

WATER COOLED LOADS

PROGRAMMABLE ELECTRONIC LOADS UP TO 120KW



WCL488 System

FEATURES

- **Highest Density Solution: Complete 120kW System Only 62" Tall**
- **Constant Current, Resistance, Voltage, Power, Pulse**
- **Operation Below 1 Volt at High Current Amps**
- **Synchronized Paralleling Creates Larger Systems Controlled as a Single Unit**
- **Automated Flow Regulation to Prevent Condensation**
- **Modular Design Using Standard Building Blocks**
- **Low Water Flow (3gpm @ 10°C / 12kW)**
- **Self Configuring Based on the Number of Slaves in Use**
- **Range Switching for Increased Resolution and Accuracy**

PRODUCT OVERVIEW

Water Cooled Modules are rated at 12KW with a selection of voltage and current ratings applicable to the test requirements i.e. 50V, 100V, 400V, and 800V modules. The master programs itself and the slaves follow. The master and slave modules may be arrayed in a rack to create specific systems for the application up to 120KW/Rack. Standard racks are 44 or 60" high x 22" wide x 36" deep.



WCL488 Master

SERIES SPECIFICATIONS

OPERATION

Constant Current: 0 to selected full scale current
 Prog. Accuracy: $\pm 0.5\%$ of selected full scale
 Regulation: $\pm 0.5\%$ of selected full scale
 Resolution: 1/4000 of selected full scale
 Constant Resistance: Constant Resistance mode operates in Amps/Volt, or entered in ohms
 Prog. Accuracy: $\pm 3\%$ of selected full scale
 Regulation: $\pm 1\%$ of selected full scale
 Resolution: 1/4000 of selected full scale
Constant Voltage: 0 to selected full scale
 Prog. Accuracy: $\pm 0.5\%$ of selected full scale
 Regulation: $\pm 0.2\%$ of selected full scale
 Resolution: 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 3.33kHz
 Accuracy: 0.1%
 Duty Cycle: 0 - 100%(IEEE)
 Accuracy: 0.1%
Adjustable Slew Rate:
 Max: 0 to full scale in 50 μ 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

PROGRAMMABLE PROTECTION

Current Limit:
 Range: 0 - 105% of selected full scale
 Resolution: 0.5% of selected full scale
Voltage Limit:
 Range: 0 - 105% of selected full scale
 Resolution: 0.5% of selected full scale
Power Limit:
 Range: 0 - 105% of full scale
 Resolution: 50 Watts
Thermal:
 Load disconnect at internal temperature of 70°C
Undervoltage:
 Load inhibited at less than 0.5 Volt, when enabled

IEEE-488 READBACKS

Current:
 Resolution: 1/4000 of Selected Full Scale
 Accuracy(Range): $\pm 0.5\% \pm 1$ Digit
Voltage:
 Resolution: 1/4000 of Selected Full Scale
 Accuracy(Range): $\pm 0.5\% \pm 1$ Digit
Power:
 Resolution: 3 Watts
 Accuracy: 0.50%

MISCELLANEOUS

AC Input: User Selectable 120VAC, 240VAC, $\pm 10\%$, 48 - 62 Hz @ 350W
 Other voltages available. Consult Factory
Ambient Temp: 0°C to 40°C



WCS Slave

UNIT SPECIFICATIONS

WCL488 50-1200-12000 (master)
WCS 50-1200-1200 (slave)

OPERATING RANGES (FULL SCALES)

Voltage: 10 Volts, 20 Volts, 50 Volts
Current: 120 Amps, 600 Amps, 1200 Amps
Power: 12000 Watts
Short Circuit: 0.0002 Ohms max.

CONSTANT RESISTANCE RANGES

High Ohms Mode:

Range:	100A	500A	1000A
10V	0-5 A/V	0-25 A/V	0-50 A/V
20V	0-2.5 A/V	0-12.5 A/V	0-25 A/V
50V	0-1.0 A/V	0-5.0 A/V	0-10 A/V

Low Ohms Mode:

Range:	100A	500A	1000A
10V	0-50 A/V	0-250 A/V	0-500 A/V
20V	0-25 A/V	0-125 A/V	0-250 A/V
50V	0-10 A/V	0-20 A/V	0-100 A/V

METER RESOLUTION

	100A	500A	1000A
Ammeter:	10mA	100mA	100mA
	10V	20V	50V
Voltmeter:	10mV	100mV	100mV

Wattmeter: 1 Watt up to 9,999 Watts
(Autoranging) 100 Watts above 10,000 Watts

MECHANICAL - MASTER UNIT

Size: 19"W x 5.25"H x 24"D
 483mm W x 133mm
 H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

MECHANICAL - SLAVE UNIT

Size: 19"W x 3.50"H x 24"D
 483mm W x 89mm H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

INPUT CHARACTERISTICS: See chart (pg.5)

WCL488 100-1000-12000 (master)
WCS 50-1000-12000 (slave)

OPERATING RANGES (FULL SCALES)

Voltage: 10 Volts, 50 Volts, 100 Volts
Current: 100 Amps, 500 Amps, 1000 Amps
Power: 12000 Watts
Short Circuit: 0.001 Ohms max.

CONSTANT RESISTANCE RANGES

High Ohms Mode:

Range:	100A	500A	1000A
10V	0-5 A/V	0-25 A/V	0-50 A/V
50V	0-1 A/V	0-5 A/V	0-10 A/V
100V	0-5 A/V	0-2.5 A/V	0-5 A/V

Low Ohms Mode:

Range:	100A	500A	1000A
10V	0-50 A/V	0-250 A/V	0-500 A/V
50V	0-10 A/V	0-50 A/V	0-100 A/V
100V	0-5 A/V	0-25 A/V	0-50 A/V

METER RESOLUTION

	100A	500A	1000A
Ammeter:	10mA	100mA	100mA
	10V	50V	100V
Voltmeter:	10mV	100mV	100mV

Wattmeter: 1 Watt up to 9,999 Watts
(Autoranging) 10 Watts above 10,000 Watts

MECHANICAL - MASTER UNIT

Size: 19"W x 5.25"H x 24"D
 483mm W x 133mm H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

MECHANICAL - SLAVE UNIT

Size: 19"W x 3.50"H x 24"D
 483mm W x 89mm H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

INPUT CHARACTERISTICS: See chart (pg.5)

WCL488 400-1000-12000 (master)
WCS 400-1000-12000 (slave)

OPERATING RANGES (FULL SCALES)

Voltage: 20 Volts, 200 Volts, 400 Volts
Current: 100 Amps, 500 Amps, 1000 Amps
Power: 12000 Watts
Short Circuit: 0.003 Ohms max.

CONSTANT RESISTANCE RANGES

High Ohms Mode:

Range:	100A	500A	1000A
20V	0-2.5 A/V	0-12.5 A/V	0-25 A/V
200V	0-25 A/V	0-1.25 A/V	0-2.5 A/V
400V	0-1.25 A/V	0-6.25 A/V	0-1.25 A/V

Low Ohms Mode:

Range:	100A	500A	1000A
20V	0-25 A/V	0-125 A/V	0-250 A/V
200V	0-2.5 A/V	0-12.5 A/V	0-25 A/V
400V	0-1.25 A/V	0-6.25 A/V	0-12.5 A/V

METER RESOLUTION

	100A	500A	1000A
Ammeter:	10mA	100mA	100mA
	20V	200V	400V
Voltmeter:	10mV	100mV	100mV

Wattmeter: 1 Watt up to 9,999 Watts
(Autoranging) 10 Watts above 10,000 Watts

MECHANICAL - MASTER UNIT

Size: 19"W x 5.25"H x 24"D
 483mm W x 133mm H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

MECHANICAL - SLAVE UNIT

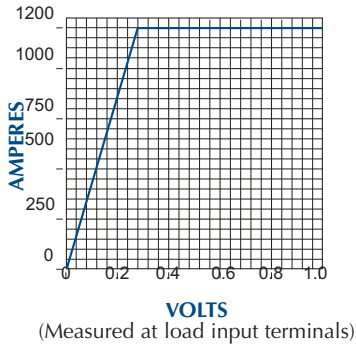
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 483mm W x 89mm H x 610mm D
 Rack Mountable

Weight: 55 lbs. / 24.95kg

INPUT CHARACTERISTICS: See chart (pg.5)

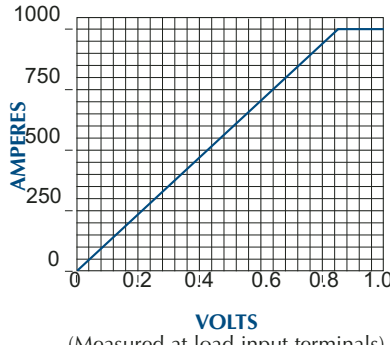
WCL488 INPUT CHARACTERISTICS

WCL488 50-1200-12000
(Low Voltage Operation)



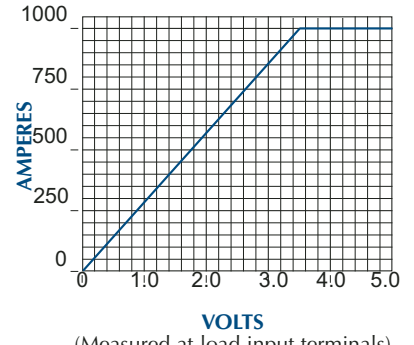
(Measured at load input terminals)

WCL488 100-1000-12000
(Low Voltage Operation)



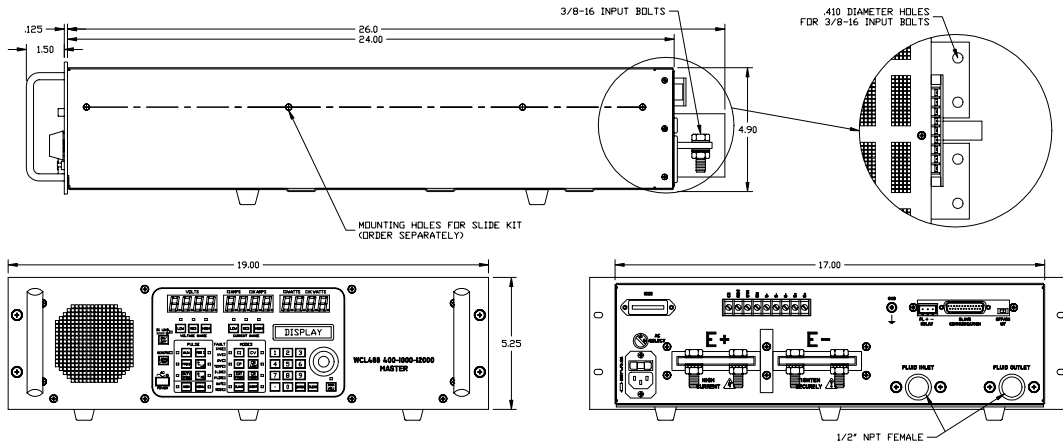
(Measured at load input terminals)

WCL488 400-1000-12000
(Low Voltage Operation)



(Measured at load input terminals)

WCL488 MASTER OUTLINE



WCS SLAVE OUTLINE

