



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

www.us.tdk-lambda.com/hp

203 Series Specification

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

- Power rating of 20kJ/sec, 25kJ/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
- 208, 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

Average Capacitor Charging Power	20,000 Joules/sec ⁽¹⁾ ($\frac{1}{2}CV^2 \times \text{Rep Rate}$)
Peak Capacitor Charging Power	25,000 Joules/sec ⁽¹⁾ ($\frac{1}{2}CV^2/t_{\text{charge}}$)
Average Continuous DC Power	30,000 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	480VAC (432-528), 3Ø or 400VAC (360-440), 3Ø, or 208VAC (180-254), 3Ø
AC Input Current	35A/45A/75A ⁽²⁾
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

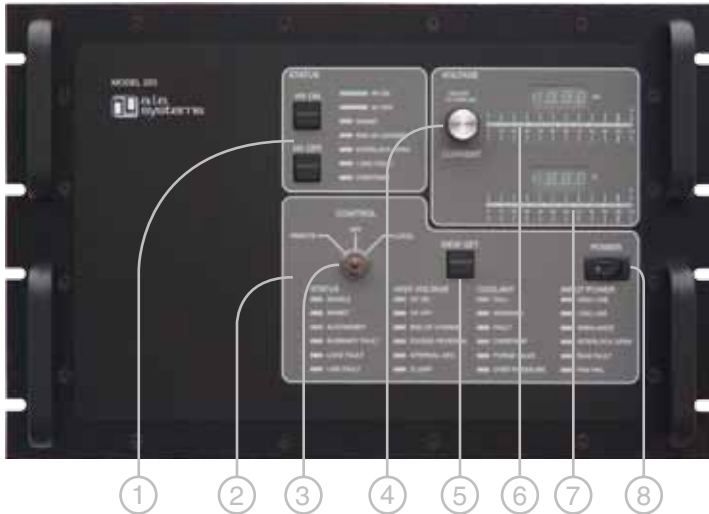
(1) Power de-rated to 18,000J/sec average, 22,000J/sec peak or 18,000W DC with 208VAC input

(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



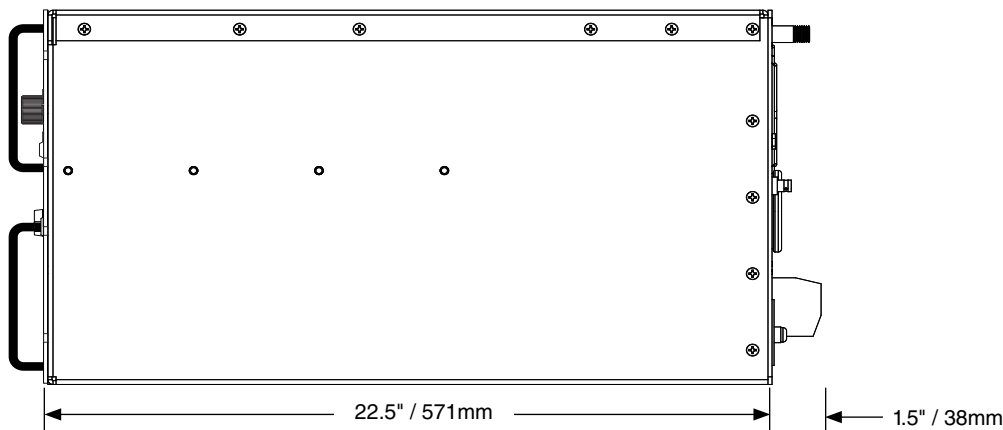
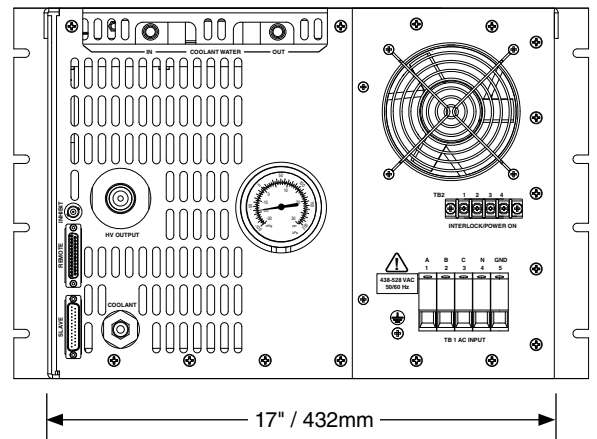
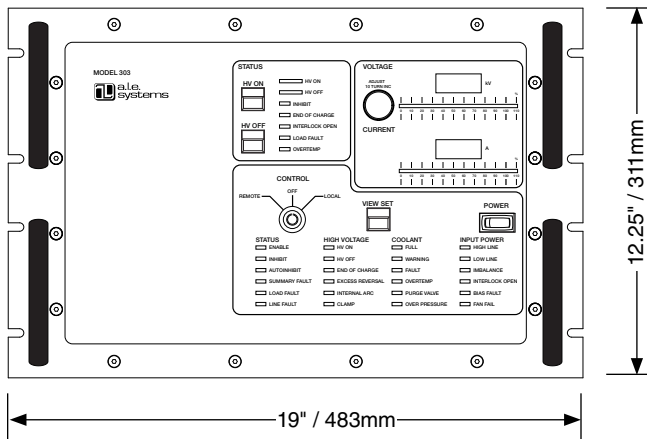
203L Rear View



- 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
28F, Xingyuan Technology Building, No.418 Guiping 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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