Gooch & Housego

OL 83A Programmable DC Current Source

The OL 83A is a microprocessor-controlled, precision DC current source specifically designed to accurately operate tungsten filament lamp standards and calibration sources. The power output range is 10 to 1000 watts. The unit features:

- *Output current accuracy of ± 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 one (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 83A enables the lamp current to be set to an accuracy of better than ± 0.01%, a factor of about 25 better than most other commercial power supplies, which are typically 0.25%. The advantage of the OL 83A's increased accuracy is illustrated in the table below.

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SPECTRAL IRRADIANCE UNCERTAINTY Due To ERROR IN SETTING LAMP CURRENT		
Wavelength (nm)	OL 83A ± 0.01%	Other Supplies ± 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 current sources will maintain their accuracies while experiencing ± 10% fluctuations in line voltage and ±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

Power Output .... 10 – 1000 Watts
Voltage Output (maximum) ....120 Volts DC
Current Output (maximum) .... 8.4 Amps DC
Current Resolution ....0.001 Amps
Voltage Resolution ....0.01 Volts
Wattage Resolution ....0.01 Watts
Lamp Current Ramp Time .... 1 minute
Current Error ....< ± 0.01% @ 8.00 Amps
Stability (after 20 minutes) ....± 10 ppm
Line Regulation ....< 2 ppm/v
I/O Communication Interface ....RS-232 (standard), IEEE-488 (optional)
Temperature Range ....0 – 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 .... 50 lbs (23 kg)
Warranty ....Part and Labor for one (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 2 kw electrical load.*

Optional PCS Software Package

The PCS Software Package is available for the OL 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!

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