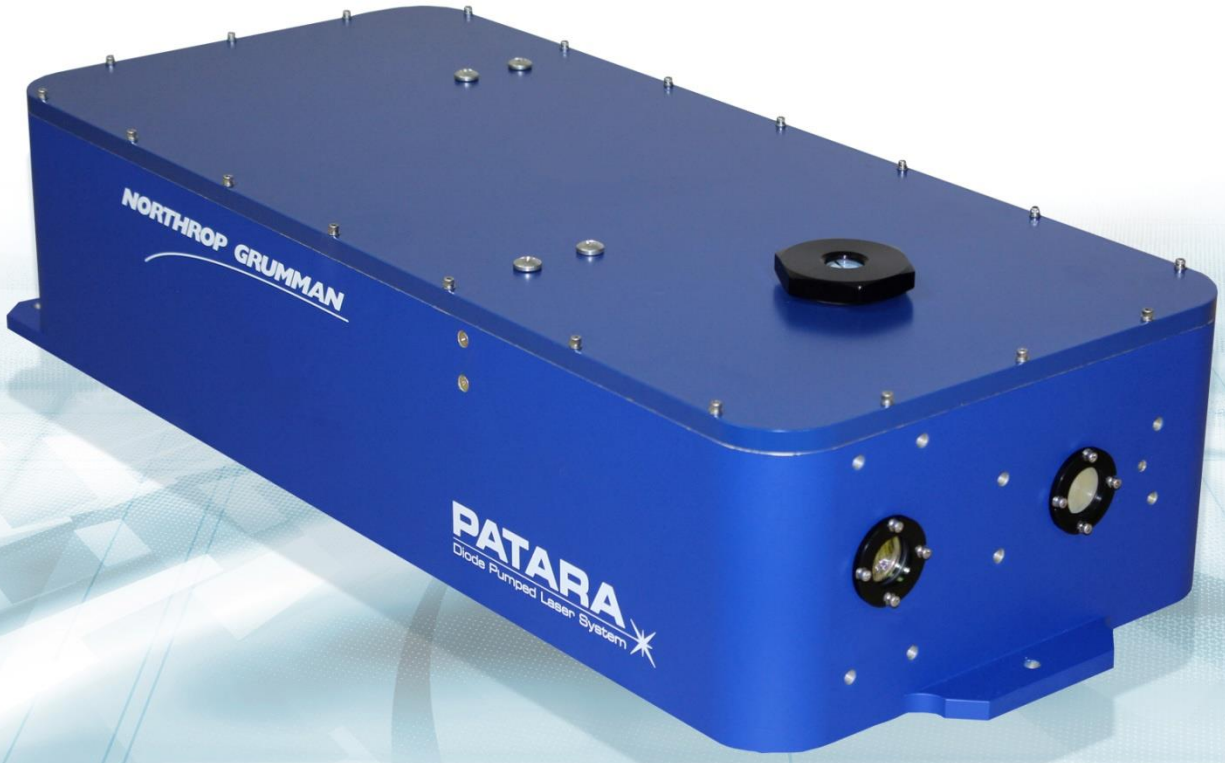
Pre-Installation Guide

- IR Patara Laser System



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NORTHROP GRUMMAN

Worldwide Technical Support and Product Information

http://www.northropgrumman.com/BusinessVentures/CEO/Pages/Service.aspx

http://www.ngceoservice.com/ (Knowledge Center)

Hours: 8:00 a.m. to 5:00 p.m., Central time*
Service and Technical Support: (636) 916-4900 (follow prompts for department directory)
Email: ngceoservice@ngc.com

Cutting Edge Optronics Headquarters

20 Point West Blvd. St. Charles, MO 63301 USA
Sales Support: (636) 916-4900 (follow prompts for department directory)

*After office hours, please leave a voice mail message. Outside North America, contact a Cutting Edge Optronics sales office or distributor; see the Cutting Edge Optronics website for a list of offices.

Important Information

Copyright

Patents

Safety Information

Product End-of-Life Handling

NG CEO is committed to protecting the environment. In accordance with the Waste Electrical and Electronic Equipment directive (WEEE) and Restriction of Hazardous Substances in the European Union (RoHS EU) directives, NG CEO accepts the return of our products for disposal. When you are ready to reclaim the instrument, you must properly transfer it according to local regulations concerning WEEE equipment. Contact NG CEO or your local distributor for shipping instructions. Please package the products as directed for a return for repair.

ROC ROHS Declaration

In accordance with the Clause 6.2 of Marking for Control of Pollution Caused by Electronic Information Products (SJ/T11364:2006) for Measures for the Administration on Pollution Control of Electronic Information Products No. 39, Order of the Ministry of Information Industry of the Peoples Republic of China, NG CEO includes the following translation about our laser modules.

中华人民共和国，电子讯息产品管理办法：自我声明

生产商	**Northrop Grumman Cutting Edge Optronics**
生产商地址	20 Pointe West Blvd St. Charles, MO 63301 USA
产品名称 / 编号	**Mirus Series Laser Systems** **Models: MI-xxx-xxxx-xxxx and AMI-xxx-xxxx-xxxx**

有毒有害物质或元素标认表

部件编号	部件名称	有毒有害物质或元素					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CrVI)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
第一组	外壳	O	O	O	O	O	O
第二组	电线/ 连接插头	X	O	X	X	X	X
第三组	安装组件	O	O	O	X	O	O
第四组	开关组件	O	O	O	X	X	X
第五组	电路板/ 开关组件	X	O	O	O	X	X
第六组	阵列前端次模组	O	O	O	O	O	O
第七组	接触板	X	O	O	O	X	X
第八组	热交换组件	O	O	O	O	O	O
第九组	16 进制硬件	O	O	X	O	O	O
第十组	焊锡	X	O	X	O	O	O
第十一组	电线/ 连接插头	X	O	O	O	X	X
第十二组	基部/ 端帽	X	O	O	X	O	O
第十三组	硬件/ 装配	O	O	O	X	O	O
第十四组	时计组件	X	O	O	X	X	X
第十五组	包装物料	O	O	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 规定的限量要求以下

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 规定的限量要求

Conventions

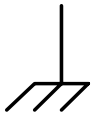
The following conventions appear in this manual:

	This icon denotes a caution or a warning, which advise you of precautions to take to avoid injury, data loss, or a system crash.
italic	Italic text denotes references to other resources that may be helpful to you or to bring attention to important information.
	This icon denotes a note, which alerts you to important information.
I **O**	Power Switch Position Symbols I = On O = Off

The following conventions may appear on the product:

DANGER	An injury hazard immediately accessible as you read the marking.
WARNING	A hazard not immediately accessible as you read the marking.
CAUTION	A hazard to property including the product.
	ESD: Handle Appropriately
	Laser Emission: Use caution.
	Shock Hazard: Use caution.

Caution: Risk of danger. Refer to manual.



Chassis Ground

General Safety Summary

The Patara Laser System emits laser radiation that can permanently damage eyes and skin, ignite fires, and vaporize materials.

Do not attempt to operate the laser system before carefully reading the complete operation manual provided with the product. If you have any questions on the product that have not been discussed sufficiently the manual, contact the manufacturer for complete instructions. Failure to heed this warning may result in the destruction or serious damage to the device, and will void the product warranty.

About This Guide

This document is to provide information necessary for smooth installation/integration of the Patara Laser System with the eDrive Nitro Laser Controller. The Guide consists of the following chapters:

- *Chapter 1: eDrive Dimensions, Power Requirement and Mounting* describes details of the eDrive Nitro
- *Chapter 2: Laser Head Dimensions, Beam Height, and Mounting Requirements* describes details of the Patara laser head
- *Chapter 3: Chiller and Coolant* provides information about plumbing the Patara Laser System.
- *Chapter 4: Facility Summary* provides information on required utilities, laser operation considerations, and suggested supplies.

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List of Figures and Tables

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Chapter 1: eDrive Dimensions, Power Requirement and Mounting

This chapter provides the following information:

- eDrive Dimensions
- Input Power
- Rack Mounting
- Clearance
- Weight

eDrive Dimensions

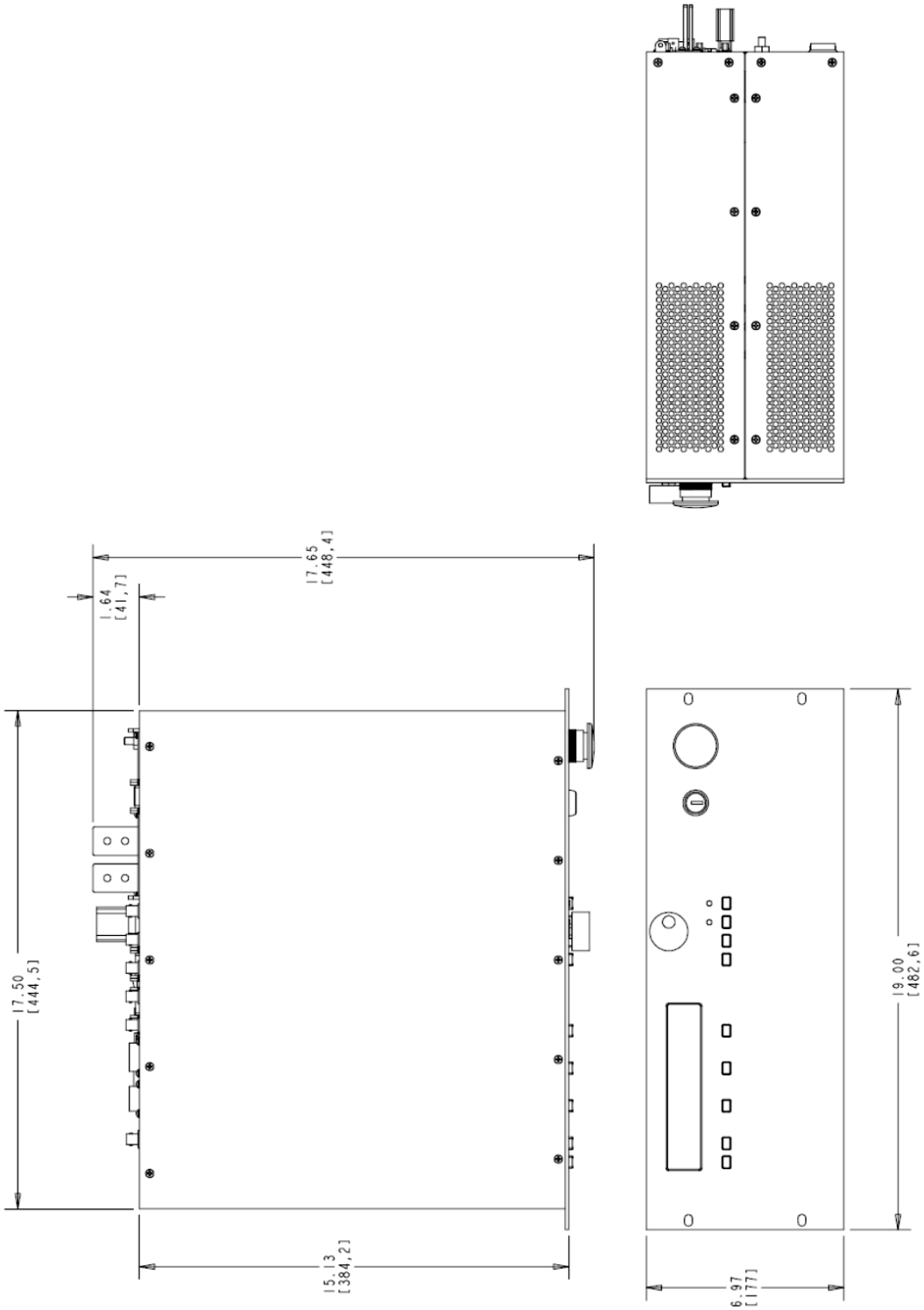

Figure 1-1 Dimensions of eDrive Nitro for Patara Laser

Input Power

Use only power cords suitable for your driver. Use a power source that delivers power in the range of 100 to 240 VAC-RMS, 47 to 63 Hz. Power switching is done automatically;

there are no configuration switches to set for high or low power ranging. Table 1-1 lists the recommended fuse selection for each voltage range.

Table 1-1 Recommended Fuse Ratings

AC Input		Frequency	Fuse Ratings (F1, F2)
120V ±10%	15A	50/60 Hz	T 15A 250V
240V ±10%	8A	50/60 Hz	T 8A 250V
Fuse Dimensions: 0.25 x 1.25 inches			

Rack Mounting

When installing the eDrive Nitro into an EIA-310D-compliant rack, always install rack mounting screws into the two bottom holes of the front panel flanges first and then install screws into the top holes. This will help to minimize any potential damage that might occur to the eDrive front panel if the driver were to shift during installation.

For the eDrive Nitro, it is recommended that two people install the unit into a rack. Supporting rails should be used. Lift the driver into place and then fasten the front panel flanges into place.

WARNING. Using the eDrive Nitro without mounting rails can result in serious damage to the driver or personal injury.

Clearance

Adequate clearance should be allowed on the front, sides, and rear of the eDrive for access to connections and components. The front and rear vents of the eDrive must be a minimum of 24 inches (61 cm) away from walls or vertical surfaces so air flow is not restricted.

Weight

The total weight of eDrive Nitro for Patara laser is approximately 52 pounds (23.6kgs).

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Chapter 2: Laser Head Dimensions, Beam Height, and Mounting Requirements

This chapter provides the following information:

- Laser Head Dimensions
- Beam Height
- Mounting Requirement
- Clearance
- Weight

Laser head dimensions

The detailed dimensions of the Patara laser are shown in Figure 2-1 and 2-2. The laser head has dimensions of 26 inch (L) x 11 inch (W) x 6.13 inch (H).

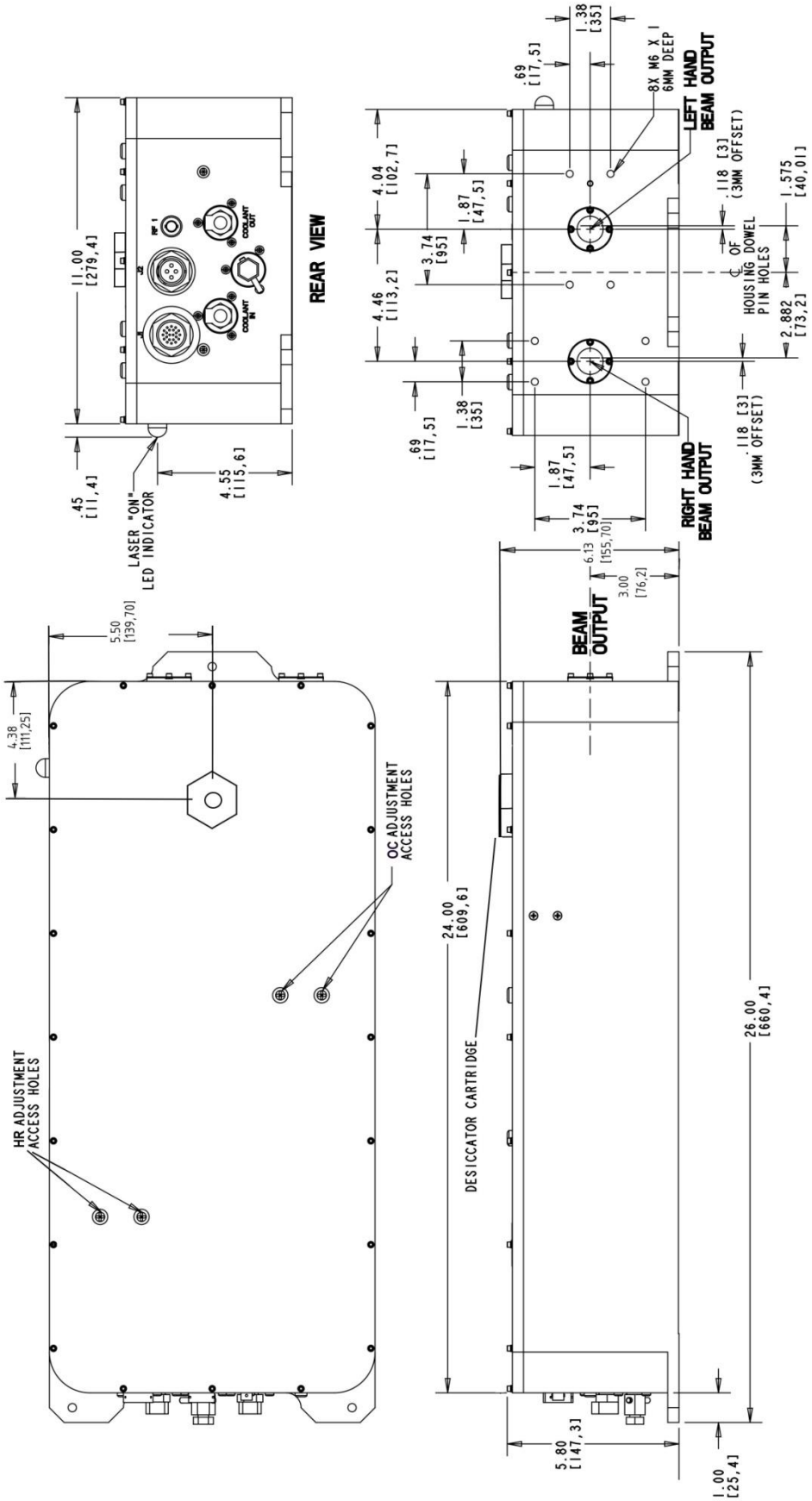

Figure 2-1 Patara Laser Head Dimensions, Sheet 1

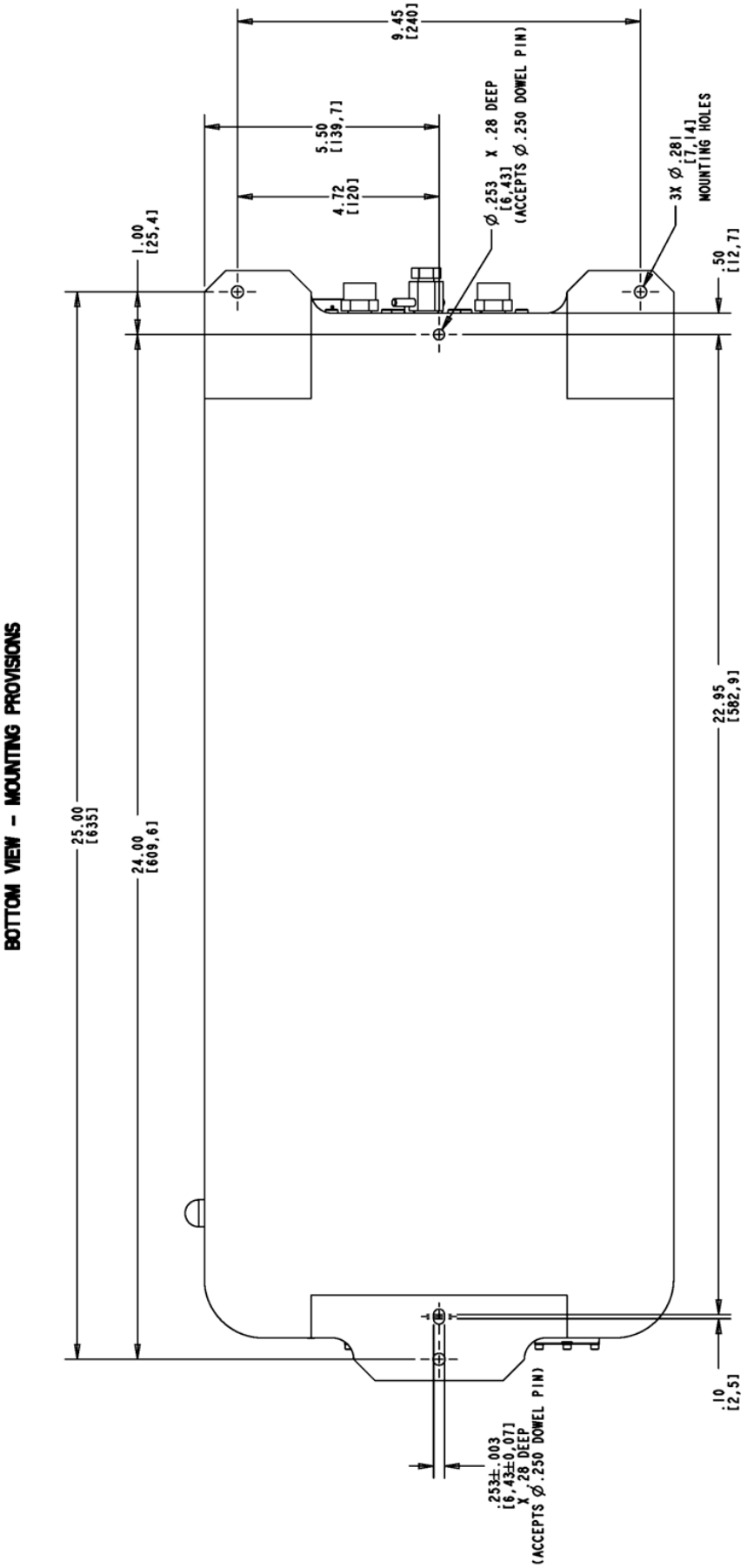

Figure 2-2 Patara Laser Head Dimensions, Sheet 2

Beam height

The beam height of the Patara laser is 3 inches.

Mounting requirement

The laser has to be mounted on a flat optical table or equivalent bench. There are three mounting holes that are 0.28 inches (7.1mm) in diameter. Two mounting holes are located at the back of the laser head and one at the front. There are holes designed for 0.25 inch dowel pins to confine the position of the laser head. These are on the center line of the laser head: see Figure 2-2.

Weight

The weight of the laser head is approximately 35 pounds (15.9kgs).

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Chapter 3: Chiller

This chapter provides the following information:

- Chiller Plumbing
- Standard NG CEO Supplied Hardware
- Suggested Chiller Models

Chiller Plumbing

Plumbing for the Patara laser is described in Figure 3-1.

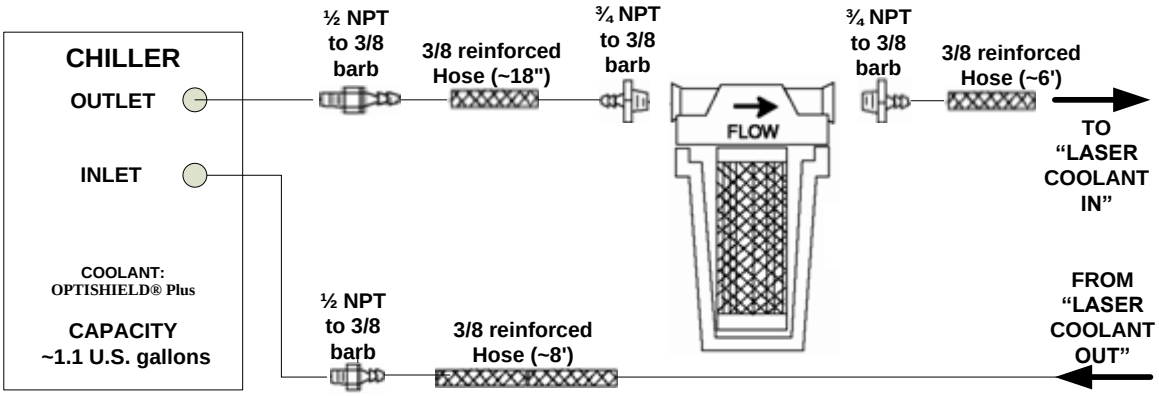

Figure 3-1 Chiller Plumbing

Standard NG CEO Supplied Hardware

1. Patara Laser head
2. eDrive
3. Chiller
4. Laser signal cable- Length 7 ft. (2.1 meters)
5. Diode power cable- Length 7 ft. (2.1 meters)
6. Plumbing Kit, including hoses and filter for chiller- Length 8 ft (2.4 meters)
7. Hose length may be modified to suit facility requirements
8. Power Cord for Chiller
9. Power Cord for eDrive

Suggested Chiller Models

NG CEO has used Polyscience chillers for long time. Other chillers with similar specifications may be used. The customer may decide to buy a chiller through NG CEO or purchase directly from the third party. When supplied by NG CEO, the following models are specified for use with the Patara-IR TEM_{00} laser.

Table 3-1 Polyscience Chiller Specifications

Model Number	Input Power	Frequency	Nominal Rated Amps	Dimensions	Weight
6362T31CE20C[1]	120V single phase	60 Hz	13.5A	22 5/8 x 14 1/2 x 27 5/8 inch	156 Lbs (71 kg)
6352T41CE30E[1]	208-230V single phase	50/60 Hz	7.6A	22 5/8 x 14 1/2 x 27 5/8 inch	156 Lbs (71 kg)

[1]Chiller models are air-cooled and feature a 1/3 HP compressor, stainless steel turbine pump and internal heating element

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Chapter 4: Facility Summary

This chapter provides the following information:

- eDrive Facility Requirements
- Chiller Facility Requirements
- Precautions for Safe Operation
- Suggested Supplies and Equipment

eDrive Facility Requirements

- AC Input-Single Phase: 100 to 240 VAC-RMS, 47 to 63 Hz
- Clearance: 24 inches minimum, sides and rear for ventilation

Chiller Facility Requirements

- AC Input-Single Phase:
- Polyscience P/N 6352T41CE30E: 208-230V/50Hz or 60Hz
- Polyscience P/N 6362T31CE20C: 120V/60HZ
- Clearance: 24 inches minimum, sides and rear for ventilation

Precautions for Safe Operation

- Avoid looking directly into the laser beam or at specular reflection, even with protective eye wear on.
- Wear laser safety eyewear that is optically dense at the wavelengths of operation (798-816 nm pump light, 1064 nm).
- Provide a controlled access area for laser operation and limit access to those trained in laser safety principles.
- Post warning signs in prominent locations near the laser operation area.
- Use safety interlocks on all entryways. All NG CEO system control electronics are supplied with interlock inputs that can be used to preclude operation with an open safety door.
- Enclose beam paths wherever possible.
- Set up experiments so the laser beam is below eye level.
- Work in an area that is well lighted to avoid dilation of pupils.
- Set up a target for the beam.
- Set up shields to prevent reflected beams from escaping the laser operation area.
- View an infrared laser beam with a protected image converter at an oblique angle reflecting from a diffuse surface.
- Ensure that all electrical connections are made in a safe manner.
- Position equipment so that electrical connections are shielded from accidental touch.
- Do not smoke, eat, or drink in laser areas.
- Avoid leaving an operating laser unattended.

Suggested Supplies and Equipment

Desiccant Cartridge

The desiccant cartridge used in the Patara laser head is an industry standard part.

Desiccant supplies can be purchased from NG CEO, or directly from AGM Container Controls, Inc. telephone number 800-995-5590.

- Desiccant cartridge NG CEO part no. 42-228
- Refill part number 643665
- Refill tool 980412

Chiller Filter

The water filter used for the Patara laser head is 5 μm pleated cellulous polyester filter.

The Hydronix pleated 5μm polyester filter, part number SPC-25-1005; available at multiple online retailers.

Coolant

CEO recommends using a mix of 10% Optishield Plus™ and 90% distilled water. For European installations use Optishield™ instead of Optishield Plus™.

Optishield Plus™ may be purchased from:

- Opti Temp Inc., 231-946-2931, http://www.optitemp.com/.

The Patara laser requires approximately 2 Gallons of prepared coolant for the system including the hoses and filter.

Laser Power Meter

Power Capacity: Minimum of 30 W

- To protect the power meter, a negative lens (f=-100 mm) with an anti-reflective (AR) coating at 1064 nm should be installed in front of the power meter