303 Series Data Sheet
High Voltage Power Supply
Capacitor Charging and DC Output Voltage from 1kV - 50kV
Output Power 30kJ/sec or 50kW
Ultra-Compact - 50kW in 7U
Unique Water-Cooled Design

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303 Series Specification

High Power Ultra-Compact water-cooled capacitor charging and DC power supplies available in 30kJ/sec for capacitor charging, or 50kW(1) in continuous DC applications.

- Power rating of 30kJ/sec, 37.5kJ/sec peak(1)
- Output Voltages from 0-1kV to 0-50kV
- Unique evaporative cooling/insulation
- Efficient IGBT based resonant inverter
- Excellent pulse to pulse repeatability
- 400 or 480VAC 3Ø input voltage(1)

Ultra compact water cooled rack mount design
- Full remote control interface
- Passive PFC (pf = 0.9)
- Full local output voltage and HV On/Off controls (L version)
- Simple parallel operation for higher power
- Lab, or Slave front panel options

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**Average Capacitor Charging Power**
30,000 Joules/sec (1) \( \frac{1}{2} CV^2 \times \text{Rep Rate} \)

**Peak Capacitor Charging Power**
37,500 Joules/sec (1) \( \frac{1}{2} CV^2 \div t_{\text{charge}} \)

**Average Continuous DC Power**
50,000 Watts (1)

**Output Voltage Range**
1, 2, 4, 5, 10, 15, 20, 30, 40, 50kV, variable from 10-100% of rated

**Polarity**
Available as fixed Positive or Negative. Please specify at time of ordering

**HV Output Cable**
1-29kV Models DS2214 Coaxial cable with proprietary HV connector
30-50kV Models DS2212 Coaxial cable with proprietary HV connector

**AC Input Voltage, Current**
3P480 - 480VAC (432-528) 3Ø, 53A max
or 3P400 - 400VAC (360-440) 3Ø, 68A (2) max - specify at time of ordering

**AC Connector**
UL/CSA approved terminal block. 3Ø +

**AC Line Contactor**
UL/CSA approved AC line contactor

**Power Factor**
Passive PFC pf = 0.9 at full load and nominal AC line

**Efficiency**
Better than 85% at full load

**Front Panel**
303L - Output Voltage Control, Voltage & Current Meters, Status Indicators
303S - On/Off Switch, Current Bar Graph, Status Indicators

**Stability**
±0.2% per hour after 1 hour warmup

**Temperature Coefficient**
100ppm per °C typical

**Stored Energy**
Less than 0.3J all models

**Pulse to Pulse Repeatability**
±2% to 100Hz std, consult factory for higher rep rates

**Dimensions - inches (mm)**
19 (483) W x 12.25 (311) H x 22.5 (571) D

**Weight - lbs (kg)**
220 (100)

**Ambient Temperature**
Storage: -40 to +70°C. Operating: 0 to +55°C

**Altitude**
Storage: 40,000ft (12,000m), Operating: 9,900ft (3,000m)

**Humidity**
10-90%, non-condensing

**Cooling**
Flowed water at 2US GPM (7.6 L/min) with max inlet temp 35°C and min inlet of 15°C. All water paths are copper or brass. Connections are \( \frac{1}{4} \)NPT male pipe.

**Protection**
Open/Short Circuits, Overloads, Arcs, Overtemp, Overvoltage, Safety Interlock

**Remote Control (all models)**
Via 25-pin D-sub connector on rear of unit, Signals include, Vprogram (0-10V), HV Enable/Reset, Inhibit, Summary Fault, Load Fault, Vanalog

**Accessories**
10ft HV cable, operating manual

**Options**
EN - Low Enable. Replaces standard high enable
5V - 0-5V Analog programming. Replaces standard 0-10V programming
LP - Latching Overload Protection, requires HV reset after overload fault
DC - Continuous DC operation
CP - 10 turn Current Programming pot and/or 0-10V remote input for DC units only
RS - Remote load voltage sense replaces local sense

**Ordering Info**
Model - XXXkV - POS (or NEG) - 3PYYYY - ZZ (options)

**Ordering Examples**
303L-10kV-POS-3P480, 303S-50kV-NEG-DC-3P480, 303L-30kV-POS-3P400

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(1) Power de-rated to 25,000J/sec average, 32,500J/sec peak or 40,000W DC with 400VAC input
(2) AC line current for capacitor charging operation. For DC operation use formula in online App Note 502.

All specifications subject to change without notice
303 Series Mechanical Details

303L Front View

1 - HV ON/OFF Push Buttons/Status LEDs (L models only)
2 - Detail Operating Status LEDs
3 - Local/Remote Keyswitch (L model only)
4 - 10-Turn HV Output Control (L models only)
5 - View Set Push Button (L model only)
6 - Voltage Display and Bar Graph (L models only)
7 - Current Display and Bar Graph (L models only)
8 - Power Switch
9 - Inhibit BNC (L models only)
10 - Slave Supply Programming Connector (L models only)

303L Rear View

11 - Remote Programming Connector
12 - Coolant Refill connection
13 - HV Output Connector
14 - Cooling Water Inlet
15 - HV Tank Pressure Gauge
16 - Cooling Water Outlet
17 - Ground Stud
18 - AC Input Connector
19 - Interlock/Remote Power On Terminals
20 - Cooling Fan

Outline Drawings

12.25" / 311mm
19" / 483mm
22.5" / 571mm

17" / 432mm
1.5" / 38mm

303 Series Data Sheet

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# GLOBAL HIGH VOLTAGE NETWORK

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