



402 Series Data Sheet
High Voltage Power Supply
Capacitor Charging and DC
Output Voltage from 1kV - 50kV
Output Power 4kJ/sec or 4kW
Full local and remote control



TDK-Lambda

us.tdk-lambda.com/hp

402 Series Specification

Industry standard rack mount capacitor charging and DC power supplies with 4kJ/sec rating for capacitor charging, or 4kW rating in continuous DC applications.

- Power rating of 4kJ/sec, 5kJ/sec peak
- Output Voltages from 0-1kV to 0-50kV
- Compact air cooled rack mount package
- Efficient IGBT based resonant inverter
- Excellent pulse to pulse repeatability
- 208 or 400VAC 3Ø input voltage
- Comprehensive remote control interface
- UL Approved AC line contactor (optional for OEM models)
- Ultra reliable and rugged industry standard design
- Passive PFC (pf = 0.85)
- Full local output voltage and HV On/Off controls (L version)
- Simple parallel operation for higher power
- Lab, Slave, or OEM front panel options

Average Capacitor Charging Power	4,000 Joules/sec ($\frac{1}{2}CV^2 \times \text{Rep Rate}$)
Peak Capacitor Charging Power	5,000 Joules/sec ($\frac{1}{2}CV^2/t_{\text{charge}}$)
Average Continuous DC Power	4,000 Watts
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	1-39kV Models - DS2124 Coaxial cable with proprietary HV connector 40-50kV Models - DS2214 Coaxial cable with proprietary HV connector
HV Insulating Medium	Shell Diala S2 or equivalent insulating oil
AC Input Voltage	208VAC (180-264), 3Ø - Suffix 3P208 or 400VAC (340-460), 3Ø + N - Suffix 3P400. Specify at time of ordering
AC Input Current	20A/15A
AC Connector	UL/CSA approved terminal block. 3Ø + $\frac{N}{\pm}$ for 208VAC, 3Ø + N + $\frac{N}{\pm}$ for 400VAC
AC Line Contactor	UL/CSA approved AC line contactor (standard on 402L and 402S, option for 402OEM)
Power Factor	Passive PFC pf = 0.85 at full load and nominal AC line
Efficiency	Better than 85% at full load
Front Panel	402L - Voltage Control, Voltage & Current Meters, Status Indicators 402S - On/Off Switch, Status Indicators 402-OEM - Blank front panel
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 1000Hz, consult factory for higher rep rates
Dimensions - inches (mm)	19 (483) W x 7 (178) H x 17 (432) D
Weight - lbs (kg)	65 (30)
Ambient Temperature	Storage: -40 to +85°C. Operating: -20 to +45°C
Altitude	Storage: 40,000ft (12,000m), Operating: 9,900ft (3,000m)
Humidity	10-90%, non-condensing
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, Vpeak
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 CT - AC line contactor (option for 402OEM models only, standard on 402L and 402S) Double terminated HV cable, and mating bulkhead connector
Ordering Info	Model - XXkV - POS (or NEG) - 3PYYY - ZZ (options)
Ordering Examples	402L-10kV-POS-3P208, 402S-1kV-NEG-DC-3P208, 402-OEM-50kV-POS-3P400

All specifications subject to change without notice

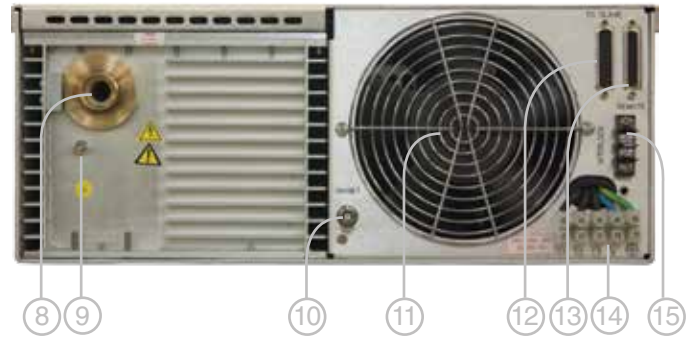
402 Series Mechanical Details

402L Front View



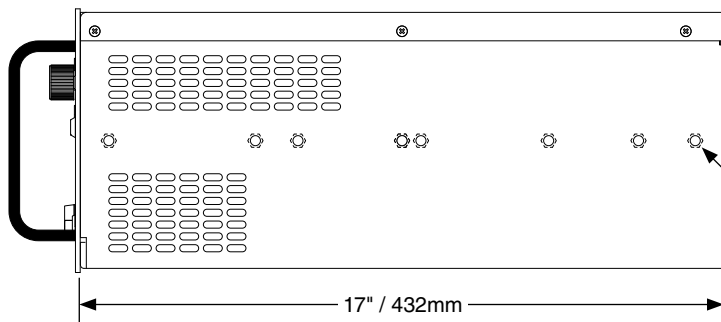
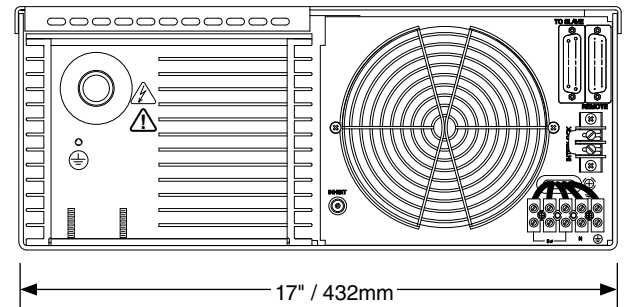
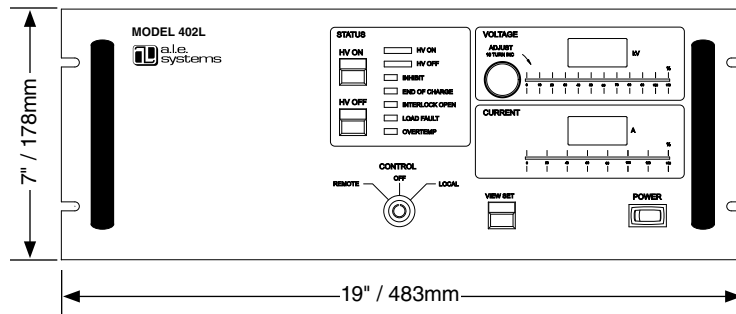
- 1 - HV On/Off Push Buttons (L model only)
- 2 - Status Indicator LEDs (L and S models only)
- 3 - Local/Remote Keyswitch (L model only)
- 4 - 10-Turn HV Output Control (L models only)
- 5 - View Set Push Button (L models only)
- 6 - Output Voltage and Current Displays (L models only)
- 7 - Power Switch (L and S models only)

402L Rear View



- 8 - HV Output Connector
- 9 - Ground Stud
- 10 - Inhibit BNC (L models only)
- 11 - Cooling Fan
- 12 - Slave Supply Programming Connector (L models only)
- 13 - Remote Programming Connector
- 14 - AC Input Terminal Block
- 15 - Interlock Terminals

Outline Drawings



Chassis slide mounting holes

Notes:

- 1 - Chassis slide mounting pattern matches General Devices CT series or equivalent with 3.875" hole spacing.
- 2 - Cooling air enters rear of unit and exits at either side. Do not block air vents or cooling fan and allow several inches of clearance at rear of unit.
- 3 - Allow 6" bend radius at rear of unit for HV cable.

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@us.tdk-lambda.com
Web: us.tdk-lambda.com/hp

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

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.pppm.co.uk

IRELAND

FRANCE

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: france@fr.tdk-lambda.com
Web: fr.tdk-lambda.com

BELGIUM

SPAIN

NETHERLANDS

LUXEMBOURG

GERMANY

Guth High Voltage GmbH
Spitzenbergstrasse 6
D – 73084 Salach
Tel: +49-7162-948930, Fax: +49-7162-948939
Email: kontakt@guth-hv.de, Web: www.guth-hv.de

AUSTRIA

SWITZERLAND

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: info.italia@it.tdk-lambda.com
Web: it.tdk-lambda.com

SCANDINAVIA

BALTICS

Divisoft AB
Sturevägen 3, SE-177 56 Järfälla
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.
56th Hachroshet st., Industry zone, Karmiel, 2161401
Tel: +972-3-9024-333, Fax: +972-3-9024-777
Email: info@tdk-lambda.co.il, Web: tdk-lambda.co.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: sales-sh@cn.tdk-lambda.com
Web: cn.tdk-lambda.com

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: tdk-lambda.com.sg

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@in.tdk-lambda.com

SOUTH AFRICA

PaR Systems (Pty) Ltd.
Pretoria, South Africa
Tel: +27-12-5480370, Fax: +27-12-5480447
Email: lasers@par.com
Web: www.par.com/technologies/pulsed-co2-lasers



TDK-Lambda Americas Inc. 405 Essex Road, Neptune, NJ 07753 USA
Tel: +1 732 795 4100 Fax: +1 732 922 1441
us.tdk-lambda.com/hp

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