



**203 Series Data Sheet**  
**High Voltage Power Supply**  
**Capacitor Charging and DC**  
**Output Voltage from 1kV - 50kV**  
**Output Power 20kJ/sec or 30kW**  
**Compact - 30kW in 7U**  
**Unique Water-Cooled Design**



**TDK-Lambda**

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# 203 Series Specification

High Power Ultra-Compact water-cooled capacitor charging and DC power supplies available in 20kJ/sec for capacitor charging, or 30kW<sup>(1)</sup> in continuous DC applications.

- Power rating of 20kJ/sec, 25kJ/sec peak<sup>(1)</sup>
- Output Voltages from 0-1kV to 0-50kV
- Unique evaporative cooling/insulation
- Efficient IGBT based resonant inverter
- Excellent pulse to pulse repeatability
- 208, 400 or 480VAC 3Ø input voltage<sup>(1)</sup>
- 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

Average Capacitor Charging Power	20,000 Joules/sec <sup>(1)</sup> ( $\frac{1}{2}CV^2 \times \text{Rep Rate}$ )
Peak Capacitor Charging Power	25,000 Joules/sec <sup>(1)</sup> ( $\frac{1}{2}CV^2/t_{\text{charge}}$ )
Average Continuous DC Power	30,000 Watts <sup>(1)</sup>
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	480VAC (432-528), 3Ø or 400VAC (360-440), 3Ø, or 208VAC (180-254), 3Ø
AC Input Current	35A/45A/75A <sup>(2)</sup>
AC Connector	UL/CSA approved terminal block. 3Ø + $\underline{\text{N}}$
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	203L - Output Voltage Control, Voltage & Current Meters, Status Indicators 203S - 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 ¼NPT 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 Double terminated HV cable, and mating bulkhead connector
Ordering Info	Model - XXkV - POS (or NEG) - YYYYVAC - ZZ (options)
Ordering Examples	203L-10kV-POS, 203S-50kV-NEG-DC, 203L-30kV-POS-400VAC

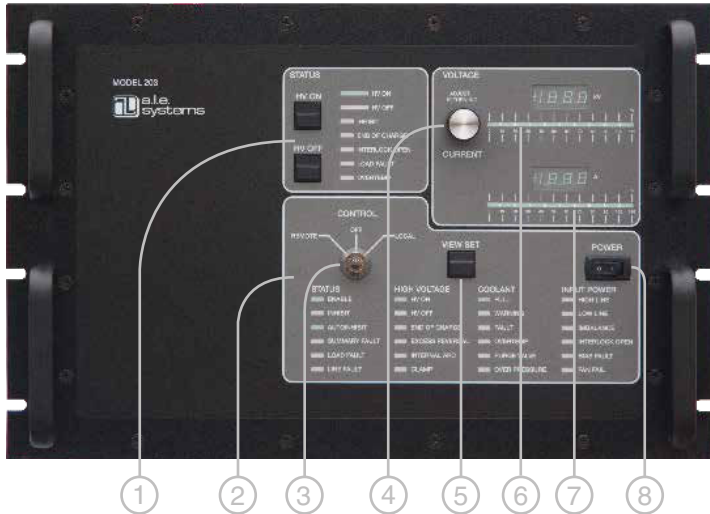
(1) Power de-rated to 18,000J/sec average, 22,000J/sec peak or 18,000W DC with 208VAC input

(2) AC line current for capacitor charging operation. For DC operation use formula in online App Note 502.

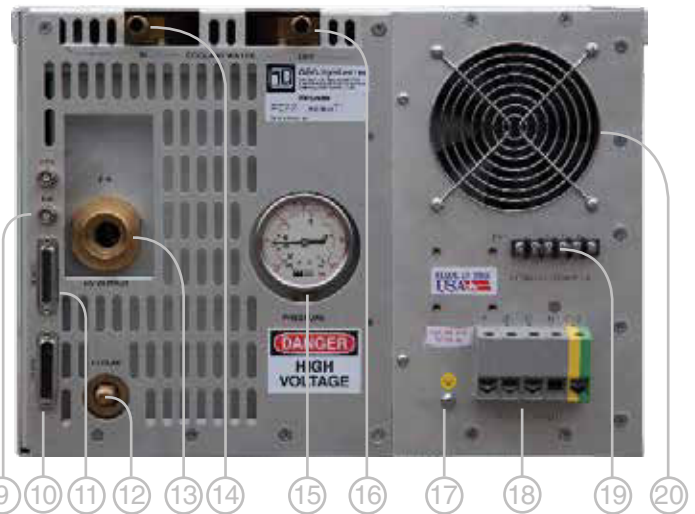
All specifications subject to change without notice

# 203 Series Mechanical Details

203L Front View



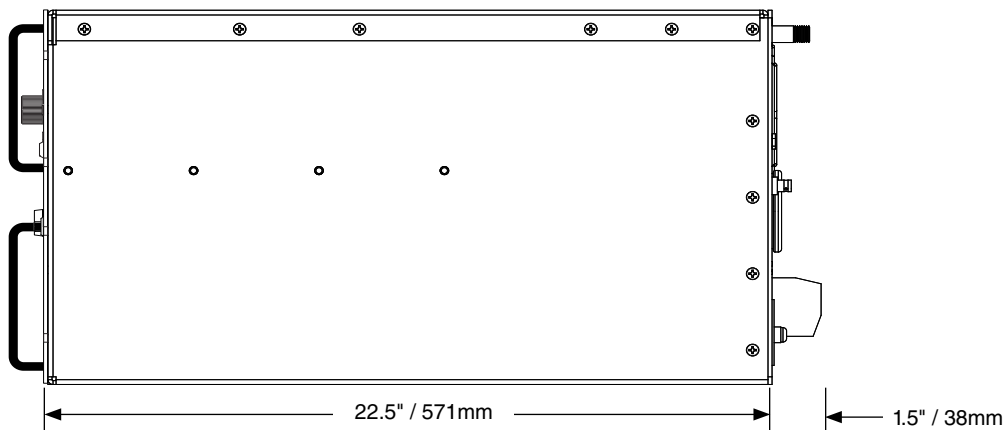
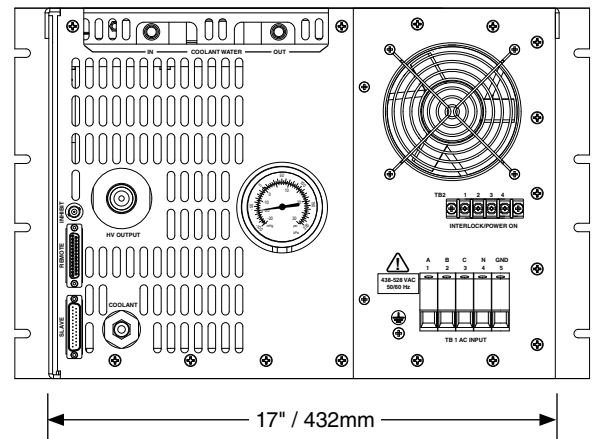
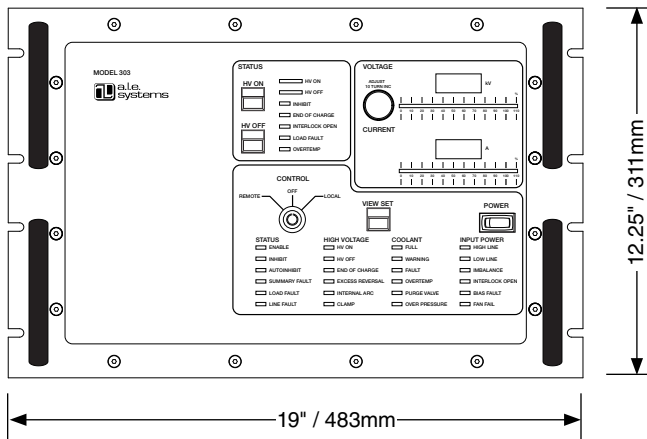
203L Rear View



- 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)

- 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



# GLOBAL HIGH VOLTAGE NETWORK

## NORTH AMERICA

TDK-Lambda Americas Inc., High Power Division  
405 Essex Rd. Neptune, NJ 07753  
Tel: +1-732-922-9300, Fax: +1-732-922-1441  
E-mail: andy.tydeman@us.tdk-lambda.com  
Web: www.us.tdk-lambda.com/hp

## CANADA

TMetrix  
5805 Kennedy Road Mississauga,  
Ontario L4Z 2G3  
Tel: +1-905-890-2010, Fax: +1-905-890-1959  
E-mail: lambda@aca.ca, Web: tmetrix.com

## UK

Pulse Power & Measurement Ltd.  
65 Shrivenham Hundred Business Park  
Watchfield, Swindon  
Wiltshire, SN6 8TY  
Tel: +44-1793-784389, Fax: +44-1793-784391  
Email: sales@ppm.co.uk, Web: www.pmpower.co.uk

## IRELAND

## FRANCE

TDK-Lambda France  
ZAC des Delaches CS 41077, 9 rue Thuillere  
91978 Villebon Courtaboeuf  
Tel: +33 1 60 12 71 65, Fax: +33 1 60 12 71 66  
Email: france@fr.tdk-lambda.com  
Web: www.fr.tdk-lambda.com

## BELGIUM

## SPAIN

## NETHERLANDS

## LUXEMBOURG

## GERMANY

Guth GmbH  
Spitzenbergstrasse 6  
D – 73084 Salach  
Tel: +49-7162-948930, Fax: +49-7162-9489399  
Email: kontakt@guth-hv.de, Web: www.guth-hv.de

## AUSTRIA

## SWITZERLAND

## ITALY

TDK-Lambda Italy  
Via dei Lavoratori 128/130  
IT 20092 Cinisello Balsamo (MI)  
Tel: +39-02-6129-3863, Fax: +39-02-6129-0900  
Email: info.italia@it.tdk-lambda.com  
Web: www.it.tdk-lambda.com

## SCANDINAVIA

## BALTICS

Divisoft AB  
Rallarvägen 41, SE-184 40 Åkersberga, Sweden  
Tel: +46 8 540 248 09, Fax: +46 8 501 096 53  
Email: iain@divisoft.se, Web: www.divisoft.se

## ISRAEL

## RUSSIA

## UKRAINE

TDK-Lambda Israel Ltd.  
Kibbutz Givat Hashlosa Tel-Aviv 48800  
Tel: +972-3-9024-333, Fax: +972-3-9024-777  
Email: info@tdk-lambda.co.il, Web: www.tdk-lambda.co.il

## BRAZIL

Suplitech  
Rua Sena Madureira 455, Belo Hte - 31340-000  
Tel: +55-31-3498 1177, Fax: +55-31-3441 0841  
Email: vendas@suplitech.com.br, Web: www.suplitech.com.br

## MEXICO

AcMax De Mexico  
Rosas 139 Col. Bugambilias. Puebla, Pue. C.P. 72580  
Tel: +52-800-211-0060, Fax: +52-264-1445  
Email: edaena@acmax.mx, Web: www.acmax.mx

## JAPAN

## KOREA

Electronics Optics Research, Ltd  
4-26-19 Koenji-Minami  
Suginami-ku, Tokyo 166-0003  
Tel: +81-333-145699, Fax: +81-333-142333  
Email: imamura@eor.jp, Web: www.eor.jp

## CHINA

TDK-Lambda Shanghai Office  
2nd Floor of Building No.1, No.15 Guiqing Road,  
Shanghai, 200233 P.R. China  
Tel: +86-21-64850777, Fax: +86-21-64850666  
Email: sales-sh@cn.tdk-lambda.com  
Web: www.cn.tdk-lambda.com

## MALAYSIA

TDK-Lambda Malaysia  
No.7.3, 7th Floor, Jaya Shopping Center,  
Jalan Semangat Section 14, 46100  
Petaling Jaya Selangor, D.E  
Tel: +60-3-7957-8800 Fax: +60-3-7958-2400  
Web: www.tdk-lambda.com.my

## SINGAPORE

## PHILIPPINES

## THAILAND

TDK-Lambda Singapore  
1008 Toa Payoh North # 06-01/08  
Singapore 318996  
Tel: +65-6251-7211 Fax: +65-6250-9171  
Web: www.se.tdk-lambda.com

## INDIA

TDK-Lambda India  
#526, Ground Floor, 10th Main, 7th Cross,  
Jeevanbhimanagar, Bangalore 560 075, Karnataka, India  
Tel : +91-80-43550500, Fax :+91-80-43550501  
Email: mathew.philip@in.tdk-lambda.com  
Web www.in.tdk-lambda.com

## SOUTH AFRICA

PaR Systems (Pty) Ltd.  
Pretoria, South Africa  
Tel: +27-12-5480370, Fax: +27-12-5480447  
Email: ndupreez@par.com  
Web: www.sdilasers.com



TDK-Lambda Americas Inc. 405 Essex Road, Neptune, NJ 07753 USA  
Tel: +1 732 922 9300 Fax: +1 732 922 1441  
www.us.tdk-lambda.com/hp

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