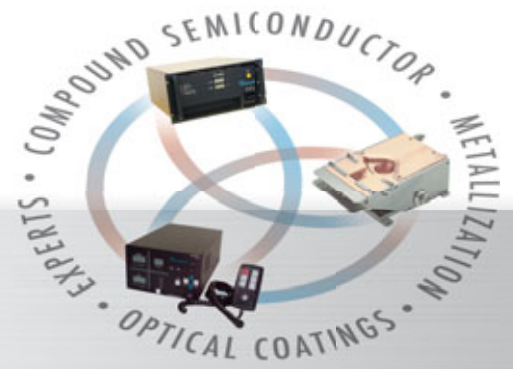


Temescal



TEMESCAL MODEL CV-12SLX ELECTRON BEAM POWER SUPPLY

The Temescal Model CV-12SLX is a 12-kW, constant-voltage switching power supply designed to power and control up to two electron beam sources. The CV-12SLX power supply is compatible with sources featuring either permanent or electromagnetic deflection.

Delivering up to 10 kV at 0–1200 mA, the model CV-12SLX makes it possible to achieve substantial deposition rates in production environments. The CV-12SLX also offers stable output at all voltage levels, rapid arc recovery, ease of integration, and safety and convenience for operating as well as service personnel.



FEATURES & BENEFITS

- **Reliable, stable power delivery**
 - HV linearly adjustable from 0 to 10 kV
 - Emission current linearly adjustable from 0 to 1200 mA
 - Solid-state HV regulation to within $\pm 0.5\%$
 - Constant emission current regulation to within $\pm 0.5\%$
 - Arc recovery within 3.5 ms
- **Autobias control feature maintains optimal bias voltage as filament ages**
- **14 front panel fault-indicator LEDs**
- **Rear-panel diagnostic port facilitates in-depth fault analysis, when necessary**
- **Front panel HV and emission current meters**
- **Ready access for servicing and adjustment**
 - Easily removed covers on HV and filament power modules
 - PCB-mounted adjustment pots
- **Easily integrated HV power module, with safety protection for equipment and personnel**
 - Rack mountable
 - Compact and lightweight (93 lbs. total)
 - Air cooled
 - Completely safety interlocked
- **CE certified**



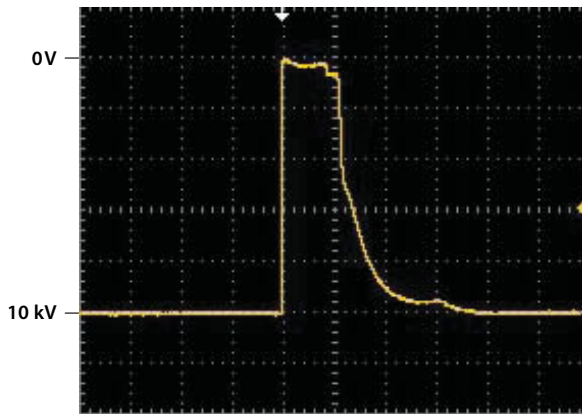
FerroTec

CV-12SLX ELECTRON BEAM POWER SUPPLY

RELIABLE, FULLY REGULATED OUTPUT

The CV-12SLX is capable of continuously delivering 10 kV at 1200 mA, as well as filament power. This level of output makes it possible to achieve substantial deposition rates in the most demanding production environments. Because input power is choke-input filtered and fully rectified, HV output is unaffected by power line fluctuation, ripple, voltage sag, or frequency variation. High voltage and emission current are both regulated to within $\pm 0.5\%$, with the HV regulated by a high-frequency switching inverter. The resulting HV stability ensures a consistently tight beam spot, yielding optimal evaporation rates at any power level.

CV-12SLX Arc Recovery Waveform



Arc event to 80% voltage recovery in approximately 3.5 ms.
Graph scales are: X = 2.5 ms/division; Y = 2 kV/division

RAPID, ROBUST ARC RECOVERY

The CV-12SLX features acute arc sensing, rapid power cutback capabilities, and arcdown recovery times within 3.5 ms. With an output circuit robust enough to survive the most protracted cutback-and-recovery cycles, the CV-12SLX is ideal for optical applications, where water molecules, adsorbed by the powdered media, often trigger intense microarcing during the predeposition phase. Power supplies designed merely to cut power in response to such microarc flurries liberate the water from these media very slowly. In some cases, such power supplies may prove incapable of completely exhausting the water from the target material.

The Model CV-12SLX applies a higher average power level to the target material, compared with conventional power supplies, ensuring that water is more quickly and effectively liberated from the media and pumped away. For fabs dedicated to these optical applications, the benefits of the CV-12SLX over conventional power supplies include higher reliability, a reduction in maintenance downtime, and improved run-by-run efficiency, yielding higher productivity.

INTERLOCKS

The Model CV-12SLX incorporates all internal interlocks required to ensure reliable operation and the protection of personnel and equipment. External interlocks can also be supplied via the power supply's remote-I/O interface. Internal as well as external interlocks are Form-C contact closures.

Optional Remote Controller

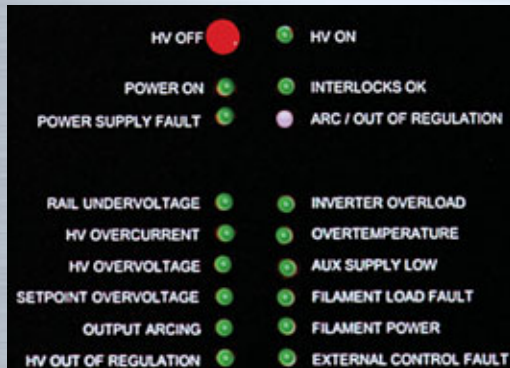
The gun control unit consists of an HV control panel and a gun control panel. Controls on the HV panel include an HV ON/OFF keyswitch, HV ON and OFF switches, an HV adjustment pot, and a Local/Remote switch. The HV panel's meter displays user-selectable HV or total power supply current. The gun control panel provides gun ON and OFF switches, emission and bias controls, and a Local/Remote switch. That panel's meter displays user-selectable filament or emission current. The LEDs on the two control panels indicate power supply and interlock status.



Optional Remote Controller

CV-12SLX ELECTRON BEAM POWER SUPPLY

HVPS FRONT PANEL



Main Circuit Breaker Switch

High-Voltage Adjustment Pot

HV OFF Button

Display Meters

- Output Voltage (0–10 kV)
- Emission Current (0–1200 mA)

Status LEDs

- Power ON
- HV ON

- **HV Out of Regulation.** Turns yellow for 2 seconds each time the Arc/Out of Regulation LED flashes.
- **Interlocks OK.** Green when all interlocks (including power supply covers) are satisfied.
- **Arc/Out Of Regulation.** Flashes yellow when sub-threshold arcs occur or when HV is momentarily out of regulation for any other reason.
- **Inverter Overload.*** Inverter current has exceeded its maximum of 100 A.
- **Overtemperature.*** Inverter temperature above 67° C, or cooling fan failure.
- **Aux Supply Low.*** Nominal 24 VDC control voltage is below 19.5 VDC.
- **Filament Load Fault.** Turns red to indicate an open filament circuit (= filament broken or burnt out).
- **Filament Power.** Green when filament power supply is powered up.
- **External Control Fault.*** Fault in the I/O Switches Power circuit.

Fault Indicator LEDs

In the list below, LED names followed by asterisks are latching (i.e., Power Supply) faults. Unless otherwise noted, all LEDs turn red when the fault condition in question occurs.

- **Power Supply Fault.** One or more latching faults has occurred.
- **Rail Undervoltage.*** Inverter rail voltage is below 220 VDC on a 208-V unit or 427 VDC on a 400-V unit.
- **HV Overcurrent.*** HV output current is more than 105% of its maximum of 1200 mA.
- **HV Overvoltage.*** HV output voltage is more than 105% of its maximum of 10 kV.
- **Setpoint Overvoltage.*** HV output voltage is outside a $\pm 5\%$ tolerance range with respect to its setpoint value.
- **Output Arcing.*** Arc rate exceeds 200 arcs/sec., or continuous arcing persists for more than 120 sec.

SPECIFICATIONS

Input Power	208 VAC $\pm 10\%$ / -5% , 60 Hz, 50 A, 3-phase delta (4-wire) or 400 VAC $\pm 10\%$ / -5% , 50 Hz, 30 A, 3-phase delta (5-wire)
High-voltage output	12 kW at 10 kV max. output; fully adjustable 0–10 kV; regulated to within $\pm 5\%$
HV Circuit	Accurate voltage control Constant ground reference Instantaneous arc recovery Air-cooled
Beam Current	Fully adjustable from 0–1200 mA; regulated to within $\pm 5\%$
Power Module	Dimensions: 8.75 in. H \times 19 in. W \times 23 in. D Weight: 93 lbs.
Filament Power Supply	Input Power: 208 VAC $\pm 10\%$, 3.5 A, 50/60 Hz, single-phase Output: 10 VAC, 50 A, 28.5 kHz max. Dimensions 6.5 in. H \times 6.5 in. W \times 11 in. D Weight: 10 lbs.
Environment	Must be free of corrosive vapors Ambient temperature: 40° C maximum Humidity: 10%–90%, noncondensing

CV-12SLX ELECTRON BEAM POWER SUPPLY

ORDERING INFORMATION

Standard CV-12SLX Power Supply	Part Number
Single-gun CV-12SLX with remote controller, 208 VAC input power*	0620-4200-0
Single-gun CV-12SLX with remote controller, 400 VAC input power*	0620-4200-1
Dual-gun CV-12SLX with remote controllers, 208 VAC input power**	0620-4200-2
Dual-gun CV-12SLX with remote controllers, 400 VAC input power**	0620-4200-3

* Includes high-voltage power supply, one filament power supply, HV/gun controller and installation kit, interconnect cables, one HV output lead set, and a technical manual.

** Includes high-voltage power supply, two filament power supplies, HV/gun controller, single-gun controller, installation kit for gun controllers, interconnect cables, two HV output lead sets, and a technical manual.

GUI-Controlled CV-12SLX Power Supply	Part Number
Single-gun CV-12SLX, GUI controlled, 208 VAC input power †	0620-4210-0
Single-gun CV-12SLX, GUI controlled, 400 VAC input power †	0620-4210-1
Dual-gun CV-12SLX, GUI controlled, 208 VAC input power ‡	0620-4210-2
Dual-gun CV-12SLX, GUI controlled, 400 VAC input power ‡	0620-4210-3

† Includes high-voltage power supply, one filament power supply, interconnect cables, HV output lead set, and a technical manual.

‡ Includes high-voltage power supply, two filament power supplies, interconnect cables, two HV output lead sets, and a technical manual.

Recommended Accessory	Part Number
SuperSweep 64 programmable beam sweep controller, fully digital	0611-8570-0

Temescal

www.Temescal.net

AUSTRALIA

AVT Services
Unit 16/35 Foundry Road
Seven Hills, 2147, Australia
1 800 559 988

BRAZIL

Edwards Vacuum, Brazil
Rua Bernado Wrona 222
02710 Sao Paulo-SP
+55 11 3952 5000
+55 11 3965 2766

CANADA

Linde Canada Ltd.
5860 Chedworth Way
Mississauga L5R 0A2
Ontario
800 387 4076
905 501 1225

CHINA

Micro-Power Semiconductor Ltd
Room 2101
Xinghuo Science Building
No.2 Fufeng Road, Fengtai
District, Beijing 100070, PRC
+86 10 88 893350/51 ext 8010
+86 10 88 893310

FRANCE, SPAIN & PORTUGAL

MTB Solutions
2 rue Pierre Latecoere
ZAC de Segla
31600 Seysses, France
+33 5 62 87 38 20
+33 5 62 87 38 21

GERMANY

Vactec GmbH
Rubinsteinstrasse 47
D-81245 Munchen
+49 89 864 4305
+49 89 864 4306
+49 89 864 4809

INDIA

Vacuum Techniques, Pvt. Ltd.
No. 36A, AGS Layout, MSR
Nagar, Bangalore, 560 054
+91 80 336 3482
+91 80 360 1639

ISRAEL

Edwards Vacuum, Inc. Israel
5 Habarzel Blvd.
Industrial Zone
P O Box 8621
Qiryat Gat 82000
+972 7 681 0633
+972 7 681 0640

ITALY

Gambetti Kenologia
Via a. Volta N. 27
20082 Binasco (MI)
+39 02 900 93082
+39 02 905 2778

KOREA

Zeus Co, Ltd
729 Jubuk-Ri,
Yangji-Myeon, Cheoin-Gu
Yongin-Si, Kyeonggi-Do
449-882 Korea
+82 31 322 6900 x280
+82 31 322 5544 5

NETHERLANDS & BELGIUM

A. De Jong
Toermalijnring 1000
3316 LC Dordrecht
Netherlands
+31 78 655 2000
+31 78 655 20 10

RUSSIAN FEDERATION

Intech Vacuum
33/1 Engelsa Avenue
408 Office
St. Petersburg, 194156
Russian Fed.
+7 812 336 38 96
+7 812 326 38 95

SINGAPORE

Ellipsiz, Ltd
29 Woodlands Ind. Park E1
#04-01/06 NorthTech Bldg.
Singapore 757716
(65) 6311 8500
(65) 6269 2628

TAIWAN

Junsun Tech Co., Ltd
7F, 659, Chung-Cheng Rd.
Hsin-Chuang City
Taipei County 242
Taiwan ROC
+886 2 29081350 x 11
+886 2 29081305

UK & IRELAND

Scotech
Netherton Road
Lanqank, Renfrewshire
Scotland PA14 6YG
+44 1 475 540 689
+44 1 475 540 206

UNITED STATES

Temescal Headquarters
4569-C Las Positas Road
Livermore, CA 94551
800 522 1215 (U.S.)
925 449 4096

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