

OPS-Q250, OPS-Q1000

Oriel[®] Quartz Tungsten Halogen Lamp Power Supplies



Quick Start Guide



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1 GENERAL INFORMATION

Thank you for your purchase of this OPS power supply from Oriel Instruments.

Please carefully read the following important safety precautions prior to unpacking and operating this equipment. In addition, please read the complete User's Manual for additional important notes and cautionary statements regarding the use and operation of the system.

1.1 SYMBOLS AND DEFINITIONS

	WARNING Situation has the potential to cause bodily harm or death.
	CAUTION Situation has the potential to cause damage to property or equipment.
	ELECTRICAL SHOCK HAZARD Hazard arising from dangerous voltage. Any mishandling could result in irreparable damage to the equipment, and personal injury or death.
	EUROPEAN UNION CE MARK The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.
NOTE:	Additional important information the user or operator should consider.

Please read all instructions that were provided prior to operation of the system.

The safety of any system incorporating the OPS power supply is the sole responsibility of the assembler of the systems.

If the equipment is used in a manner not specified by Newport Corporation, the protection provided by the equipment may be impaired.

If there are any questions, please contact Oriel Instruments or the representative through whom the system was purchased prior to use.

1.2 GENERAL WARNINGS

- Read all warnings and operating instructions for this system prior to setup and use.
- Do not use this equipment in or near water.
- To prevent damage to the equipment, read the instructions in the equipment manual for proper input voltage.
- This equipment is grounded through the grounding conductor of the power cord.
- Route the power cord and other cables so they are not likely to be damaged.
- Disconnect power before cleaning the equipment.
- Do not use liquid or aerosol cleaners; use only a dry lint-free cloth.
- Lock out all electrical power sources before servicing the equipment.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Qualified service personnel should perform safety checks after any service.
- If this equipment is used in a manner not specified in this manual, the protection provided by this equipment may be impaired.
- To prevent damage to equipment when replacing fuses, locate and correct the problem that caused the fuse to blow before re-applying power.
- Do not block ventilation openings.
- Do not use or store flammable liquids near the power supply.
- Do not position this product in such a manner that would make it difficult to disconnect the power cord.
- Use only the specified replacement lamp.
- This product should only be powered as described in the manual.
- Do not remove the cover for normal usage.

1.3 ELECTRICAL HAZARDS

Make all connections to or from the power supply with the power off. There may be dangerous voltage present at the output terminals.

Tighten all lamp housing interconnect cable connections to prevent arcing.

There are no user serviceable parts inside the power supply. Do not use the power supply without its cover in place. Lethal voltages are present inside.

1.4 FIRE HAZARDS

Lamps are extremely hot during operation, and for several minutes after being shut off. Keep flammable objects away from the lamp and lamp housing.

Each compatible Newport brand lamp housing is equipped with a condenser lens. The re-focused output of this lens can cause ignition of flammable targets including but not limited to walls, certain chemicals.

Use only the line cord supplied with the power supply. A substitute line cord may not be rated for high current.

1.5 LAMP HANDLING

Read all information and warnings provided with lamp.

Never touch any lamp or the reflector's inner surface with bare fingers or other contaminants. Skin oil or other substances can burn into the lamp envelope during operation and negatively affect the lamp's performance and lifetime.

Always wear appropriate gloves and impact-resistant goggles when handling any lamp. Avoid any mechanical strain during handling. Do not operate the lamp without all housing panels in place.

Lamps become very hot after only a few minutes of operation (up to 150°C) and remain quite hot for at least 10 to 15 minutes after being turned off.

Do not run the lamp at more than 10% above its current or power rating. Lamp lifetime will decrease dramatically.

1.6 LIGHT HAZARDS

These lamps produce considerable ultraviolet and infrared radiation. Avoid excessive exposure of the eyes or skin to radiation from these lamps.

Utilize protective eyewear and gloves when operating these lamps.

2 INTRODUCTION

2.1 QTH LAMP COMPATIBILITY

Newport Corporation offers all the components required to assemble a complete illumination system. The minimum components include a lamp, lamp housing, power supply, and possibly a socket adapter. The table below explains which components are compatible with each other to create an illumination system.

OPS-Q250 Series Lamp Compatibility Table					
Power Supply	Lamp or IR Emitter	Lamp Rating, Description	Compatible Oriel Lamp Housings or Rod Mounts		
			Q Housing [Socket Adapter]	Research Lamp Housings [Socket Adapter]	Rod Mount
OPS-Q250	63358	QTH 45W (CALIBRATED)	n/a	n/a	63966
	63360	QTH 45W (UNCALIBRATED)	n/a	n/a	63966
	6332	QTH 50W (SHORT FILAMENT)	60000 Housing with 60090 Interface Kit [60043]	66881, 66882, 66883, 66884, 67009, 67011 [60043]	n/a
	6337	QTH 50W (LONG FILAMENT)	60000 Housing with 60090 Interface Kit [60043]	66881, 66882, 66883, 66884, 67009, 67011 [60043]	n/a
	6333	QTH 100W	60000 Housing with 60090 Interface Kit [60043]	66881, 66882, 66883, 66884, 67009, 67011 [60043]	n/a
	6363	IR EMITTER 140W	60000 Housing with 60090 Interface Kit [60041]	66881, 66882, 66883, 66884, 67009, 67011 [60041]	n/a
	63355	QTH 200W (CALIBRATED)	n/a	n/a	63966
	63368	QTH 200W (UNCALIBRATED)	n/a	n/a	63966
	6334NS	QTH 250W	n/a	66881, 66882, 66883, 66884, 67009, 67011 [60043]	n/a

OPS-Q1000 Lamp Compatibility Table					
Power Supply	Lamp	Lamp Rating, Description	Compatible Oriol Lamp Housings or Rod Mounts		
			Q Housing [Socket Adapter]	Research Lamp Housings [Socket Adapter]	Rod Mount
OPS-Q1000	6336	QTH 600W	n/a	66885, 66886 [6392NS]	n/a
	6317	QTH 1000W	n/a	66885, 66886 [6392NS]	n/a
	6315	QTH 1000W (FEL)	n/a	66885, 66886 [6397]	n/a
	63350	QTH 1000W (CALIBRATED)	n/a	n/a	63965
	63362	QTH 1000W (UNCALIBRATED)	n/a	n/a	63965

3 SYSTEM SETUP

3.1 ITEMS INCLUDED WITH SYSTEM

Oriel Instruments provides lamp interconnection cables with the lamp housing. The power supply includes the following items:


- Power Supply
- Power Cord
- Quick Start Guide

3.2 UNPACKING

Remove all items from the shipping containers and verify each item is accounted for. The system is carefully packaged to minimize the possibility of damage during shipment. Inspect the shipping boxes for external signs of damage or mishandling. Inspect the contents for damage.

If any item is missing or damaged, immediately contact Oriel Instruments or the Newport representative from whom the system was purchased. It is suggested to save the packaging material and shipping container, in case the equipment needs to be relocated at a future date.

When handling this power supply, hold it from underneath the housing. Never use any knobs, buttons or cables to carry or locate the power supply.

	<p>WARNING</p> <p>Do not attempt to operate this equipment if there is evidence of shipping damage or there is suspicion that the equipment will not operate correctly. Damaged equipment may present hazards.</p>
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3.3 CHOOSING A LOCATION

Choose an installation location where the power requirements can be met for the system. Be sure power is not applied to the system until the setup has been completed.

The environment should be that of a typical laboratory atmosphere, without excessive humidity and contaminants in the air. Do not allow the ventilation holes on the power supply to be blocked. Air should be able to circulate freely around the unit.

Once the connections have been made to the back of the power supply, the unit can be operated by using the controls located on the front panel. Ensure that the final location allows for ease of access to all front panel functions.

3.4 POWER SUPPLY CONNECTIONS

3.4.1. Front Panel Controls/Connections

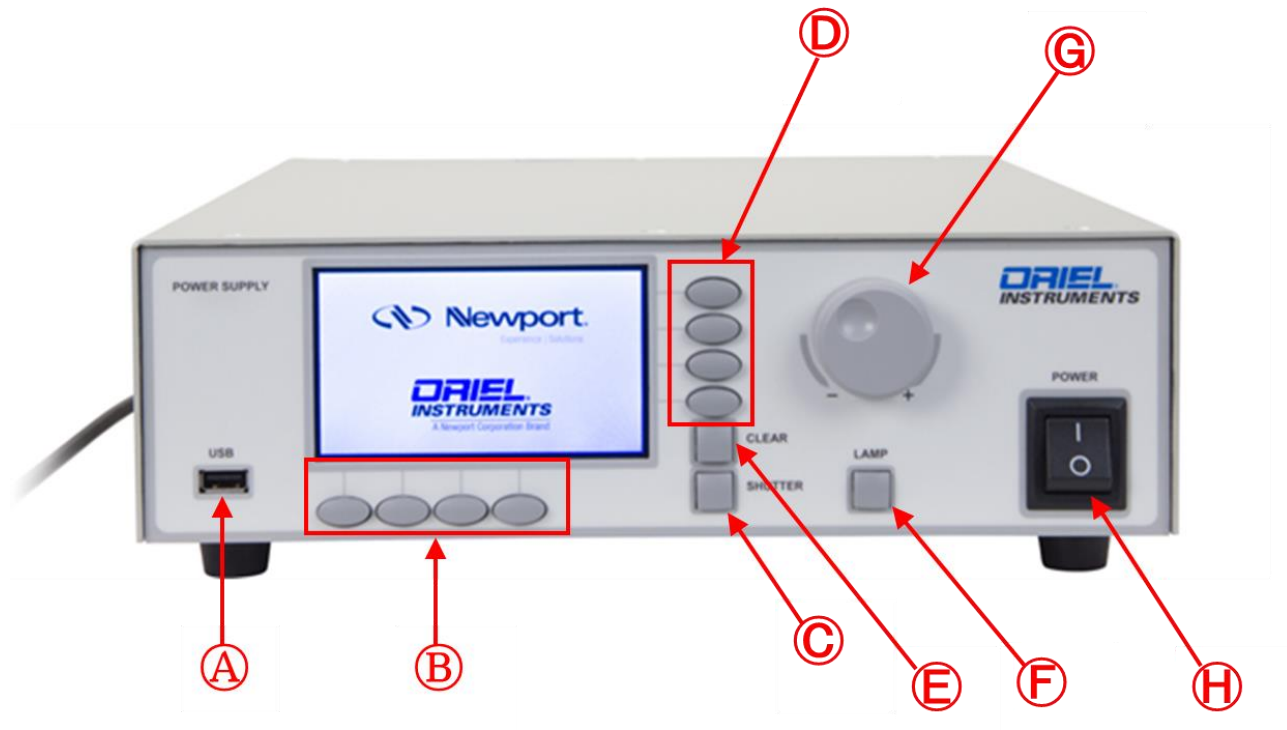


Figure 1 OPS-Q Power Supply Front Panel Connections.

- A. **USB.** The USB connector on the front panel is used to install firmware and LCD GUI updates to the power supply. Any firmware updates, please visit OPS-Q power supply product page.
- B. **Horizontal menu buttons.** These four horizontal menu buttons are for using setting and monitoring various features of the power supply:
 - a. Lamp Operating Mode
 - b. Manual/Timed Shutter Control, Display Features
 - c. Saving/loading particular setups.
- C. **SHUTTER.** This button is for manual control of an electronic TTL input shutter. When pressed, the shutter will open/close.
- D. **Vertical menu buttons.** These four vertical menu buttons are for navigating settings for each feature associated with pressing the horizontal menu buttons of the power supply.
- E. **CLEAR.** The CLEAR button is for exiting the feature menu currently displayed on the LCD screen. This button is also used to clear any error messages that are displayed.

- F. **LAMP.** The LAMP button is for manual control of the lamp. When pressed, the lamp will ignite/power down.
- G. **Control knob.** The control knob is for setting the parameters specific to each power supply feature.
- H. **POWER.** This is the AC mains power switch. In the ON position as shown in Figure 2, AC power will be switched into the main circuitry of the power supply. There is no output from the power supply until the manual or external command to supply power to the lamp is received with the interlock condition satisfied.

3.4.2. Rear Panel Controls/Connections

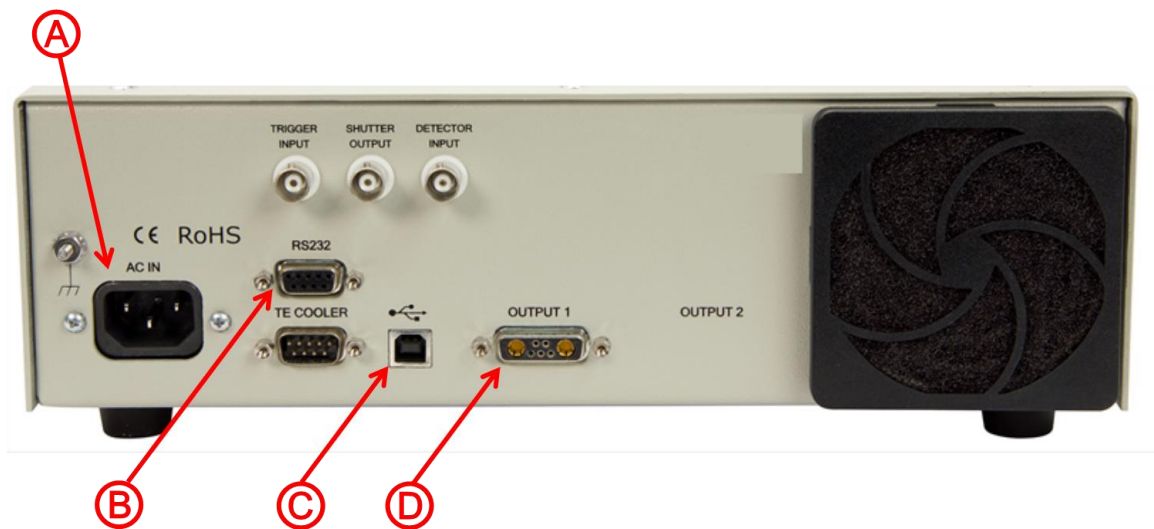


Figure 2 OPS-Q Power Supply Rear Panel Connections

A. AC IN. Before powering up the system for the first time, it is suggested to have a qualified electrician verify the wall socket to be used with the power supply meets the requirements for operation as noted.


The line voltage requirements for the OPS power supplies are as follows:

Model	Input Rating
OPS-Q250	90 to 264 VAC, 47 to 63 Hz
OPS-Q1000	95 to 264 VAC, 47 to 63 Hz

A dedicated power line or line isolation may be required in certain locations, as the electronics contained in the instrument are sensitive to static electricity and radiated electromagnetic fields. Operation of the system near intense pulsed sources (lasers, Xenon flash lamps, etc.) may compromise performance.

Before making any electrical connections, verify the power switch is in the OFF position for the OPS.

Connect the power cord to the back of the OPS before plugging it into an AC electrical outlet.


	<p>ELECTRICAL SHOCK HAZARD</p> <p>To avoid electric shock, connect the instrument to a properly earth-grounded, 3-prong receptacle only. Failure to observe this precaution can result in severe injury or death.</p> <p>Never attempt to open the power supply. These models do not contain any user serviceable parts. Failure to follow this warning can result in severe injury or death.</p>
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B. RS232. The RS232 connector located on the rear panel of the power supply allows for external control of the power supply from a Windows based PC. The Command Set for RS232 control is in Appendix B of this manual.

C. USB. The USB connector located on the rear panel of the power supply is for providing an alternative external control method to RS232. The Command Set for USB control is in Appendix B of this manual.

D. OUTPUT 1. The interconnection cables between the lamp housing and power supply are noted in the table below. A safety interlock feature does not allow the lamp to start if the cable or cables are not connected. Never alter these cables and do not use if they appear to be damaged. Fully tighten all connections between the lamp housing and the power supply to prevent arcing.

Model	Lamp Type	Lamp Housing Interconnection Cable
OPS-Q250	QTH, IR	Oriel model 70050 (Black)
OPS-Q1000	QTH	Oriel model 70050 (Black)

	<p>ELECTRICAL SHOCK HAZARD</p> <p>When operating the power supply above 60 V, a significant electrical shock risk is present. Before operating the power supply, please inspect the Lamp Housing Interconnection cable and confirm the cable is securely connected to the power supply and lamp housing. Failure to observe this precaution can result in severe injury or death.</p>
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	<p>CAUTION</p> <p>Do not turn on the power supply until the lamp has been installed and all connections have been made to the power supply and lamp housing.</p>
---	---



WARNING

When the Lamp On button is depressed, the lamp will begin emitting light. Do not press the Lamp On button until the output flange is directed in such a way that people, animals and equipment will not be harmed by the light.

If there are any questions or concerns, contact Oriel Instruments or the regional sales representative for Newport.

3.5 INITIAL START-UP SCREEN

Upon powering up the OPS-Q Model Power Supply the following screen will appear on the power supply's LCD:

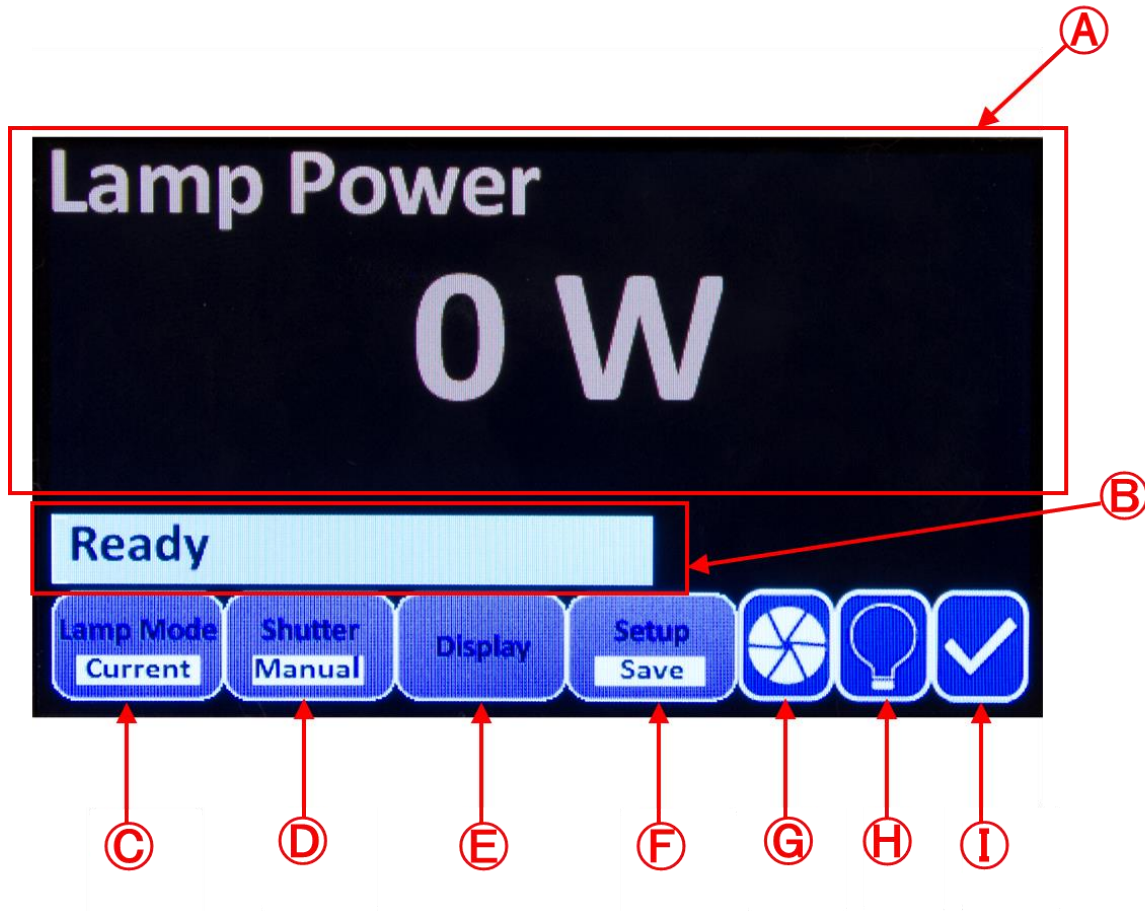


Figure 3 The LCD display of the OPS-Q Model Power Supply.

- A. The main section of the LCD screen displays the desired parameter as selected by the user and will be used for menu navigation.
- B. This portion of the LCD screen displays a “Ready” status indicating the power supply and related components (lamp, lamp housing, cable(s)) are prepared for lamp ignition, or displays “Interlock Open,” indicating a problem with the system setup. Similar error messages such as “Cooler Not Ready” when using the LIK-LMP Light Intensity Controller kit and “Function Not Available” may also be displayed here. The meaning of these error messages and troubleshooting techniques are explained in the relevant portions of this manual.
- C. **Lamp Mode.** The operating mode as designated by the user will be displayed by this indicator.
- D. **Shutter.** The setting of the shutter, manual or timed, as designated by the user will be displayed here.

- E. Display.** Pressing the horizontal menu button under this icon will reveal the vertical menu listing the display options available by the OPS-Q Model Power Supply.
- F. Setup.** Pressing the horizontal menu button under this icon will allow the user to Save and Load preferred settings, reset the amount of hours the OPS-Q has been recording for the current lamp in use, and access other functions of the power supply. More details on the functions accessible with the menu button under this icon are explained throughout this manual.
- G. Shutter Indicator.** This icon displays the open/close status of the shutter.
- H. Lamp Indicator.** This icon displays the ignition status of the lamp.
- I.** This icon will display either a Check Mark, indicating lamp housing connections and lamp housing door are properly secured, or an Exclamation Point, indicating the connections and/or door previously referenced need to be re-examined for secure connection(s)

4 INTERLOCK CABLES/CONNECTIONS TO LAMP HOUSINGS

A lamp interconnection cable must be purchased for use with a Research Lamp Housing, based on the type of lamp being utilized. Replacement cables may also be purchased if needed. Interconnection cables are available on Newport.com.

Model	Lamp Type	Lamp Housing Interconnection Cables (6 foot, 12 foot or 20 foot lengths)	Cable Color
OPS-Q250	QTH or IR	Oriel model 70050, 70046 or 70047	Black
OPS-Q1000	QTH	Oriel model 70050, 70046 or 70047	Black



Figure 4 The output connector on the rear panel of the OPS-Q250/OPS-Q1000 Power Supply for interface with Oriel Lamp Housing. The 70050 (Black) Lamp Housing Interconnection Cable is also shown.

If a replacement cable is needed, please contact Oriel Instruments. Oriel Instruments can only guarantee that the OPS Power Supply will meet performance specifications and be operated safely if lamp housing interconnection cables provided by Oriel Instruments as listed in the table on the previous page are used. The use of a lamp housing interconnection cable provided by a third party vendor or made on the user's end could damage the power supply and lamp housing and pose an electrical shock risk to the user.

4.1 CONNECTION TO A Q SERIES TYPE HOUSING

For connecting the OPS-Q Series Power Supply to a Q Series Type Housing, use one of the black Oriel model 70050, 70046 or 70047 cables as described previously in this manual. Connect this 5 pin connector on the 60090 QTH and IR Element Interface Kit to the input connector under the label OUTPUT 1 on the rear panel of the power supply.



Figure 5 The electrical connector on a 60090 QTH Lamp/IR Emitter Interface Kit for use with an OPS-Q Model Power Supply.

4.2 CONNECTION TO A RESEARCH LAMP HOUSING

For connecting the OPS-Q Series Power Supply to a Research Lamp Housing, use one of the black Oriel model 70050, 70046 or 70047 cables as described previously in this manual. Connect this 5 pin connector on the Research Lamp Housing to the input connector under the label OUTPUT 1 on the rear panel of the power supply.



Figure 6 The electrical connector on an Oriel Research Lamp Housing for use with an OPS-Q Model Power Supply.

4.3 SAFETY INTERLOCK

Newport's Oriol Power Supplies have a safety interlock feature which must be satisfied before the power supply will power the lamp and which, if broken during operation, will disable the power supply. Overheating of the housing or accidental opening of the door will automatically shut down the power supply. If the Interlock Open and alert symbol shown below appear on the LCD interface on the power supply during operation, it is recommended that all connection cables be connected for loose connections and the door of the lamp housing be confirmed as completely closed and secured.

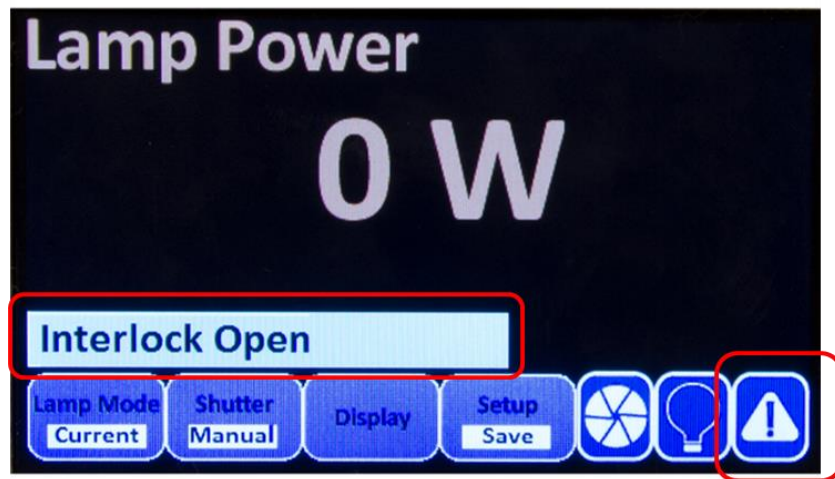
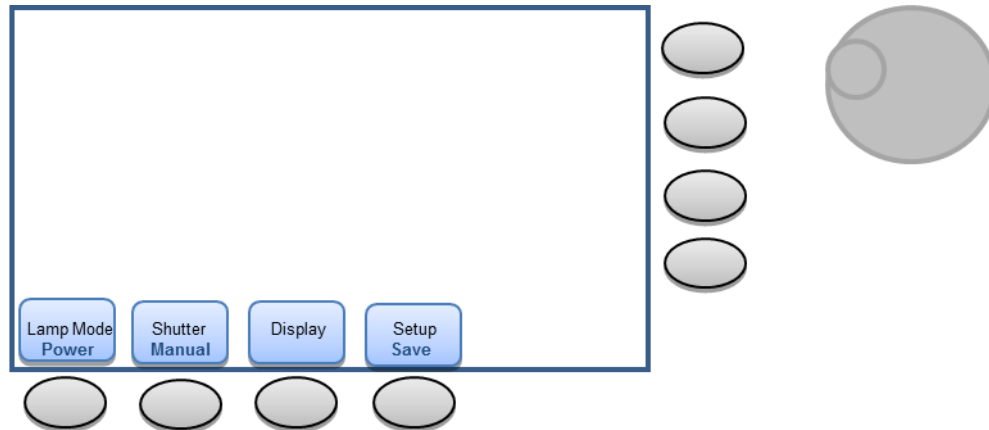


Figure 7 The Interlock Open and warning symbol indicator of the power supply indicates a cable is disconnected and/or the lamp housing is open.

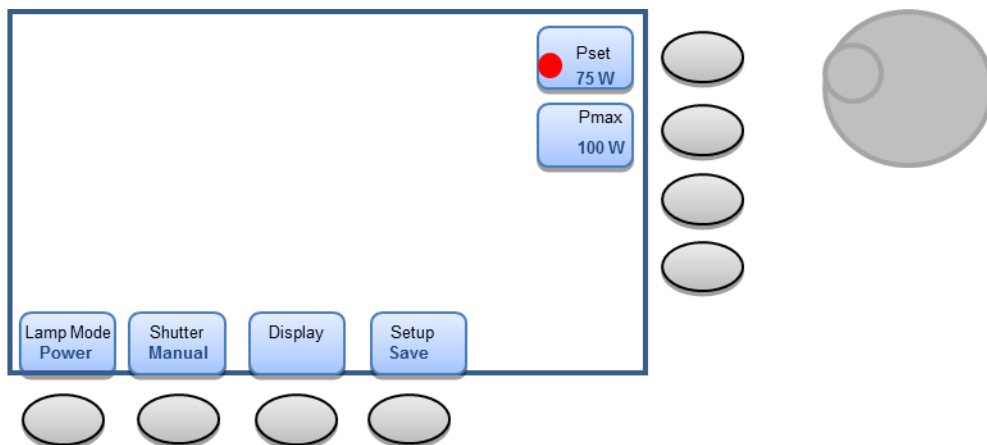
5 OPERATING MODES

5.1 POWER OPERATION MODE

In power mode, the lamp is operated at a constant power setting. As the voltage cannot be changed, the current is raised or lowered to maintain the power at the same level. As the lamp ages, the radiant output decreases. As an IR emitter ages, its resistance may double. However, the lamp life is prolonged.



1. Press the horizontal menu button under the Lamp Mode icon on the LCD display until the text under Lamp Mode reads power as shown in the figure above. Upon reaching the Constant Power mode option, the vertical menu for setting the lamp operating power (P_{set}) and maximum power to be supplied to the lamp (P_{max}) will appear as shown above.



2. To adjust the P_{set} and P_{max} , press the vertical menu button next to each parameter. A red bullet in the box indicating that particular parameter can be changed will appear. That parameter can now be changed by rotating the knob to the right of the vertical menu buttons. Be aware that P_{max} cannot be changed when the lamp is ignited.

Note. If using a lamp purchased from Newport Corporation, set P_{set} to the desired operating power. P_{max} is typically set at 10% higher than the lamp rating. If not using a lamp purchased from Newport Corporation, it is best to follow operation power and maximum power supply guidelines determined by the lamp manufacturer.

3. Press CLEAR to clear the vertical menu from the screen and observe the desired operating parameter in real time while the lamp is being operated. The lamp is now ready for ignition.

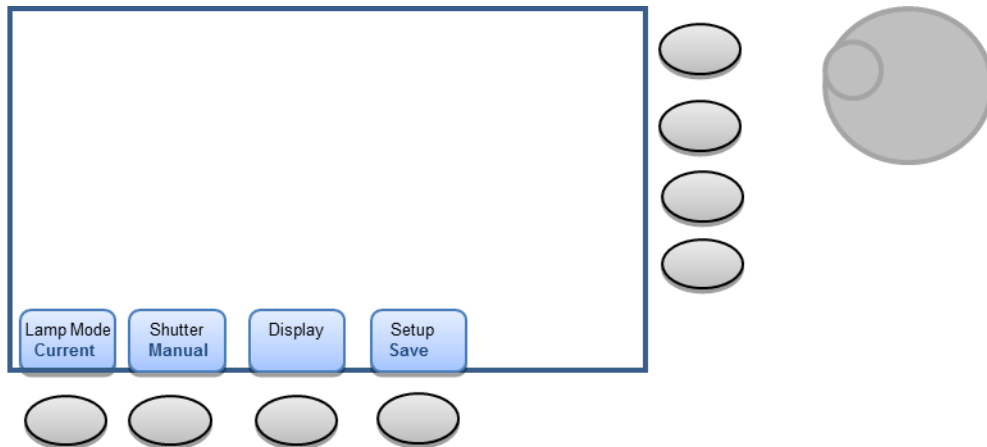
If the “Warning I_{max} Setting” message appears on the screen as shown below while the power supply is being operated in Power Mode, this indicates that the I_{max} setting in Current Mode is set too low for the lamp to reach the desired Pset.



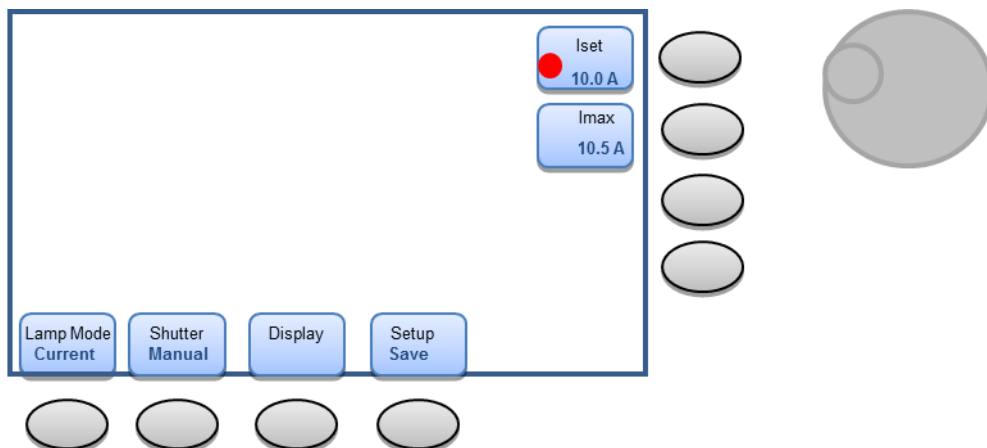
If this error message appears, power down the lamp. Then, change Lamp Mode to Current Mode as described in the next section. Increase the I_{max} parameter while staying safely within the lamp’s maximum input current specification. Return to Power Operation Mode and ignite the lamp. The power supply will now be able to supply enough current to the lamp to reach the desired Pset.

5.2 CURRENT OPERATION MODE

In current mode, the lamp is operated at a constant current setting. As the voltage cannot be changed, the power is raised or lowered to maintain the current at the same level. As the lamp ages, the power is increased. This results in greater optical output which to some extent may help compensate for a darkening lamp envelope. However, the lamp life is reduced due to the increase in power.



1. Press the horizontal menu button under the Lamp Mode icon on the LCD display until the text under Lamp Mode reads Current as shown in the figure above.



2. Upon reaching the Constant Power mode option, the vertical menu for setting the lamp operating current (Iset) and maximum current to be supplied to the lamp (Imax) will appear as shown on the next page.
3. To adjust the Iset and Imax, press the vertical menu button next to each parameter. A red bullet in the box indicating that particular parameter can be changed will appear. That parameter can now be changed by rotating the knob to the right of the vertical menu buttons. Be aware that Imax can only be changed when the lamp is not ignited.

**Note. If a lamp that was not purchased from Newport Corporation is being used, use the manufacturer's current specifications for operation. If the lamp operating power and voltage are known but the operating current is not, determine the current setting by using Ohm's Law:
Amperes = Power ÷ Voltage**

4. Press CLEAR to clear the vertical menu from the screen and observe the desired operating parameter in real time while the lamp is being operated. The lamp is now ready for ignition.

Please note that the lamp operation mode cannot be changed while the lamp is being operated. If the operating mode is to be changed, power off the lamp and change the lamp operation mode before reigniting the lamp.

6 OPS-Q SERIES OVERVIEW

	OPS-Q250	OPS-Q1000
Approved Lamp Wattage	45 - 250 W	600 - 1000 W
Power Factor	>0.99	
Input Voltage	90 - 264 VAC	95 - 264 VAC
Input Current Max	3 A	13 A
Input Frequency	47 - 63 Hz	
Output Current Range	1-10.5 A	2-10 A
Output Voltage Range	0 - 31 VDC	0 - 130 VDC
Line Regulation	0.01%	
Output Voltage Ripple	<0.05 % rms	
Light Ripple	<0.05 %	
Meter Accuracy (% of full scale)	<0.05 %	
Digital Meter Resolution, Voltage	0.01 VDC	
Digital Meter Resolution, Power	1 W	
Digital Meter Resolution, Current	0.01 A	
Safety Interlock Voltage	12 VDC/GND	
Operating Mode	Constant Current, Power, or Intensity	
Operating Temperature	10 - 45 °C	
Max Relative Humidity	80%, non-condensing	
Max Weight lb (kg)	12 (6)	
Max Dimensions (W x D x H) in.	12.0 x 16.25 x 4.25	
Shutter Control Resolution	10 ms	
Min Shutter Exposure Time	10 ms	
Intensity Control Range (µA)	1 – 2450	
Intensity Control Resolution (µA)	1	
Intensity Multiplier (gain)	0.01 - 9999.99	
Dose Control Range (mA)	0.01 - 9.999 x 10 ¹²	
Dose Control Resolution (mA)	0.01	
Time Control Range	0.01 s - 99.99 hr	
Time Control Resolution (s)	0.01	
Lamp Hours Range	1 s - 9999.99 hr	
Lamp Usage Recording Resolution (s)	1	
Temperature Control Range when using LIK-LMP	0 - 25 °C	
Compliance	CE and RoHS	

WARRANTY AND SERVICE CONTACTING ORIEL INSTRUMENTS

Oriel Instruments belongs to Newport Corporation's family of brands. Thanks to a steadfast commitment to quality, innovation, hard work and customer care, Newport is trusted the world over as the complete source for all photonics and laser technology and equipment.

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To obtain information regarding sales, technical support or factory service, United States and Canadian customers should contact Newport Corporation directly.

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