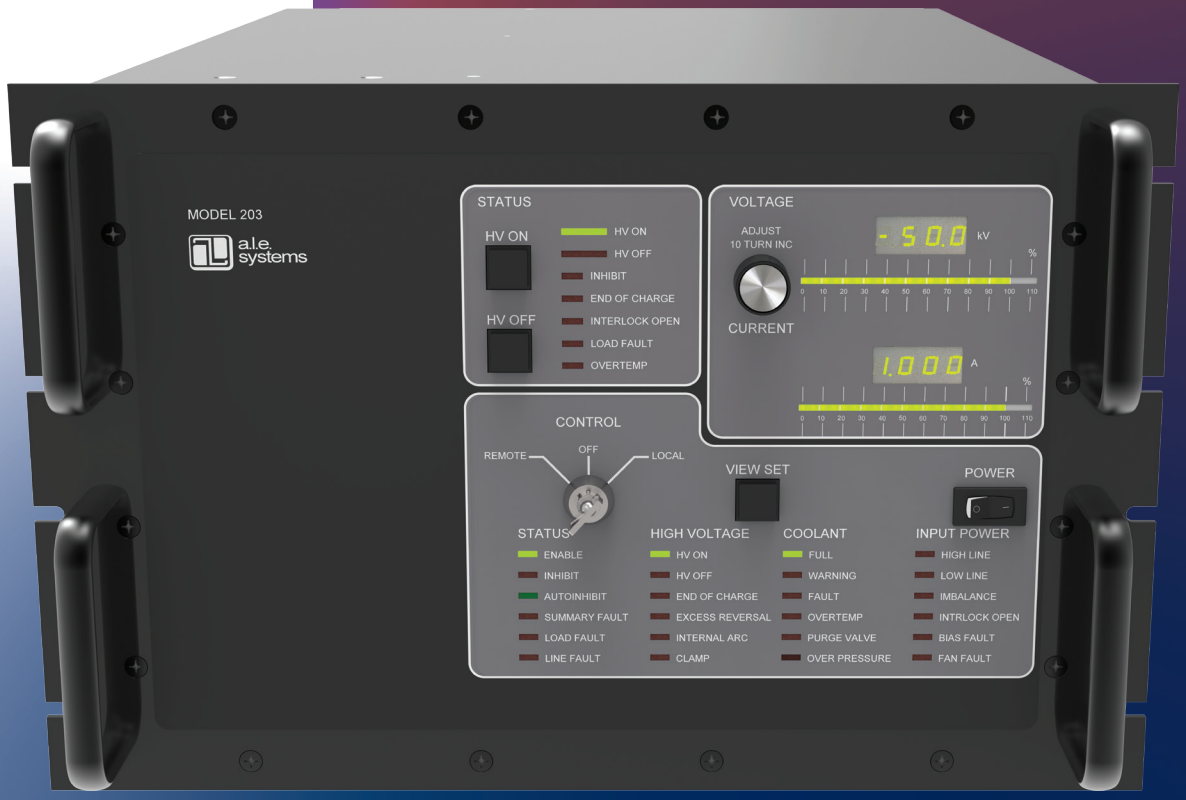
a.l.e. systems

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



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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(1) in continuous DC applications.

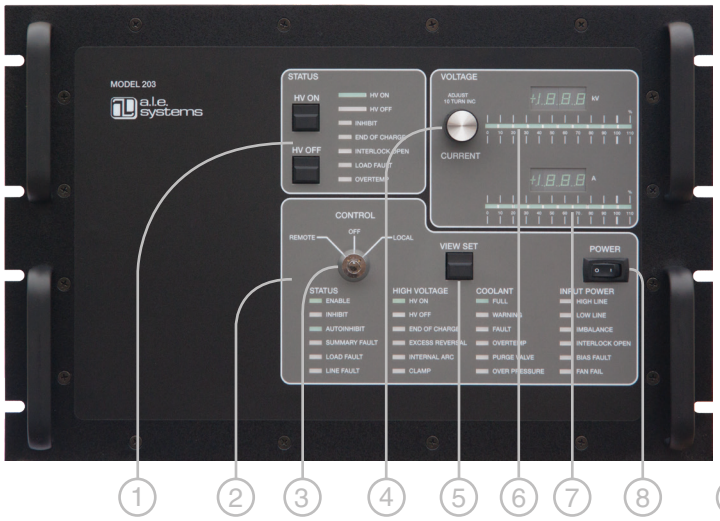
- **Power rating of 20kJ/sec, 25kJ/sec peak(1)**
- **Output Voltages from 0-1kV to 0-50kV**
- **Unique evaporative cooling/insulation**
- **Efficient IGBT based resonant inverter**
- **Excellent pulse to pulse repeatability**
- **208, 400 or 480VAC 3Ø input voltage(1)**
- **Ultra compact water cooled 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) ($\frac{1}{2}CV^2$ x Rep Rate)
Peak Capacitor Charging Power	25,000 Joules/sec (1) ($\frac{1}{2}CV^2/t_{charge}$)
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, Current	3P480 - 480VAC (432-528) 3Ø, 35A max or 3P400 - 400VAC (360-440) 3Ø, 45A max or 3P208 - 208VAC (180-254) 3Ø, 75A max (2) - 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	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 **C**urrent **P**rogramming 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) - 3PYYY - ZZ (options)
Ordering Examples	203L-10kV-POS-3P480, 203S-50kV-NEG-DC-3P480, 203L-30kV-POS-3P400

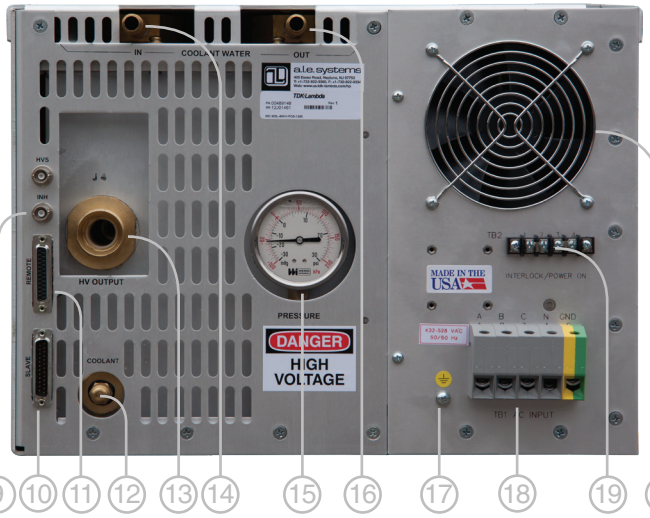
(1) Power de-rated to 18,000J/sec average, 22,000J/sec peak or 18,000W DC with 208VAC input
(2) AC line current for capacitor charging operation. For DC operation use formula in online App Note 502.
All specifications subject to change without notice

203 Series Mechanical Details

203L Front View

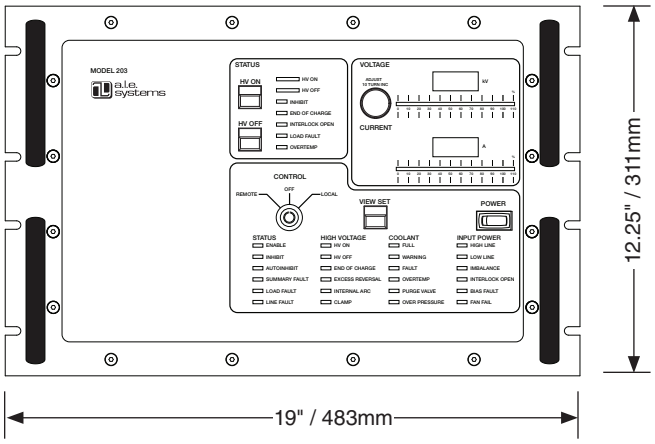


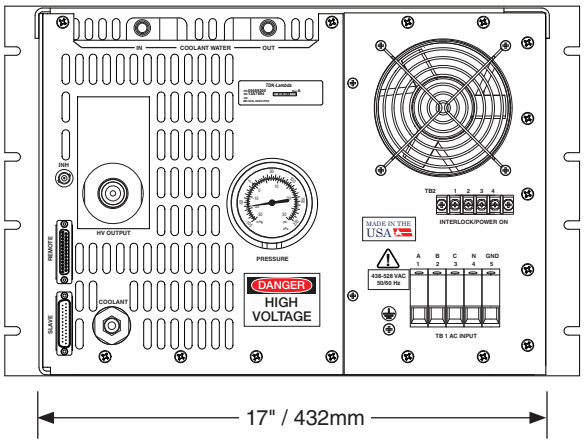
203L Rear View

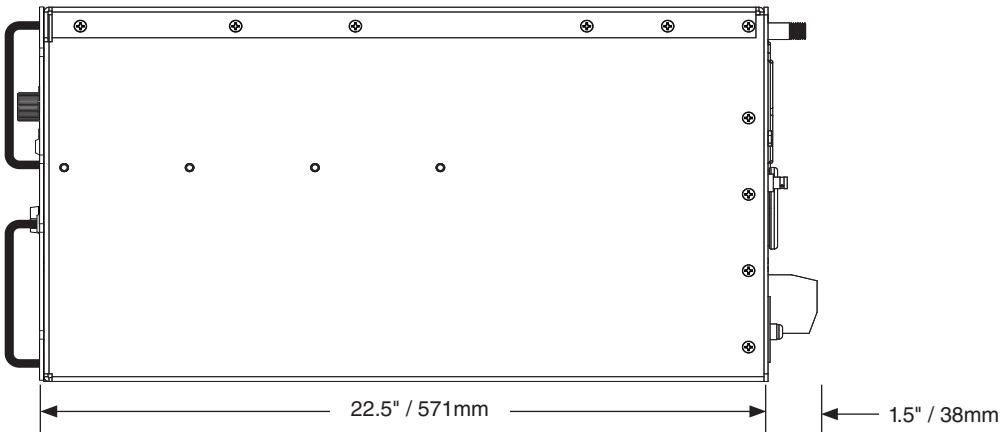


1 - HV ON/OFF Push Buttons/Status LEDs (L models only)
2 - Detail Operating Status LEDs
3 - Local/Remote Keyswitch (L model only)
4 - 10-Turn HV Output Control (L models only)
5 - View Set Push Button (L model only)
6 - Voltage Display and Bar Graph (L models only)
7 - Current Display and Bar Graph (L 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., Programmable and High Voltage
405 Essex Rd. Neptune, NJ 07753
Tel: +1-732-795-4100, Fax: +1-732-922-1441
E-mail: andy.tydeman@tdk.com
Web: www.us.lambda.tdk.com

CANADA

ACA TMetrix
5805 Kennedy Road
Mississauga, Ontario L4Z 2G3
Tel: +1-800-665-7301 Fax: +1-905-890-1959
E-mail: lambda@aca.ca
Web: tmetrix.com

UK **IRELAND**
GERMANY **AUSTRIA** **SWITZERLAND**

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.ppmpower.co.uk

FRANCE **BELGIUM** **SPAIN**
NETHERLANDS **LUXEMBOURG**

TDK-Lambda France
3 Avenue du Canada, Parc Technopolis - Bâtiment Sigma
91940 Les Ulis
Tel: +33 1 60 12 71 65, Fax: +33 1 60 12 71 66
Email: tlf.fr-powersolutions@tdk.com
Web: www.emea.lambda.tdk.com/fr

ITALY

TDK-Lambda France Sas Succursale Italiana
Via Giacomo Matteotti 62,
20092 Cinisello Balsamo (MI)
Tel: +39-02-6129-3863, Fax: +39-02-6129-0900
Email: tlf.it-powersolutions@tdk.com
Web: www.emea.lambda.tdk.com/it

SCANDINAVIA **BALTICS**

Divisoft AB
Sturevägen 3, SE-177 56 Järfälla
Tel: +46 8 540 248 09, Fax: +46 8 501 096 53
Email: info@divisoft.se
Web: www.divisoft.se

ISRAEL **UKRAINE**

TDK-Lambda Israel Ltd.
56th Hachroshet st., Industry zone, Karmiel, 2161401
Tel: +972-3-9024-333, Fax: +972-3-9024-777
Email: TLI.Powersolutions@tdk.com
Web: www.emea.lambda.tdk.com/il

BRAZIL

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

MEXICO

AcMax De Mexico
Calle Rosas No. 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
5th Floor Kehui Tower, 1188 Qinzhou Road (North),
Xuhui District, Shanghai, 200233 P.R. China
Tel: +86-21-64850777, Fax: +86-21-64850666
Email: tlc.powersolutions@tdk.com
Web: www.lambda.tdk.com.cn

MALAYSIA

TDK-Lambda Malaysia
Lot 709, Nilai Industrial Estate,
71800, Nilai,
Negeri Sembilan, Malaysia
Tel: +60-3-7957-8800 Fax: +60-3-7958-2400

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.sg.lambda.tdk.com

INDIA

TDK-Lambda India
No.989, 1st Cross, 2nd Floor , 13th Main,
HAL 2nd Stage, Bangalore, Karnataka , India – 560 008
Tel : +91-80-43550500, Fax :+91-80-43550501
Email: mathew.philip@tdk.com

SOUTH AFRICA

TEACO Lasers (Pty) Ltd.
Pretoria, South Africa
Tel: +27 82 447 0509
Email: info@TEACOLasers.com
Web: teacolasers.com