

OL 16A, 65A, and 83A Programmable DC Current Sources



The OL 16A, 65A and 83A are microprocessor controlled, precision DC current sources specifically designed to accurately operate tungsten filament lamp standards and calibration sources. The power output range is 10 to 100 watts for the OL 16A, 10 to 200 watts for the OL 65A and 10 to 1000 watts for the OL 83A. All three units feature:

- Output current accuracy of $\pm 0.01\%$ or better
- Controlled ramp up / ramp down of the lamp current
- Simultaneous digital readout of lamp current, voltage, and power
- Ability to set lamp current, voltage, or power
- Lamp "library" for storing and recalling the operating parameters & description for up to 10 different lamps. The user-defined operating parameters include lamp current, voltage or power, current limit, calibration due interval & lamp hours. A separate elapsed time meter keeps track of the lamp hours for each of the 10 lamps. A calibration due warning message will appear upon power up when the lamp hour's limit is exceeded and/or 1 year has elapsed since last calibration.
- RS-232 (standard) and IEEE-488 (optional) computer interface

Tungsten lamp standards must be operated at their specified calibration current in order to realize the accuracy of the standard. A small error in setting the lamp current can induce a sizeable, wavelength dependent error in the spectral output of the lamp. The OL 16A/65A/83A enables the lamp current to be set to an accuracy of better than $\pm 0.01\%$, a factor of about 25 better than most other commercial power supplies, which are typically 0.25%. The advantage of the OL 16A/65A/83A's increased accuracy is illustrated in the table below.

SPECTRAL IRRADIANCE UNCERTAINTY Due To ERROR IN SETTING LAMP CURRENT		
Wavelength (nm)	OL 16A/65A/83A $\pm 0.01\%$	Other Supplies $\pm 0.25\%$
250	0.12%	3.0%
300	0.09%	2.3%
550	0.04%	1.0%
1000	0.02%	0.5%
2000	0.01%	0.3%
*Tungsten Lamp @ ~3000K		

In order to eliminate electrical shocking of the lamp due to high initial current surges, a ramp function is used to control the turn-on current rise. Once the instrument is turned on, the current automatically increases at a slow, safe rate until the set current is reached. A fail-safe, shut down circuit protects the lamp standard against any equipment malfunctions.

The OL current sources will maintain their accuracies while experiencing $\pm 10\%$ fluctuations in line voltage and $\pm 10\%$ variance on the load voltage. These features effectively compensate for transients in the power line and variations in resistance from one lamp to another. The power supplies are packaged in a chassis suitable for mounting in a 19" cabinet rack.

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SPECIFICATIONS	OL 16A	OL 65A	OL 83A
Power output	10 - 100 Watts	10 - 200 Watts	10 - 1000 Watts
Voltage output (maximum)	6 Volts DC	32 Volts DC	120 Volts DC
Current output (maximum)	16.0 Amps DC	6.6 Amps DC	8.4 Amps DC
Current Resolution	0.001 Amps		
Voltage Resolution	0.01 Volts		
Wattage Resolution	0.1 Watt		
Lamp current ramp time	1 minute		
Current Error	±0.01% @ 15.0 amps	< ±0.01% @ 6.50 amps	< ±0.01% @ 8.00 amps
Stability (after 20 minutes)	± 40 ppm	± 10 ppm	± 10 ppm
Line Regulation	<15 ppm/v	<2 ppm/v	<2 ppm/v
I/O Communications Interface	RS-232 (standard) IEEE-488 (optional)		
Temperature Range	0 to 45°C		
Power requirements	115 VAC, 60 Hz or 230 VAC, 50 Hz ± 10% ^{1/}		
Dimensions	19"W x 7"H x 15.5"D (48 cm x 18 cm x 39 cm)		
Weight	35 lbs. (16 kg)	35 lbs (16 kg)	50 lbs (23 kg)
Warranty	Parts and labor for 1 year		

^{1/} The OL 83A requires a heavy-duty (20 amp) power service NEMA 5-20R. A dedicated line is recommended to handle the 2kw electrical load.

Optional PCS Software Package

The PCS Software Package is available for the OL 16A/65A/83A Programmable Current Source (PCS) and consists of two instrument control software applications and a software development kit. Instrument control applications allow the user to operate all of the PCS's functions from a host computer. The primary application is based upon ActiveX technology. A secondary LabVIEW application is also provided.

The software development kit includes an ActiveX control, which functions as an instrument driver and user interface. Additionally, programmers may develop custom applications from suitable ActiveX containers such as Excel, a Visual Basic executable program, or C++. This is a very useful feature, especially for controlling multiple instruments and custom reporting or logging.

Another component of the software development kit is the LabVIEW source code (vi's). These vi's function as LabVIEW instrument drivers for customers who own LabVIEW and wish to develop their own custom applications in this development environment.

- Software applications include the real-time display of lamp parameters, including current, voltage, wattage, usage hours, current limit, and lamp description.
- Uploading and downloading of a lamp parameter set which contains information on a particular lamp (current, voltage, wattage, usage hours, current limit, and lamp description).
- Uploading and downloading an entire lamp library file, which contains up to 10 separate lamp parameter sets.
- Logging of the lamp's current and voltage to a user-specified data-logging file at regular user-defined intervals (LabVIEW application and software development kit).

The uploading/downloading features allow an unlimited number of lamps to be tracked individually!

