Optics Power Supply

Version 1.1

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1.0 Packing List

1.1 Packing List for Optics Power Supply

The Optics Power Supply is shipped with the following items:

Table 1. Optics Power Supply

Quantity	Part Number	Description
1	PSDS_OPT_EIGHT_01	Optics Power Supply with 8 outputs
1	PSDS_OPT_EIGHT_01_MAN	Optics Power Supply Eight Output Operators Manual
1	CABL_POW_110AC_10FT	Universal AC power cable for US use, 10 feet long
1	CABL_OPTX_8N0_10FT_01	Optics cable with 10 Pin MS connector and 8 pin optics input, 10 feet long

1.2 Optional Accessories for Optics Power Supply

The following list of optional cables and components are compatible with the Optics Power Supply. See Appendix A for more details.

Table 2. Optional Accessories for Optics Power Supply

Part Number	Name	Description
801108	CABL_BNC_MXPIN_10FT_01	BNC to Molex plug cable, 12 inches long.
801109	CABL_OPTX_MXSOCK_8X_12IN_01	Optics breakout cable which mates to 8 pin Optics Power Supply optics output connector, with eight separate color coded wires terminated in two-socket Molex connectors.
801110	CABL_OPTX_MXPIN_8X_12IN_01	Optics breakout cable which mimics 8 pin optics output connector, with eight separate color coded wires terminated in two-pin Molex connectors.
801112	CABL_MX_Y_FMF_121N_01	Two Molex sockets to Molex plug Y-cable.
801114	CABL_BNC_MXSOCK_10FT_01	BNC to Molex socket cable, 12 inches long.
801117	CABL_OPTX_8X_EXTENSION_10FT_01	Optics breakout cable which mimics 8 pin optics output connector, with eight separate color coded wires terminated in two-pin Molex connectors.
801119	CABL_OPTX_MXSOCK_8X_10FT_01	
801120	CABL_OPTX_9N2_10FT_01	Optics cable with 10 Pin MS connector, 8 pin optics input, and 3 pin filament input which includes one optics element, 10 feet long

2.0 Product Identification

In all communication with Ardara Technologies, please specify the Ardara Technologies part number for the power supply from your original purchase order, along with the serial number of the unit.

3.0 Scope of Manual

This manual applies to the Ardara Technologies Optics Power Supplies Identified as PSDC_OPT_EIGHT_01 in the upper left hand corner of the box's rear panel.

This document is valid as of the date of publication. We reserve the right to make technical changes to the design. As this design of the Optics Power Supply is customizable, please refer to configuration document.

4.0 Intended Use

The Ardara Technologies Optics Power Supply was designed to provide stable high voltages suitable for up to eight optics elements, including lenses, quadrupole deflectors, ion guide offset potentials, pre-filter offset potentials and other ion optics devices.

The system also features an available vacuum interlock input on its back panel, which is designed to disable the voltage output under conditions where the vacuum pressure is too high for safe operation.

5.0 Safety

This Optics Power Supply is capable of generating lethal voltages. Care must be taken to ensure safety during use.

5.1 Input Power

This Optics power supply is equipped with a universal input AC power connection, which requires that the power cord ground connection be connected to earth ground through a properly wired AC outlet to ensure safe operation. The use of a 'ground isolator' or similar device is prohibited for safe operation.

The AC power input is compatible with worldwide AC power, from 100 to 240 VAC, 50-60 Hz and 600 Watts.

5.2 Custom Output Connections

Use only approved high voltage cables and connectors, which are rated to the voltages in use.

It is often the case that this Optics power supply is used to replace another in an existing application. Be sure to review the voltage ratings of the cables and vacuum feedthrus in use to verify compatibility with high voltages possible from this Optics supply.

5.3 Vacuum Pressure Considerations

The Ardara Optics Power Supply is often used to power Ion optics at intermediate vacuum pressure. One challenge to operating high voltage devices is the impact of gas pressure on the voltage discharge limit.

At high vacuum (10^{-5} torr and below) and at atmospheric pressure and above, devices can tolerate quite high voltage gradients with very small electrode gaps.

However, for intermediate pressures (10^{-2} torr to 1 torr), the tolerance to high voltage gradients is dramatically reduced, resulting in discharges (i.e. glow discharge) which can damage the device as well as damage the power supplies driving it. This phenomenon is described in the literature using the Paschen Curve.

The vacuum interlock feature of this Optics power supply is designed to be utilized in conjunction with a vacuum gauge that features a contact closure output when the measured pressure is below a given set point. It is recommended that this feature of the Optics power supply be implemented to ensure safe operation.

6.0 Liability and Warranty

Ardara Technologies assumes no liability and the warranty becomes null and void if the end user or third parties:

- Disregard the information in this manual
- Use the product in a non-conforming manner
- Make any kind of changes (modifications, alterations, etc.) to the Optics Power Supply.
- Use the product with accessories not listed in the corresponding product documentation

7.0 Product Overview

7.1 Summary

The Ardara Technologies Optics Power Supply was developed to provide users with a stable high voltage source for various ion optics devices. Ardara's Optics Power Supply is conveniently designed to install into a standard 19-inch (48.25 cm) instrument rack, allowing for adequate ventilation.

The design incorporates eight +/- 400-volt outputs standard.

The front panel display switch allows direct measurement of each individual output voltage using the front panel digital voltmeter. The front panel also features 8 ten-turn potentiometers for fine control of each individual output. Combined, these offer an easy, fast, and efficient voltage adjustment.

External command inputs can be implemented through the use of the DB25 connector, featured on the back panel. A +/-4.00V command yields +/-400V output; with a 1 Mohm input impedance. The unit can be switched between front panel control and external command by switching the Internal/External switch.

The unit has a vacuum interlock connector on the back panel, which allows an external contact closure to enable or disable the high voltage optics. This feature is compatible with ionization gauge pressure transducers with vacuum interlock contact closure outputs, and allows the Optics power supply to be put into a safe state if there is not adequate vacuum. This feature can also be used to turn voltages on and off remotely, by applying a 5-volt signal to pin 2 of this connector.