

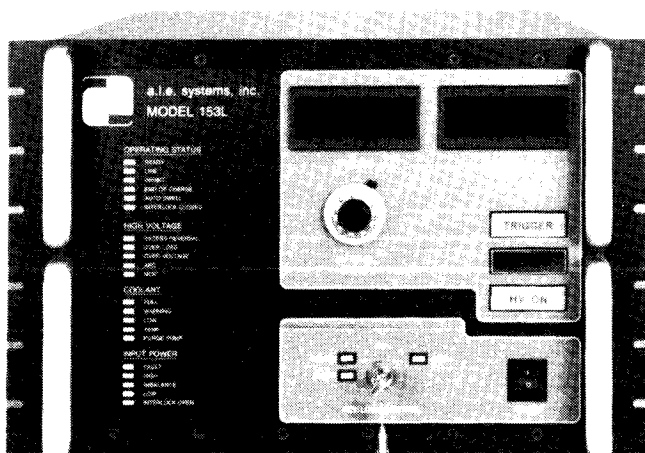
MODEL 153**15,000 Joules/sec****CAPACITOR CHARGING POWER SUPPLY**

WITH

ULTRA-PAC™ TECHNOLOGY

ULTRA-PAC™ technology was developed and field tested by A.L.E. Systems over several years of designing the industry's most compact high power, high voltage power supplies. The Model 153 with ULTRA-PAC™ technology offers the densest power packaging commercially available in this power range.

Users of power conversion equipment for large capacitor charging applications can now specify compact configurations of power supplies. A.L.E.'s 153 power supply with ULTRA-PAC™ technology is leading a new generation of power supplies for high voltage, high power applications.

CAP CHARGING POWER SUPPLY**APPLICATIONS:**

- Charging capacitors and capacitor banks.
- Powering pulse forming networks/modulators.
- Powering lasers: Excimer, flashlamp pumped dye, Yag, etc.

FEATURES:

- 15kJ/S output power in 12.25" of rack space.
- Rep rates from single shot to 200 Hz, optionally higher.
- Local or remote operation with optional instrument/computer interfaces.
- International input power configurations.
- Parallel operation (master/slave) high power applications.
- Enclosed unit incorporates water cooling as the major means of heat removal.
- Fast response to varying load conditions.
- Floating H.V. output in low voltage ranges.

BENEFITS:

- Smallest package size available in this power range.
- Low EMI/RFI.
- Low ambient heating and quiet operation.
- Lightweight switchmode design.
- Rack mount design.
- Low stored energy provides greater safety.
- Resistant to external EMI.

**a.l.e. systems, inc.**

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GENERAL DESCRIPTION

Capacitor charging requires a power supply designed specifically for the task. The 15,000 Joules per second unit described here allows capacitors to be charged in pulse forming networks and modulators in a very fast, efficient and controllable manner.

The 153 is designed to be a compact, high power current source that will rapidly charge a capacitor and then operate in a voltage regulation mode to keep the capacitor or capacitor bank charged to the specified voltage as set by front panel control or the remote input.

The flexible design of the 153 allows the unit to be configured with or without the front panel controls and indicators. These front panel controls are helpful in the operation of custom systems, R&D, laboratory use and diagnostics. All front panel controls and indicator signals are available at the rear panel remote control connector regardless of which front panel option is selected.

The unit is self contained, requiring only AC power and water for cooling. Several 153s may be used in parallel (master/slave) with the "daisy chain" H.V. connector option. There is no actual limit to the number of units that may be paralleled. Typically one master unit and one or more slave units may be used to obtain as much output power as necessary. System configurations and power distribution considerations are offered by A.L.E.'s custom systems group.

The 153 is also ideally suited to charge a reservoir capacitor for resonant charging circuits where high rep rates (several kilohertz) are required, such as in metal vapor lasers. Among options available for custom configurations are a floating H.V. return and voltages available between 50 kv and 100 kv. Other custom configurations can be quoted for OEM system applications.

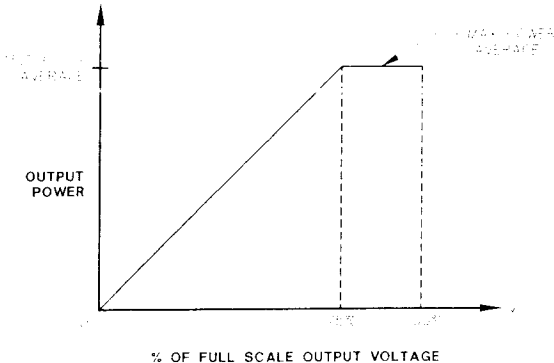
SPECIFICATIONS

Model: 153L and S, 15,000 J/S Cap Charging P.S.

1.0 OUTPUTS

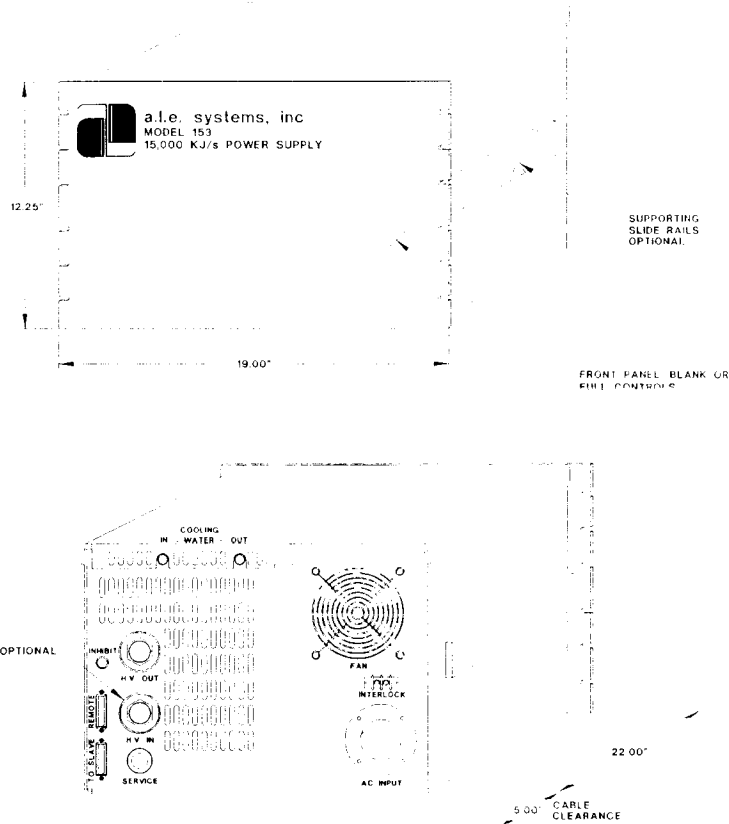
- Power: 15,000 J/S Average
20,000 J/S charge rate.
- Voltage: 1 kv to 50 kv in the following ranges:
0-1, 2, 4, 5, 10, 20, 30, 40, 50
- Other ranges available on special request.
Ranges of 50 kv and greater are optional.
Ranges of 50 to 100 kv include an expansion unit (second 12-3/4" rack mount unit).

OUTPUT POWER VS. OUTPUT VOLTAGE SETTING



Output power is derated-linearly below 75% of the rated full scale output voltage range, since the current is constant and Power = Volts X Amps.

153



- Protection: Open circuit.
Over voltage trip.
Short circuit.
AC Input power failure protected
Protected from excess voltage reversal and modulator feedback noise and spikes.
- Polarity: Positive or negative (specify when ordering).
- H.V. Return: Ground, through H.V. output cable shield to chassis, and through separate safety ground cable.
- Voltage Regulation: $\pm 0.5\%$ full load range and input voltage range into minimum capacitance load.
- Efficiency: 90% at full load.
- Rep Rate: Single shot to 200 Hz. Lower regulation for 200 to 1 kHz rates.
- Max. Discharge Time: 5 seconds to safe output level at output cable without external load connected.
- Max. Output Current: 40,000
Max. Output Voltage Rating

2.0 PHYSICAL SPECIFICATIONS

Size:	19" Rackmount standard 17" Wide 12.25" High 22" Deep + 5" for cables Other package configurations available on request.
Cooling:	Water, 35 deg. C max. at > 2.0 gpm (gallons per minute) (higher temp. water requires a greater flow rate).
Water Fittings:	1/4" NPT
Weight:	185 lbs. approx.
Shock and Vibration:	Unboxed 0.5 g. Factory packing 2.0 g.
Shipping:	Gross weight with packing material: 210 lbs. approx. Size: 27"W x 21"H x 30"D
Temperature Range	Operating: 10 deg. C 50 deg. C (Lower temperatures on special request) Storage: -55 deg. C to 70 deg. C
Humidity Range: (non-condensing)	Operating: 10% to 90% Storage: 10% to 90%
Max. Altitude:	Operating: 12,000 ft. Storage: 12,000 ft. (Storage to 45,000 ft. Optional)

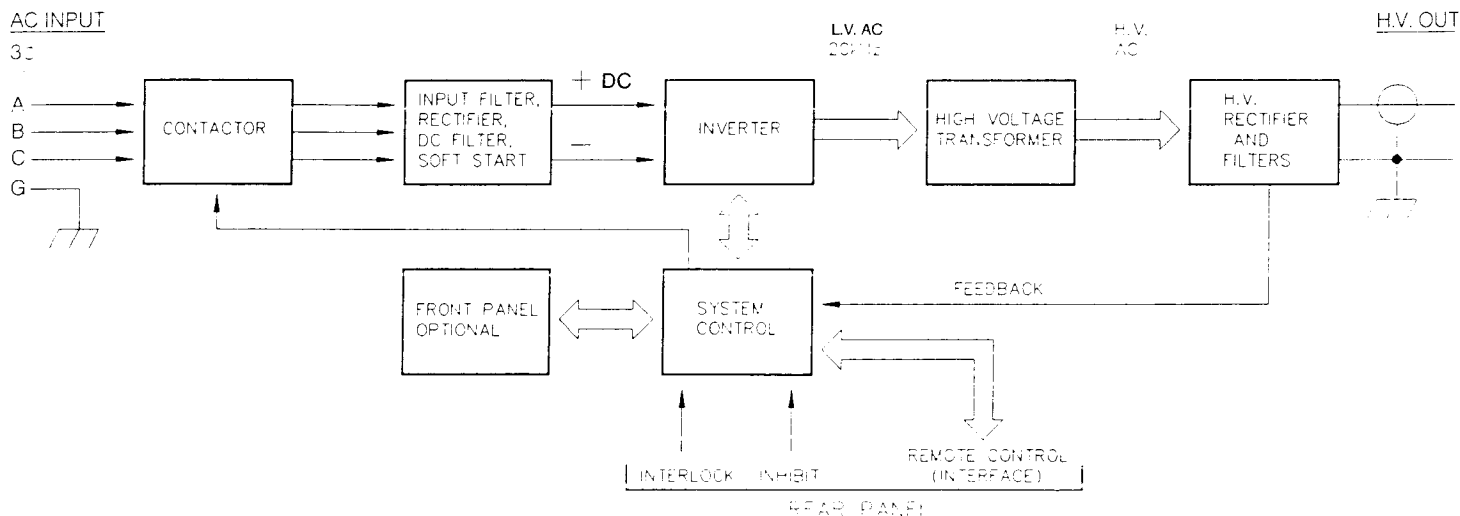
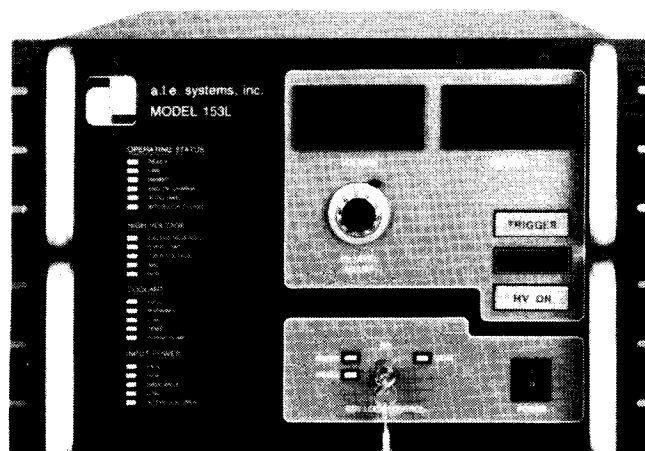
3.0 INPUT POWER

Voltage:	50/60Hz, 190 to 240 VAC, 0.85 PF, 67 A/Phase 50Hz, 380 VAC $\pm 15\%$, 0.75 PF, 42 A/Phase WYE only 50Hz, 415 VAC + 15%, -10%, 0.85 PF, 32 A/Phase 60Hz, 480 VAC + 10%, -20%, 0.85 PF, 32 A/Phase
Phase Configuration:	WYE or Delta, any rotation, separate ground.
AC Line Filtering:	Power factor correction and EMI filters included.
Inrush current:	Limited to below full power level.

ADDITIONAL FEATURES:

- Internal contactor and fuses for AC disconnect and protection.
- AC line filter built in.
- Standard AC power and control connectors.
- Self test built in.
- Documentation:
 - Installation.
 - Check out.
 - Test/trouble shooting.
 - Block diagrams.
 - Suggested remote interface and control circuits.
 - Capacitor charging application notes.
- 15 feet (approx. 5 meters) of DS-2124 H.V. output cable is standard, other lengths and cable types are optional.

CAP CHARGING POWER SUPPLY



MODEL 153 POWER SUPPLY BLOCK DIAGRAM

HOW TO SPECIFY

Standard Features

153L - 15kJ/Sec. power supply. Full front panel control, includes a standard analog remote control interface input connector and a slave output connector to control optional 153S units.

153S - 15kJ/Sec. power supply, basic model, includes standard analog remote control interface.

OPTIONS:

Specify output (full scale) voltage range 0-1,2,4,5,10,20,30,40,50kV. Other ranges available on request.

Specify POS or NEG H.V. output with respect to ground.

3 Phase AC input:
200, 208, 240, 380, 415, 480V

153L - 40kV - POS - 208V - Option 1 and 5

Also specify

1. Load capacitor size.
2. Rep rate to be used.

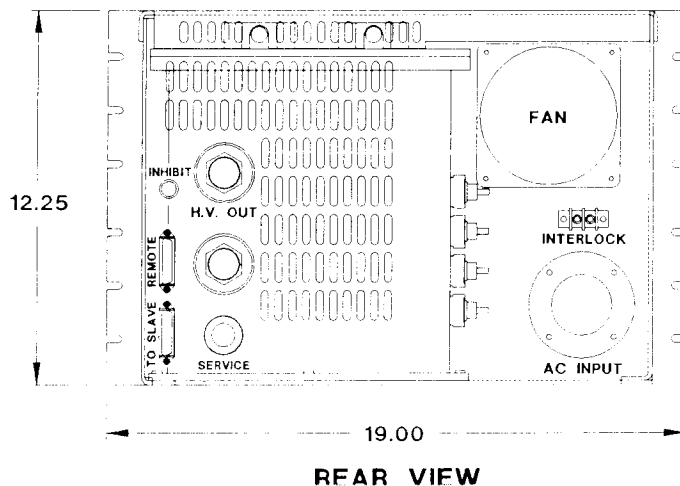
OPTIONS

Other options priced separately include:

1. H.V. "daisy chain" connector (for master/slave operation).
2. Floating H.V. return.
3. 50kV to 100kV output ranges.
4. Slide rails for rack mounting.
5. Remote interfaces other than standard analog interface.
6. Optional length H.V. output cables.
7. Operation over 200Hz.

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Specifications subject to change without notice.

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