series an ideal solution for any fuel cell requirement.

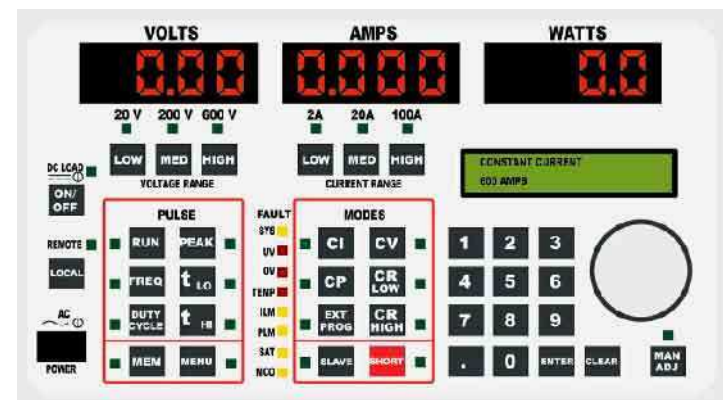
### Standard Features

- Ratings from 0-1000 Volts\*, 0-1000 Amps, up to 4000 watts in a single unit
- Units available:
  - 800 Watt (8"W x 5.25"H x 22"D)
  - 2000 Watt (19"W x 5.25"H x 22"D)
  - 4000 Watt (19"W x 8.75"H x 22"D)
- Variable speed fans minimize fan noise
- Operation below .5 volts at 1000 Amps
- 5 Modes of operation: Constant Current, Constant Resistance, Constant Power, Constant Voltage, Pulse Mode
- Full Scale Range Switching: for increased resolution and accuracy
- Synchronized paralleling to create larger systems that are controlled simultaneously
- Internal pulse generator with variable slew adjust for transient testing.
- GUI and Lab View drivers are available for IEEE-488 or RS232 computer control

### RBL Front Panel (Analog)



### RBL488 Front Panel (Digital)



\* Refer to RBL 1000V datasheet.

## Dynaloads Up To 1000 Volts, Up To 1000 Amps



### Features

- Front Panel, Analog, IEEE-488, or RS-232 Control
- Current and Voltage Range Selection
- Constant Current, Resistance, Voltage, Power
- Operation at a Fraction of 1 Volt
- High Speed Adjustable Slew Rate
- Software Drivers Available
- Master/Slave Paralleling
- Pulse Load Shaping
- Short Circuit Capability

### Series Specifications

#### OPERATION

**Constant Current:** 0 to selected full scale current  
 \* Prog. Accuracy (Range): (high/med) ranges:  $\pm 0.25\%$  (low) range:  $\pm 0.5\%$   
 Regulation:  $\pm 0.1\%$  of selected full scale  
 Resolution(IEEE): 1/4000 of selected full scale  
**Constant Resistance:** Constant Resistance mode operates in Amps/Volt, IEEE units entered in ohms or A/V  
 \* Prog. Accuracy:  $\pm 3\%$  of selected full scale  
 Regulation:  $\pm 3\%$  of selected full scale  
 Resolution(IEEE): 1/4000 of selected full scale  
**Constant Voltage:** 0 to selected selected full scale  
 \* Prog. Accuracy (Range): (high/med) ranges:  $\pm 0.25\%$  (low):  $\pm 0.5\%$   
 Regulation:  $\pm 0.15\%$  of selected full scale  
 Resolution(IEEE): 1/4000 of selected full scale  
**Constant Power:** 0 to full scale power  
 \* Prog. Accuracy:  $\pm 3\%$  of full scale  
 Regulation:  $\pm 3\%$  of full scale  
 Resolution(IEEE): 0.25% of full scale power

#### ANALOG MODE

**Ext. Prog:** 0 to 10 Volts input yields 0 to selected full scale loading in all operating modes.  
 Input Impedance: 330k Ohms  
 Prog. Response: Limited by internal adjustable slew rate limiter

#### PULSE MODE

\*\* Frequency: 0.06Hz to 20kHz  
 Accuracy: 0.1%  
 Duty Cycle: 0 - 100%(IEEE), 10 - 90%(Analog)  
 Accuracy: 0.1%  
**Adjustable Slew Rate**  
 \*\* Max: 0 to full scale in 10 $\mu$ S  
 Min: 0 to full scale in 10mS

#### OUTPUT SIGNALS

**Current Sample Output**  
 Scaling: 10 Volts = selected full scale  
 Accuracy:  $\pm 0.5\%$  of selected full scale  
**Sync Output**  
 Timing: Synchronous with pulse generator.  
 Output: Sink with 10k pull up to +15V

#### PROTECTION

**Current Limit**  
 Analog Models: Approximately 105% of selected full scale current  
 Range(IEEE): 0 - 105% of selected full scale  
 Resolution(IEEE): 0.5% of selected full scale  
**Voltage Limit**  
 Analog Models: Load disconnect at 105% of selected full scale voltage  
 Range(IEEE): 0 - 105% of selected full scale  
 Resolution(IEEE): 0.5% of selected full scale

#### Power Limit

Analog Models: Approximately 4250 Watts  
 Range(IEEE): 0 - 4200 Watts  
 Resolution(IEEE): 20 Watts  
**Thermal:** Load disconnect at internal temperature of 105°C  
**Undervoltage:** Load inhibited at less than 1 Volt, when enabled

#### IEEE-488 READBACKS

**Current**  
 Resolution: 1/4000 of Selected Full Scale  
 Accuracy(Range): (High/Med):  $\pm 0.25\% \pm 1$  Digit  
 (Low):  $\pm 0.5\% \pm 1$  Digit  
**Voltage**  
 Resolution: 1/4000 of Selected Full Scale  
 Accuracy(Range): (High/Med):  $\pm 0.25\% \pm 1$  Digit  
 (Low):  $\pm 0.5\% \pm 1$  Digit

#### Power

Resolution: 1 Watt  
 Accuracy: 0.50%

#### MISCELLANEOUS

**AC Input:** User Selectable 100VAC, 120VAC, 200VAC, 240VAC,  $\pm 10\%$ , 48 - 62 Hz @ 350W  
**Ambient Temp:** 0°C to 40°C

\* Where applicable, stated accuracies are with respect to an externally programmed reference. Meters may be used together with calibration data for increased accuracy.  
 \*\* Practical upper limits of pulse frequency and maximum slew rate are highly dependent on operating mode, source characteristics, and source to Dynaload wiring.

## Unit Specifications

### RBL488 50-400-2000

#### OPERATING RANGES (FULL SCALES)

**Voltage:** 10 Volts, 20 Volts, 50 Volts  
**Current:** 20 Amps, 200 Amps, 400 Amps  
**Power:** 2000 Watts  
**Short Circuit:** 0.001 Ohms max.

#### CONSTANT RESISTANCE RANGES

##### High Ohms Mode

Range	20A	200A	400A
10V	0 - 1 A/V	0 - 10 A/V	0 - 20 A/V
20V	0 - .5 A/V	0 - 5 A/V	0 - 10 A/V
50V	0 - .2 A/V	0 - 2 A/V	0 - 4 A/V

#### Low Ohms Mode

Range	20A	200A	400A
10V	0 - 10 A/V	0 - 100 A/V	0 - 200 A/V
20V	0 - 5 A/V	0 - 50 A/V	0 - 100 A/V
50V	0 - 2 A/V	0 - 20 A/V	0 - 40 A/V

#### IEEE METER RESOLUTION

	100A	??A	500A
<b>Ammeter:</b>	10mA	100mA	100mA
	10V	20V	50V
<b>Voltmeter:</b>	10mV	10mV	10mV
<b>Powermeter:</b>	0.5 Watts		

#### MECHANICAL

**Size:** 19"W x 5.25"H x 22"D  
 483mm W x 133mm H x 589mm D  
 Rack Mountable  
**Weight:** 56 lbs. / 25.40kg

**INPUT CHARACTERISTICS:** See Page 11 Chart E

### RBL488 100-300-2000 & RBL 100-300-2000

#### OPERATING RANGES (FULL SCALES)

**Voltage:** 10 Volts, 50 Volts, 100 Volts  
**Current:** 20 Amps, 200 Amps, 300 Amps  
**Power:** 2000 Watts  
**Short Circuit:** 0.005 Ohms max.

#### CONSTANT RESISTANCE RANGES

##### High Ohms Mode

Range	20A	200A	300A
10V	0 - 1 A/V	0 - 10 A/V	0 - 15 A/V
50V	0 - .2 A/V	0 - 2 A/V	0 - 3 A/V
100V	0 - .1 A/V	0 - 1 A/V	0 - 1.5 A/V

#### Low Ohms Mode

Range	20A	200A	300A
10V	0 - 10 A/V	0 - 100 A/V	0 - 150 A/V
50V	0 - 2 A/V	0 - 20 A/V	0 - 30 A/V
100V	0 - 1 A/V	0 - 10 A/V	0 - 15 A/V

#### IEEE METER RESOLUTION

	20A	200A	300A
<b>Ammeter:</b>	10mA	100mA	100mA
	10V	50V	100V
<b>Voltmeter:</b>	10mV	100mV	100mV
<b>Powermeter:</b>	0.5 Watts		

#### METERS (ANALOG UNIT)

	20A	200A	300A
<b>Ammeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Ammeter Resolution:</b>	10mA	100mA	1A
	10V	50V	100V
<b>Voltmeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Voltmeter Resolution:</b>	10mV	100mV	100mV

#### MECHANICAL

**Size:** 19"W x 5.25"H x 22"D  
 483mm W x 133mm H x 589mm D  
 Rack Mountable  
**Weight:** 56 lbs. / 25.40kg

**INPUT CHARACTERISTICS:** See Page 11 Chart F

### RBL488 400-300-2000 & RBL 400-300-2000

#### OPERATING RANGES (FULL SCALES)

**Voltage:** 20 Volts, 200 Volts, 400 Volts  
**Current:** 20 Amps, 200 Amps, 300 Amps  
**Power:** 2000 Watts  
**Short Circuit:** 0.010 Ohms max.

#### CONSTANT RESISTANCE RANGES

##### High Ohms Mode

Range	20A	200A	300A
20V	0 - .5 A/V	0 - 5 A/V	0 - 7.5 A/V
200V	0 - .05 A/V	0 - .5 A/V	0 - .75 A/V
400V	0 - .025 A/V	0 - .25 A/V	0 - .375 A/V

#### Low Ohms Mode

Range	20A	200A	300A
20V	0 - 5 A/V	0 - 50 A/V	0 - 75 A/V
200V	0 - .5 A/V	0 - 5 A/V	0 - 7.5 A/V
400V	0 - .25 A/V	0 - 2.5 A/V	0 - 3.75 A/V

#### IEEE METER RESOLUTION

	20A	200A	300A
<b>Ammeter:</b>	10mA	100mA	100mA
	20V	200V	400V
<b>Voltmeter:</b>	10mV	100mV	100mV
<b>Powermeter:</b>	0.5 Watts		

#### METERS (ANALOG UNIT)

	20A	200A	300A
<b>Ammeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Ammeter Resolution:</b>	10mA	100mA	1A
	20V	200V	400V
<b>Voltmeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Voltmeter Resolution:</b>	10mV	100mV	1V

#### MECHANICAL

**Size:** 19"W x 5.25"H x 22"D  
 483mm W x 133mm H x 589mm D  
 Rack Mountable  
**Weight:** 56 lbs. / 25.40kg

**INPUT CHARACTERISTICS:** See Page 11 Chart G

### RBL488 600-100-2000 & RBL 600-100-2000

#### OPERATING RANGES (FULL SCALES)

**Voltage:** 20 Volts, 200 Volts, 600 Volts  
**Current:** 2 Amps, 20 Amps, 100 Amps  
**Power:** 2000 Watts  
**Short Circuit:** 0.035 Ohms max.

#### CONSTANT RESISTANCE RANGES

##### High Ohms Mode

Range	2A	20A	100A
20V	0 - .05 A/V	0 - .5 A/V	0 - 2.5 A/V
200V	0 - .005 A/V	0 - .05 A/V	0 - .25 A/V
600V	0 - .0016 A/V	0 - .016 A/V	0 - .083 A/V

Range	2A	20A	100A
20V	0 - .5 A/V	0 - 5 A/V	0 - 25 A/V
200V	0 - .05 A/V	0 - .5 A/V	0 - 2.5 A/V
600V	0 - .016 A/V	0 - .166 A/V	0 - .833 A/V

#### IEEE METER RESOLUTION

	2A	20A	100A
<b>Ammeter:</b>	1mA	10mA	100mA
	20V	200V	600V
<b>Voltmeter:</b>	10mV	100mV	100mV
<b>Powermeter:</b>	0.5 Watts		

#### METERS (ANALOG UNIT)

	2A	20A	100A
<b>Ammeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Ammeter Resolution:</b>	1mA	10mA	100mA
	20V	200V	600V
<b>Voltmeter Accuracy(±1 Digit):</b>	±0.5%	±0.25%	±0.25%
<b>Voltmeter Resolution:</b>	10mV	100mV	1V

#### MECHANICAL

**Size:** 19"W x 5.25"H x 22"D  
 483mm W x 133mm H x 589mm D  
 Rack Mountable  
**Weight:** 56 lbs. / 25.40kg

**INPUT CHARACTERISTICS:** See Page 11 Chart H

## Input Characteristics

### Operational Graphs

These graphs provide a guideline for selecting the proper load for your application. They indicate the maximum operating voltage, the maximum operating current and the maximum operating power of each model. Care should be taken when selecting the proper load for your application. As an example, do not choose a model rated for 100 Volts maximum if you intend on testing a 100 Volt source. The same philosophy should be applied when selecting the current and power ratings. A transient overshoot in current limit, power limit or overvoltage could result in nuisance trip outs or clipping of current peaks.

### RBL & RBL488 Series 2000 Watt

Chart E (50V, 500A, 2000W)

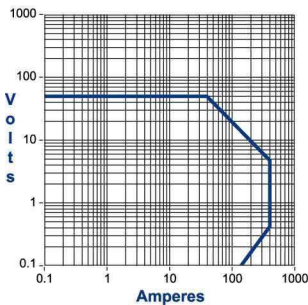


Chart F (100V, 300A, 2000W)

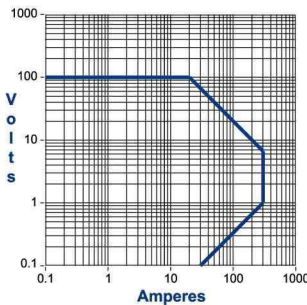


Chart G (400V, 300A, 2000W)

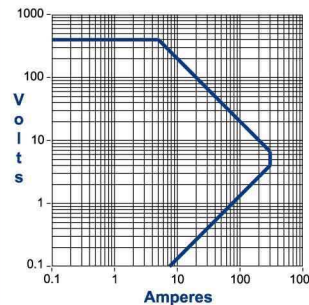
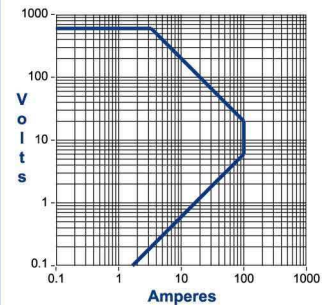
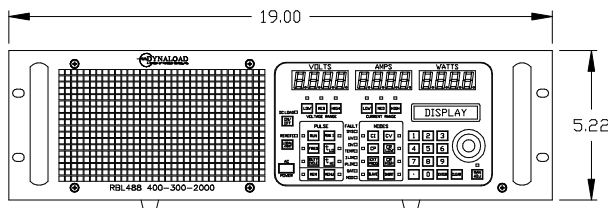
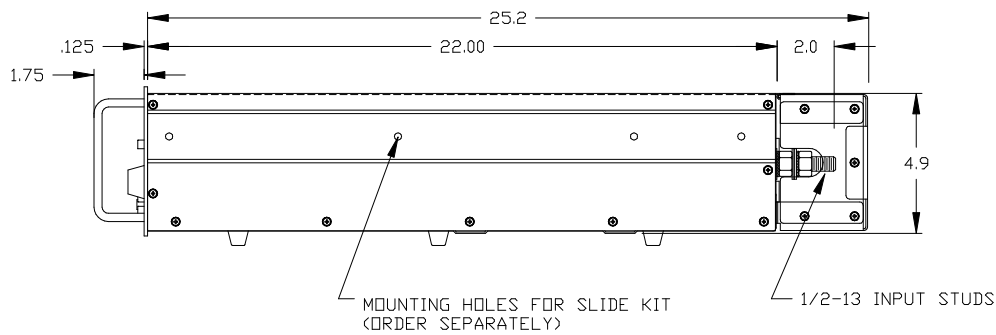


Chart H (600V, 100A, 2000W)



### 2000 Watt



© Copyright 2000, Transistor Devices, Inc.

This data sheet is believed to be correct at time of publication and Transistor Devices, Inc. accepts no responsibility for consequences from printing errors or inaccuracies. Specifications are subject to change without notice.