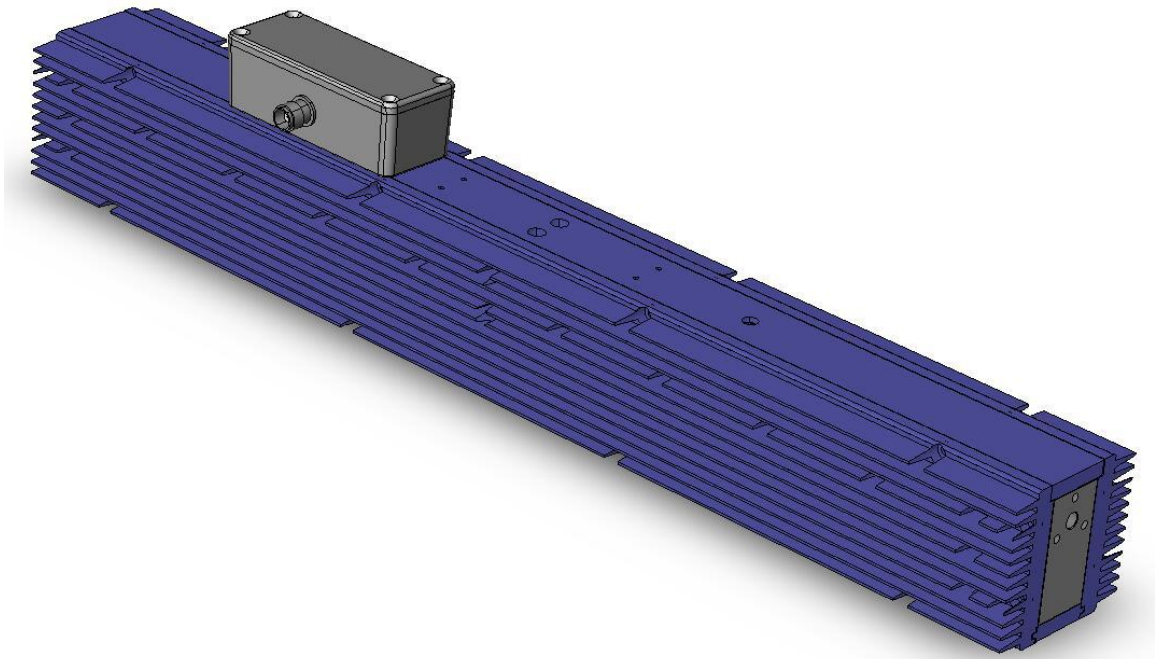




ACCESS LASER

where innovation never stops

L12 Series Operator Manual



Access Laser Company
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www.accesslaser.com

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Company Statement

Thank you for purchasing an Access Laser product. We remain dedicated to your needs long after your initial purchase. In order to help us meet your needs, please contact us if you have any questions, comments or concerns about your laser, at sales@accesslaser.com or call us at 425-582-8674. Our staff will make every effort to assure that your laser is operating at its peak performance. We look forward to working with you through the life of your project.



Contact Information

Access Laser Company is a multi-national company, headquartered in Everett, Washington.

| | |
|-----------------|--------------------------------------------------------------------------------------|
| Mailing Address | Access Laser Company 917 134 th St SW Suite A1 Everett, WA 98204 |
| Phone Number | 425.582.8674 |
| Fax Number | 425.582.8679 |
| Email | sales@accesslaser.com |

Access Laser Company specializes in innovative solutions to meet your application needs. Our Sales Team and Customer Service Team can provide you with the most up-to-date product information. If you need assistance with an order or service, contact Access Laser Company at 425.582.8674, ext.1 or email your questions.

| | |
|---------------------------|------------------------------------------------------------------|
| Sales/Technical Questions | sales@accesslaser.com |
|---------------------------|------------------------------------------------------------------|

| | |
|--------------------|----------------------------------------------------------------------|
| Service Department | service@accesslaser.com |
|--------------------|----------------------------------------------------------------------|



Warranty

All of Access Laser Company's lasers come with a one-year standard warranty, which certifies that your laser is found to be free of any defects in material or workmanship. This warranty applies regardless of your laser application. It does not cover any issues that may arise due to operator negligence, environmental factors, accident, alterations, or improper maintenance.

Access Laser Company requests that you inspect your shipment within 14 days of arrival. If there appears to be any damage or defect you must notify Access Laser Company, in writing, at service@accesslaser.com. If Access Laser Company is not notified within 14 days, we will assume that the shipment arrived in satisfactory condition.

Please complete the information below upon final inspection of your order.

Date Received: _____

Laser Model: _____

Laser Serial Number: _____

RF Driver Serial Number: _____

Received By: _____

Access Laser Company and its Authorized Distributors maintain the sole authority to make any claims or statements regarding warranty on Access Laser Company products. Access Laser Company reserves the right to make changes or improvements to product design without notice, and without expectation of equivalent changes in products previously manufactured or shipped.



The L12 Series

The L12 Series lasers have an operating power of 12 Watts in Continuous Wave mode. The L12 is the base model. The series also includes the L12P, providing a Super-pulse option, and the L12D, providing the features of the L12 or the L12P. Operations of the L12, L12P and L12D are covered in this Operator Manual.

Accessories are available in the L12 series. Operation instructions for these accessories are included in the Appendices of the Operator Manual, or in a separate manual, included with your shipment.

Because Access Laser Company provides innovative solutions to meet your needs, many specialty features are possible with the L12 series. Many of these specialty features may alter the appearance of your laser from what is pictured in the Operator Manual, but they do not alter the basic specifications or operation instructions for your laser. If you have any questions about the specifications or operation of your laser, please feel free to contact us at 425-582-8674, ext 1.



Laser Shipment Contents

The following items are included with each standard laser shipment:

- L12 Series Laser
- RF Driver
- BNC connector to TNC connector Coax Cable (1)
- D-sub 15 Dongle
- L12 Series Laser Product Manual
- Laser Test Documents
 - Final Test Document
 - Pulse Power Document
 - Power Plot

If you have questions about the contents of your shipment, please contact us.



Safety Information

Safety Symbols and Terms

Commonly used safety symbols and terms are used throughout this manual and on our products. Please familiarize yourself with the definitions and use of the terms and symbols.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation in which, if not avoided, could result in minor or moderate injury.

CAUTION

Indicates an unsafe practice that can result in property damage.

Note: Additional information provided for optimal product performance.



Safety Information

FDA and Federal Regulations

Access Laser Company has designed our lasers to comply with CDRH requirements set forth by United States' Radiation Control Health Act of 1968. Therefore the L12 series lasers meet all standards for laser products under 21CFR 10.40.10 and 21CFR 1040.11. These standards have been set forth to protect the end user from harmful radiation. It is the responsibility of the end user to assure compliance with any and all regulations related to final use or when used outside the United States.



Never Open the Laser

To prevent direct exposure from the laser beam and injury to the user, do not try to open the laser. Opening the laser may result in burns or eye damage or misalignment of the laser or other damage to the laser. The end user will never need to open the laser for maintenance or any other reason. All laser parts are serviceable only by authorized Access Laser personnel. Disassembling the laser voids any warranty. Use of controls, adjustments or performance procedures other than those specified herein may result in hazardous exposure.



Eye Protection Required

The L12 series lasers are Class IV lasers. Class IV Lasers have power outputs of greater than 500 mW. This laser can cause mild to severe burns if skin or eyes are exposed to the beam or scattered radiation. Protective eyewear should be worn at all times.



Use Appropriate Beam Blocks

The L12 series lasers produce laser radiation around 10.6 μ m. This wavelength is invisible and requires special equipment to detect or view. Some materials may cause the laser beam to reflect and scatter, causing injury or damage. Take precautions to block the beam from unintentional reflection. Avoid using materials such as copper, aluminum, or gold as beam blocks which are highly reflective and may cause the beam to scatter. Organic materials may be flammable when exposed to the laser beam. Never use organic materials such as plastic or wood as a beam block. Use a beam block designed for the wavelength and power of your laser, or use a laser power meter.



Safety Information

FDA and Federal Regulations

CAUTION Super-Pulse Lasers

For Super Pulse lasers (-P model), running the laser above a 25% duty cycle or 400 μ s pulse length may damage the RF driver. The internal protection program will interrupt the user signal beyond these parameters, making the output inconsistent.



Safety Information

Safety Label Location

Safety labels identify some potential risks while operating the laser. Please familiarize yourself with the labels.

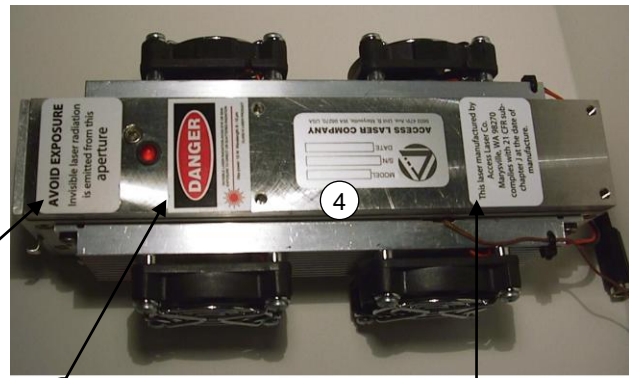
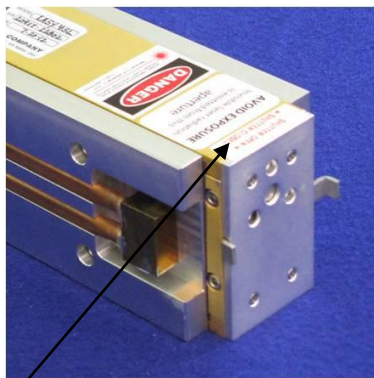
Safety Label Definitions

1. Shutter Open/Closed label – Indicates whether the manual shutter is in the “Open” or “Closed” position. (Manual shutters are not included on non-OEM lasers.)



Close the manual laser shutter to interrupt the beam. Operate the shutter using the lever closest to your body. Never pass your hand in front of the laser beam to close the shutter.

2. Aperture label – Indicates location of laser beam exit (aperture)
3. Laser Danger label – Indicates laser class and associated warnings
4. Product Identification label – Indicates Model, Series and date of manufacture
5. CDRH Compliance label – Indicates whether the laser was manufactured in compliance with United States Code of Federal Regulations



1

2

3

5

AVOID EXPOSURE
Invisible laser radiation
is emitted from this
aperture



Non-OEM*

This laser manufactured by
Access Laser Co.
Everett, WA 98204
complies with 21 CFR
subchapter J at the
date of manufacture.

OEM*

This laser manufactured by
Access Laser Co.
Everett, WA 98204
does not comply with 21
CFR subchapter J at the
date of manufacture.

* All non-OEM lasers comply with 21 CFR subchapter J at the time of manufacture. If your laser is a custom order (OEM), it is your responsibility to assure compliance with CFR in your final application.



Laser Operation Instructions

Operating the Laser

1. Close the laser shutter (if present).
2. Direct the laser toward an appropriate target, such as a power meter or a beam-blocking device. (See Safety Information regarding appropriate beam blocking devices.)
3. Secure the laser to a bench top.

⚠ CAUTION

Do not torque, twist or bend the laser body during the mounting process. Applying uneven pressure to the laser body may distort the laser body, causing poor performance and possible damage.

4. Connect the Cooling System
 - a. Air Cooled Lasers (where cooling is provided by the end user)
 - i. If no cooling is built in to your laser, you are responsible for providing sufficient cooling to maintain the laser specifications. (See Air Cooling Section for specifications.)
 - ii. Connect your air cooling system to the laser.
 - b. Built-in Fan Cooled Lasers
 - i. Connect the 12V DC supply to the fan power connector.
5. Connect the RF cable to the BNC connector on the laser.
6. Connect the RF cable to the TNC connector on the RF Driver.
7. Connect your 5V TTL source to the RF Driver via the TTL gate (BNC connector).
8. Set the TTL input to 0V (0V = OFF; 5V = ON).
9. Connect the RF Driver to the appropriate DC power supply.
 - a. L12: 28V DC
 - b. L12P: 48V DC
 - c. L12D: 28V DC for Continuous Wave operation. 48V DC for Super Pulse operation.

NOTE: Red wire is positive. Black wire is negative.



Laser Operation Instructions

Operating the Laser

NOTE: The RF driver can be modulated at frequencies from 0 Hz to 100 kHz. Optimal laser performance can be expected at a frequency range of 1-15 kHz.

10. Install the gate enabling D-sub 15 dongle onto the D-sub 15 connector on the RF driver.

NOTE: If using the LC3 Controller, plug the LC3 Controller into the D-sub 15 connector, instead.

11. Verify the beam path is pointed at an appropriate beam blocking device.



Eye Protection Required

This laser can cause mild to severe burns if skin or eyes are exposed to the beam or scattered radiation. Protective eyewear should be worn at all times.

12. Remove the protective tab from the aperture.
13. Open the laser shutter (if present).



Operate the shutter using the lever closest to your body. Never pass your hand in front of the laser beam to open or close the shutter.

14. Plug in (or apply) the DC power supply to the RF Driver.

NOTE: The RF Driver is enabled after a 5 second safety delay, as indicated by the LED on the D-sub 15 dongle. The LED is red during the safety delay and turns amber when the RF Driver is enabled.



The red LED on the laser indicates the laser is powered. When the laser is powered it is able to lase upon application of a control signal.

15. To activate the laser beam, apply 5V through the TTL gate (0V = OFF, 5V = ON).

NOTE: For the Super Pulse operation found in the L12P and L12D, using the 48V DC power supply, the laser is designed to run up to 25% duty cycle and a pulse length up to 400µs.

Laser Operation Instructions

Operating the Laser

CAUTION

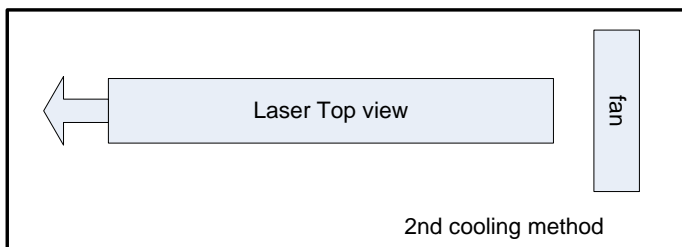
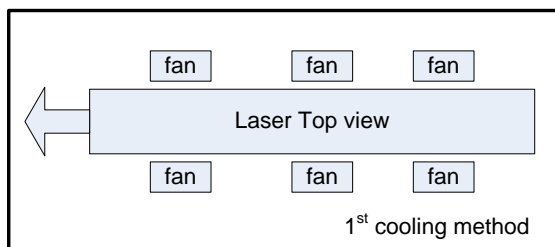
Running above 25% duty cycle or 400 μ s pulse length may damage the RF driver. The internal protection program will interrupt user signal beyond these parameters, making the output inconsistent.



Laser Operation Instructions

Air Cooling Guidelines

Here are two suggested basic air-cooling configurations of Access Laser products. In both cases, air flow is directed toward the laser. Air cooling must be symmetric on both sides of the laser. Otherwise, the laser can develop thermal-mechanical distortions over the long term.



The table below gives minimum airflow rates required on laser when operating at full power under normal atmospheric conditions, below 2000 m elevation. It also lists power to be dissipated for each model. Other cooling options may be possible provided that the power dissipation specifications and symmetrical cooling are applied.

| Laser model | Total air flow (CFM- Cubic feet/Minute) | Power to dissipate from the laser at full duty(watts) |
|-------------|--------------------------------------------|-------------------------------------------------------------|
| L12/P/D | 120 | 150 |

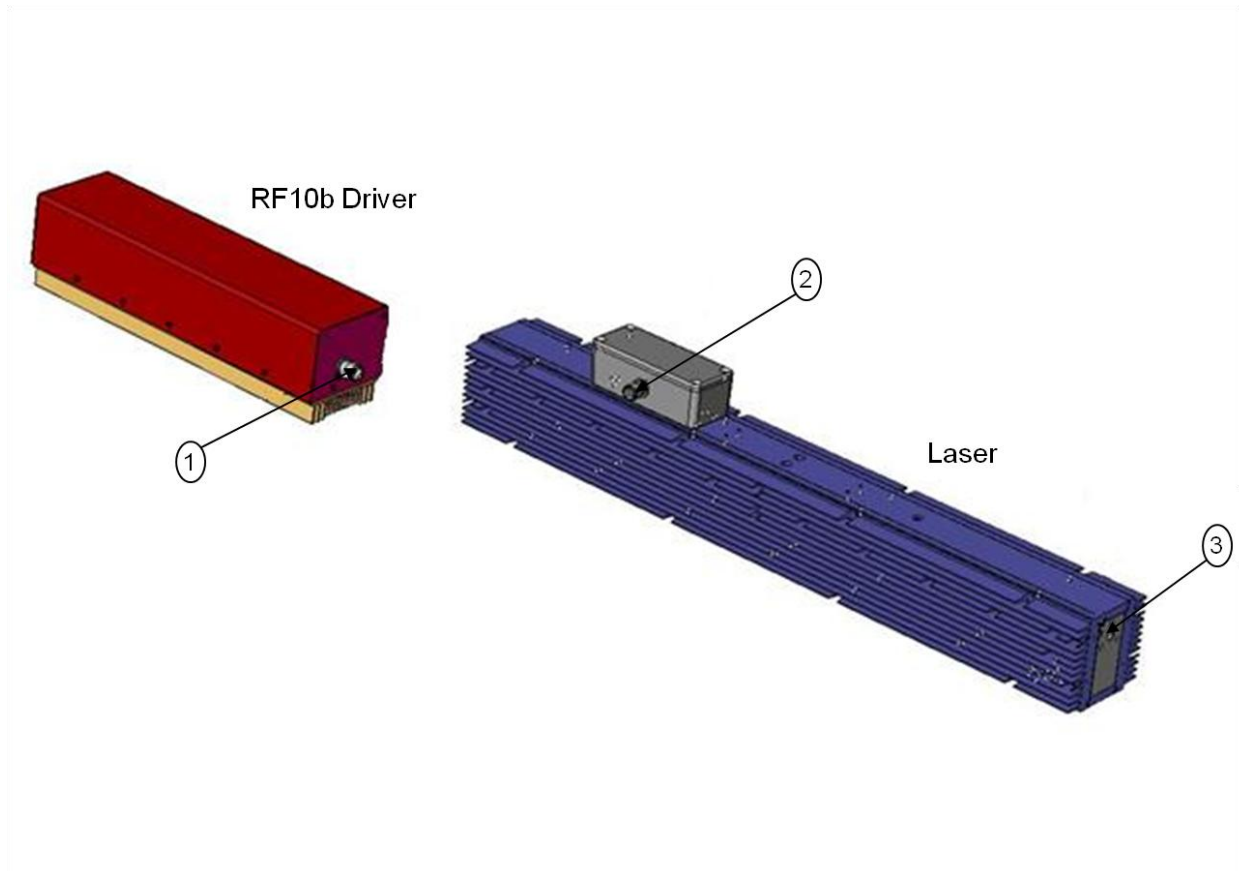
The laser heat sinks are designed so that standard 60 mm or 50 mm square fans can be mounted directly to the laser, as in the photo to the right. In the Lasy-20, for example, one can mount six 30 CFM fans (3 of them on each side symmetrically) using self-tapping screws (#6-7/8" or equivalent.)



Laser Operation Instructions

Laser System Connection Diagrams

Front View

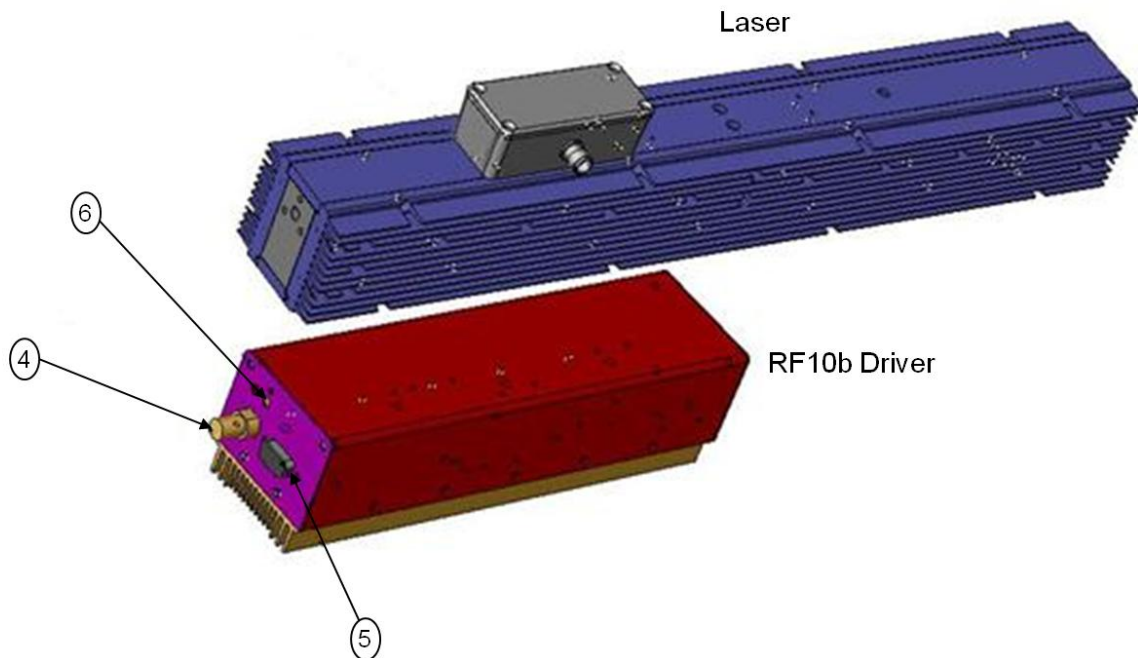


1. RF Output – TNC connector
2. RF Input – BNC connector
3. Laser Beam Exit (Aperture)

Laser Operation Instructions

Laser System Connection Diagrams

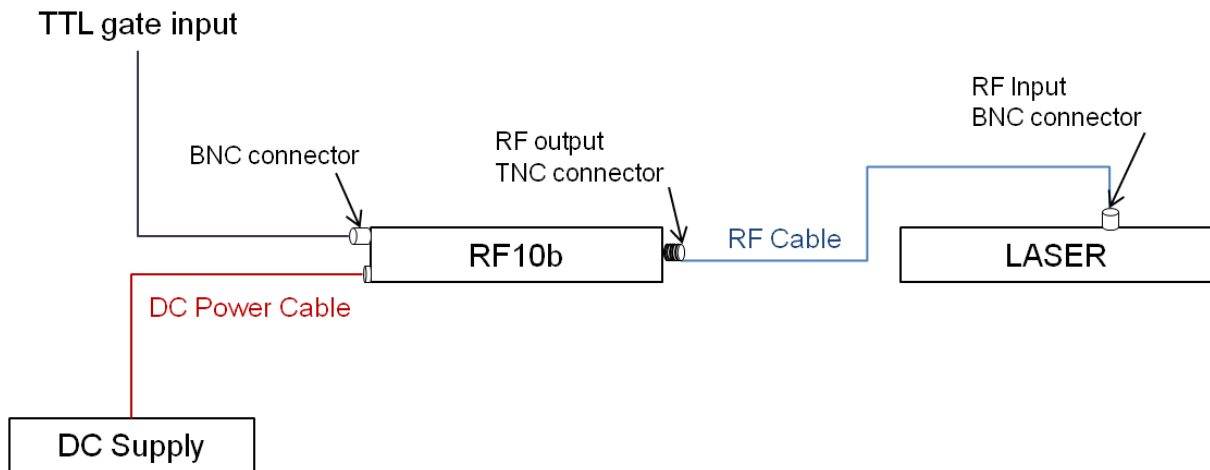
Rear View



- 4. TTL Gate Input – BNC connector
- 5. D-sub 15 Connector
- 6. DC Power cable outlet

Laser Operation Instructions

Laser System Wiring Diagram



Note:

The correct DC Supply varies with laser model.

L12: Connect a 28V 240W DC power supply

L12P: Connect a 48V 240W DC power supply

L12D: Connect a 28V 240W DC power supply for Continuous Wave operation OR
connect a 48V 240W DC power supply for Super Pulse operation



Laser Specifications

L12, L12P, and L12D Specifications

L12 air cooled pictured

(Fan cooling or other features may alter the look of your laser from that shown here.)



The L12 is the base model in the L12 Series. The L12P, Super-Pulse, provides bursts of power for limited duration. The L12D gives the functionality of the L12 and the L12P, depending on which DC power supply is applied.

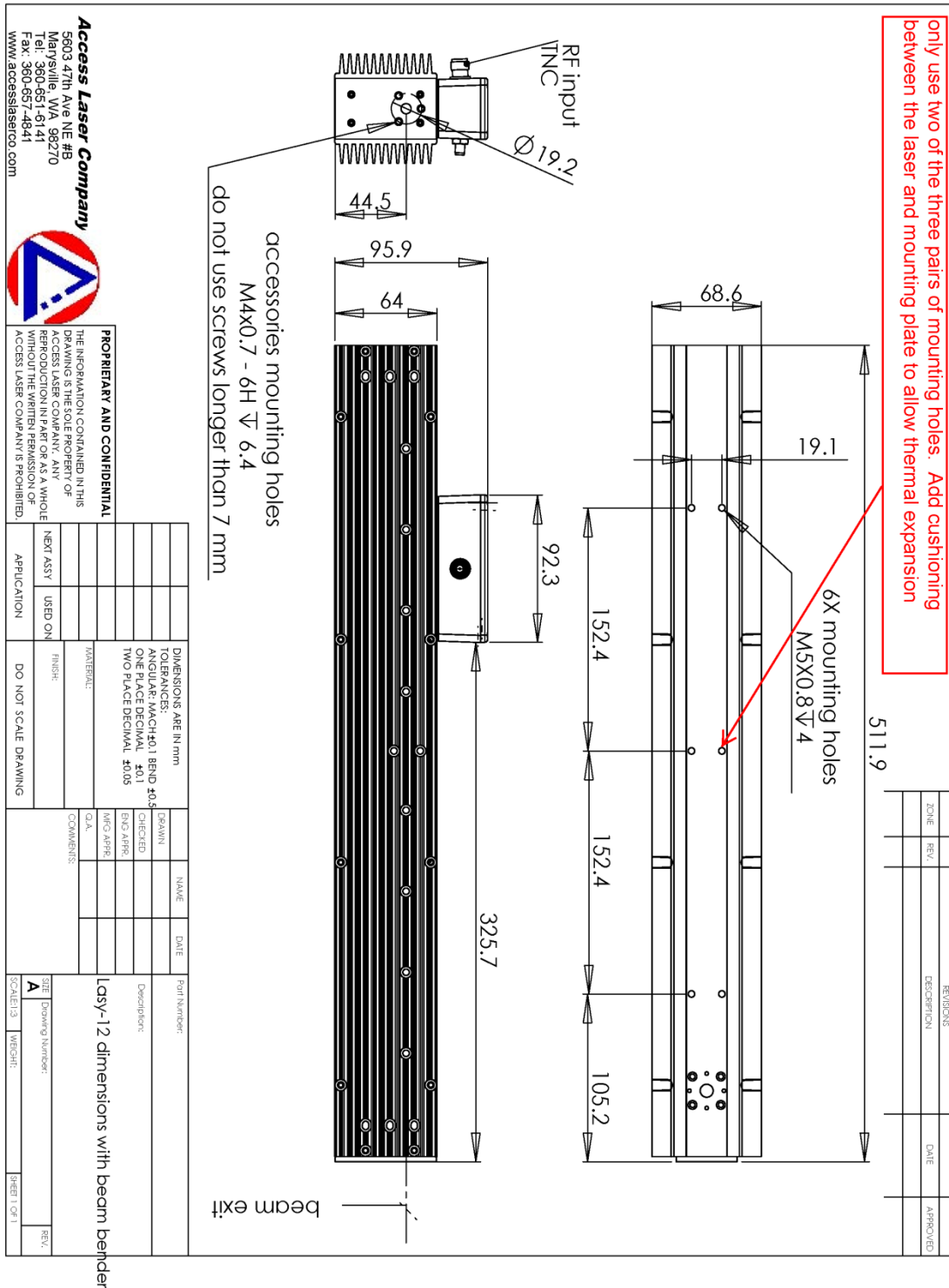
Fan cooling is an available options. Linear polarization is available. Optimization for 9.3 μ m and 11.2 μ m with 13CO₂ isotope gas fill are further options.

| Model | L12 | L12P | L12D |
|--------------------------------|------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Wavelength (μ m) | ~10.6 | ~10.6 | L12D has the ability to operate with the features of the L12 or the L12P. The laser functionality is changed by changing the DC power supply. |
| CW Power (W) | 12 | 7 (average) | |
| Peak Power (W) | 12 | 30 | |
| Power Stability | $\pm 10\%$ | $\pm 10\%$ | |
| Mode Quality (M ²) | < 1.1 | < 1.1 | |
| Beam Waist Diameter | 2.4 mm | 2.4 mm | |
| Waist Location | Output Coupler | Output Coupler | |
| Full Div. Angle | 5.5 mrad | 5.5 mrad | |
| Rise Time (μ s) | 200 | 100 | |
| Fall Time (μ s) | 200 | 100 | |
| Supply Voltage (DC) | 28V 240W | 48V 240W | |
| Electronic PWM Parameters | Any frequency up to 100 kHz, duty cycle 0-100% | Any frequency up to 100 kHz, duty cycle 0-25%, pulse length to 0.4 ms | |
| Cooling Requirement | Air Cooled | Air Cooled | |
| Working Temperature | 5-40° C | 5-40° C | |
| Dimensions (LxWxH, inch) | 20x2.8x3.8 | 20x2.8x3.8 | |



Laser Specifications

L12 Series Mounting Dimensions (air cooled)



Laser Specifications

RF10b Driver Specifications

| Model | RF10b | RF10b-P | RF10b-D |
|---------------------|-------------------------------------------|-------------------------|---------------------------------------------------------|
| Features | Standard | Super Pulse | Smart Driver that can be either Standard or Super Pulse |
| | External TTL Control Input up to 100kHz | | |
| | Built-in Plasma Ignition Signal at 2.5kHz | | |
| Frequency | 40.68 MHz | | |
| Supply Voltage | 28V DC | 48V DC | 28V or 48V DC |
| Supply Current | 7 Amps | 4 Amps | 7 or 4 Amps |
| Output Power | 120W up to CW | 300W up to 30% or 400µs | 120W up to CW, 300W up to 30% or 400µs |
| Dimensions (inches) | 9.6 x 3.4 x 2.7 | | |

CAUTION

Never connect the DC to the RF driver with the wrong polarity, or the RF driver will be damaged.

CAUTION

Never operate the RF driver without its output properly connected to the laser.

CAUTION

Do not block the air flow to and from the heat sink, or the RF driver will be damaged.

CAUTION

On air cooled versions, if the fans fail, the RF driver will stop immediately.

CAUTION

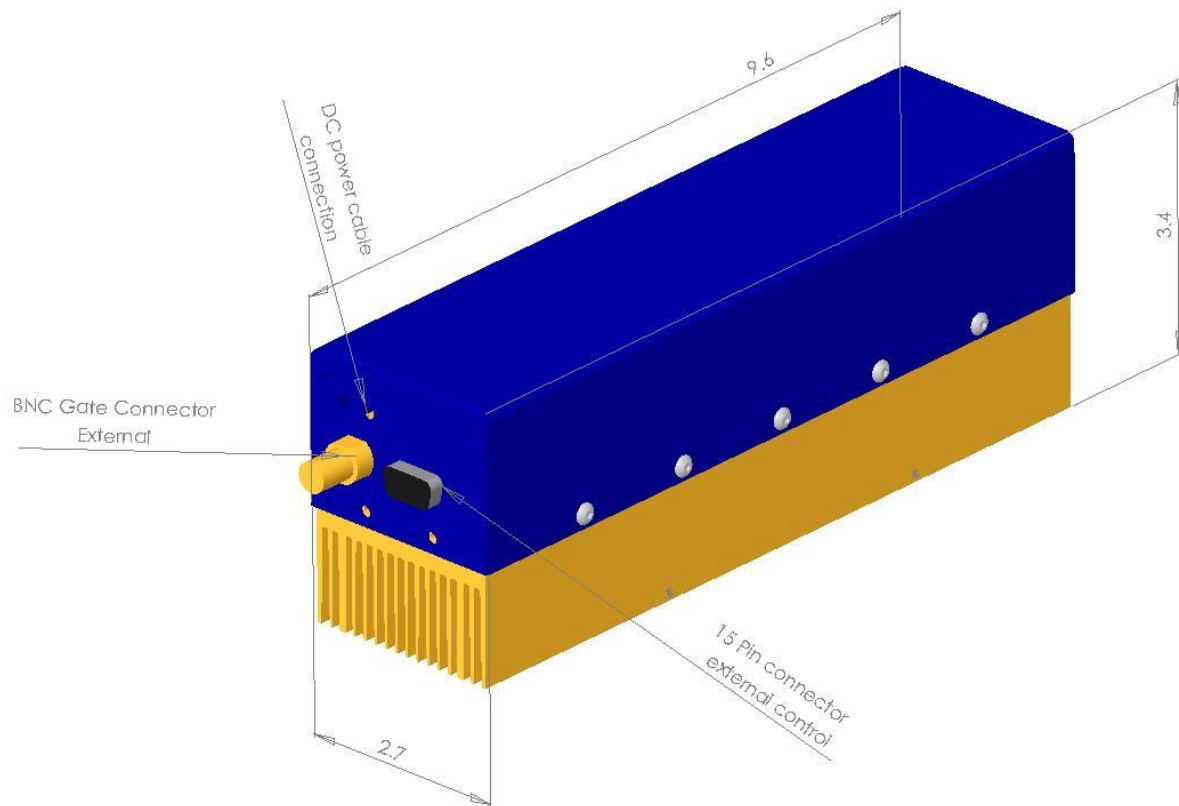
Do not gate the RF driver at frequencies above 10 kHz.



Laser Information

RF10b Driver Dimensions

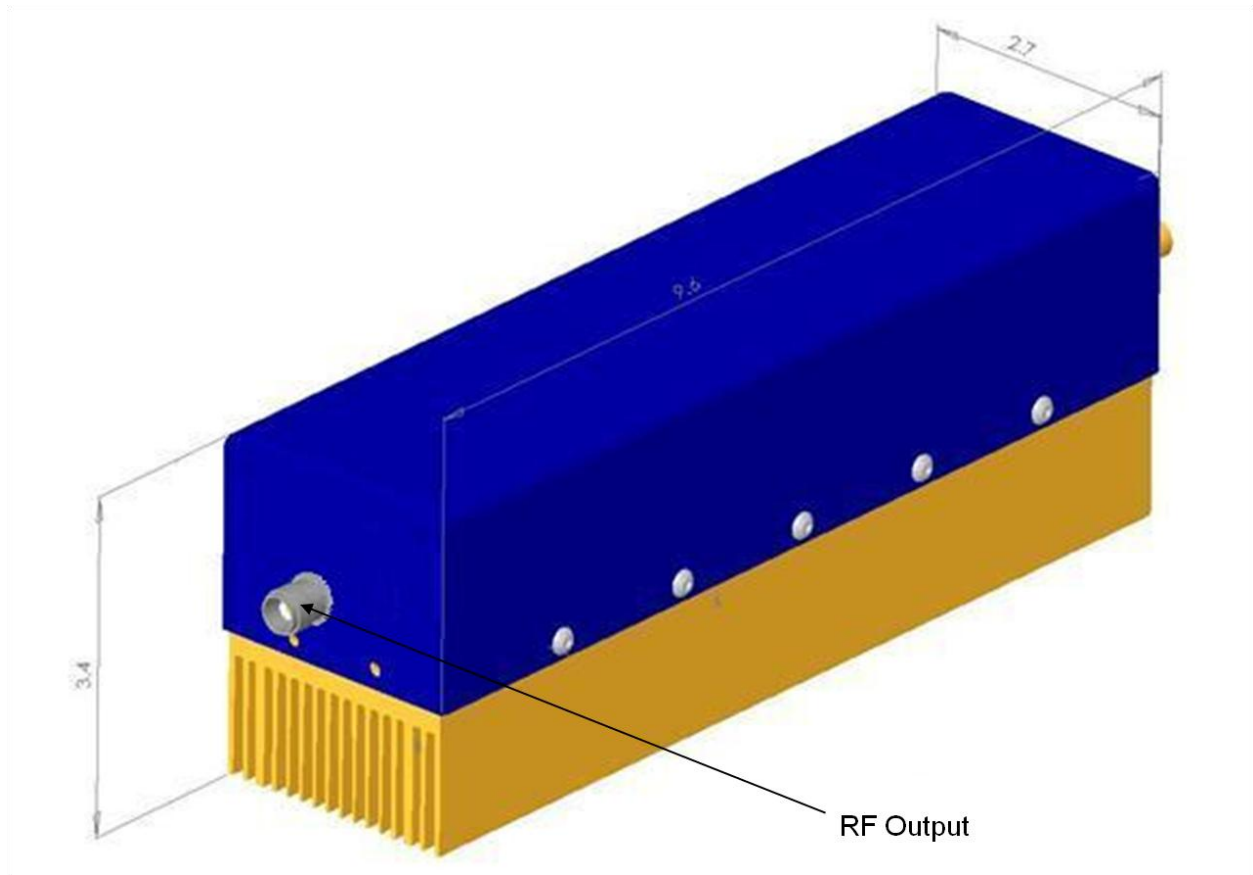
View from Input End



Laser Information

RF 10b Driver Dimensions

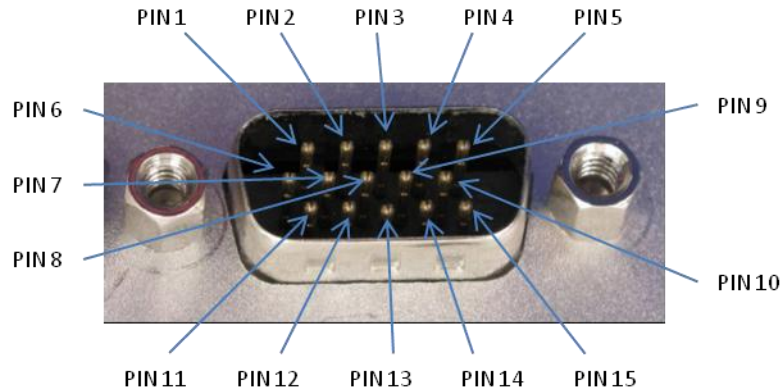
View from Output End



(all dimensions in inches)

Appendix A: RF Driver D-sub 15 Connector

RF Driver D-Sub 15 Connection Port
Pin Number Diagram



Custom Controls and Signals at the D-sub 15 Connector

| Pin # | FUNCTION | MODE 0 Action / Result | MODE 1 Action / Result |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 1 | 5 VDC, 20 mA capacity, power ready. Connection to an external red LED. | Red LED off / No power. | Red LED on / Powered |
| 2 | Connected to an external green LED to indicate laser ready status, up to 10 mA supplied. | Green LED off / Laser not ready. Fault due to RF overtemp, interlock opened, or key switch fault. | Green LED on / Laser is ready to fire |
| 3 | Safety Key Switch Connection. When this pin is enabled by PIN 6 and there is a power outage or opening interlock (PIN 4), this pin needs to be pulled high and then low again to restore laser operation. | Short to PIN 15 / DC power supply is connected to laser | Open / No DC power to laser |
| 4 | Safety Interlock = top level laser enable. This pin also needs to be enabled by PIN 6. | Short to PIN 15 / Laser enabled at the top level | Open / Laser not operational |
| 5 | AVC (Pin 11) Enable | Short to PIN 15 / Enables AVC together with PIN 10 | Open / Disables AVC |
| 6 | CDRH Safety Mode. Controls key switch on PIN 3 and Safety Interlock of PIN 4. | Short to PIN 15 / Enables key switch | Open / Disables key switch |
| 7 | Gate for Laser Enable | Not connected or connected to 0V / Laser disabled | Connected to 5V or to PIN 1 / Laser enabled |

Appendix A: RF Driver D-sub 15 Connector

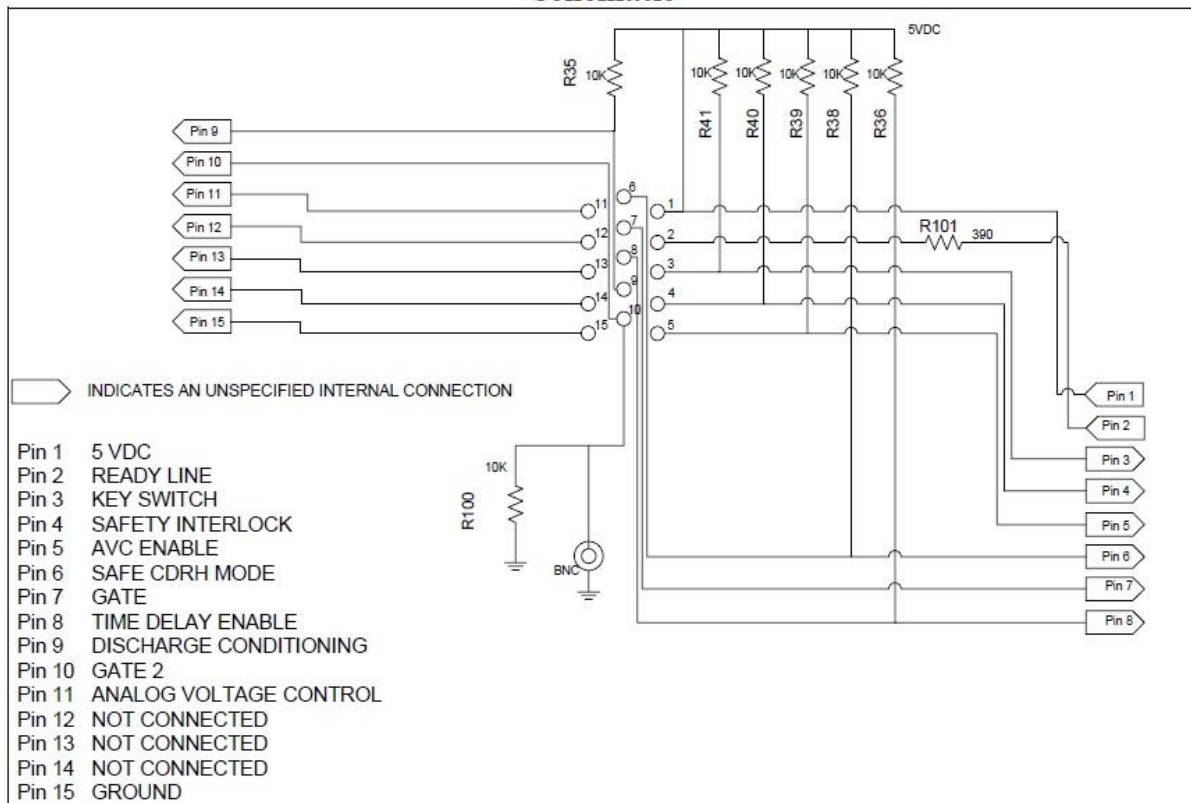
| Pin # | FUNCTION | MODE 0 Action / Result | MODE 1 Action / Result |
|-------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 8 | Time delay control: 5 seconds between initial power on and lasing | Short to PIN 15 / No delay | <i>Open / Delay True</i> |
| 9 | Discharge conditioning | Open/conditioning on (Recommended for marking lasers) | <i>Open / Conditioning on (Recommended for marking lasers)</i> |
| 10 | Gate 2, connected to BNC input, signal is provided by the customer to turn the laser on/off electronically. | <i>Not connected or connected to 0V / Laser off</i> | Connected to 5V / Laser on |
| 11 | Input, AVC ¹ | This is an analog function therefore there are more than two modes. ² | |
| 12-14 | Do not use | | |
| 15 | Ground | N/A | N/A |



Appendix A: RF Driver D-sub 15 Connector

ENGINEER'S NOTES

Schematic



Appendix A: RF Driver D-sub 15 Connector

ENGINEER'S NOTES (cont.)

- PIN 1 5V DC regulated supply output line. 20 mA source capacity. Intended to light remote "Power On" LED. (**Important:** no internal series current limiting resistor provided on this line.)
- PIN 2 This output line is a "Laser Ready" indicator in both the Safe CDRH mode and the OEM mode. When LOW, it indicates a fault has occurred and the laser is shut down: RF amplifier over heated, DIN cable not connected or RF cable not connected or damaged. The Amplifier will operate for approximately one minute on start-up before the processor checks for faults. This allows some troubleshooting before a Fault Shutdown. In the Safe CDRH mode two additional faults are indicated by PIN 2. The Key Switch fault status (see description of PIN 3) and the Interlock Fault Status (see description of PIN 4). This is an un-buffered output of 3.8V DC with internal 390 ohm current limiting resistor R101. If remoting this signal, we recommend buffering.
- PIN 3 Key Switch is an active LOW input line. The Key Switch is a safety requirement for many laser systems. PIN 3 is internally pulled HIGH with a 10k resistor R41. The Key Switch is only functional in the Safe CDRH mode (PIN 6 LOW). To implement a Key Switch use the normally open contacts. (Key Switch "on" is PIN 3 pulled LOW). The Key Switch has to be turned on before the laser can operate. When there is a power outage the Key Switch has to be recycled to restore laser operation. The key should not be removable when the Key Switch is turned on.
- PIN 4 Safety Interlock is an active HIGH input line. The Safety Interlock is a safety requirement for some laser systems. When PIN 4 is functional any logic HIGH transition on PIN 4 halts lasing. PIN 4 is internally pulled HIGH with a 10k resistor R40. The Safety Interlock is only functional in the Safe CDRH mode (PIN 6 LOW).
- PIN 5 Analog Voltage Control (AVC) input enable line. The AVC input is a LOW enable. PIN 11 becomes active as a 0V DC to 5V DC analog PWM control line. See definition of PIN 11 for AVC mode of operation. When PIN 5 is pulled HIGH (internal 10k pull up resistor R39), lasing is controlled exclusively by the logical result of Gate (PIN 7) AND Gate-2 (PIN 10).
- PIN 6 Safe CDRH mode LOW enable input line. The Key Switch (PIN 3) and the Safety Interlock (PIN 4) becomes active. When PIN 6 is pulled HIGH (internal 10k pull up resistor R38) these two safety devices are disabled. Operation with PIN 6 disable (HIGH) is generally referred to as the "OEM mode".



Appendix A: RF Driver D-sub 15 Connector

- PIN 7 Gate is an active HIGH lasing enable input. Gate is pulled LOW internally (processor controlled 10k pull down resistor). To initiate lasing, both the Gate (PIN 7) and Gate-2 (PIN 10) input lines must be pulled HIGH externally by user.
- PIN 8 Delay Enable is an active HIGH input. When active, while operating in the OEM mode (PIN 6 HIGH), a 5 second delay is enforced every time the DC supply electrical power is cycled. PIN 8 must be enabled to operate in the Safe CDRH mode. When active, while operating in the safe CDRH mode, a 5 second lasing safety delay is enforced every time the Key Switch is cycled. The Delay Enable line is internally pulled HIGH by a 10k resistor R36. User must pull PIN 8 LOW to suppress the safety delay (not recommended).
- PIN 9 Discharge Conditioning active HIGH enable input line. PIN 9 is internally pulled HIGH by a 10k resistor R35. User must pull PIN 9 LOW to suppress Discharge Conditioning.
- PIN 10 Gate-2 is an active HIGH lasing enable input. Gate-2 is pulled LOW by an internal 10k pull down resistor R100. To initiate lasing, both the Gate-2 (PIN 10) and Gate (PIN 7) input lines must be pulled HIGH externally by the user. Additionally, Gate-2 is wired directly to the external BNC connector.
- PIN 11 AVC (Analog Voltage Control) input. See definition of PIN 5. A 0V DC to 5V DC analog voltage on PIN 11 results in a proportional 0% to 100% Pulse Width Modulated (PWM) laser output. The PWM frequency is 2.5 kHz. To enable the internal PWM drive signal in the AVC mode: PIN 5 must be held LOW by user, Gate-2 (PIN 10) must be pulled HIGH by user, Gate (PIN 7) can be left open (NC) or pulled HIGH by user and a non-zero voltage between 0V DC and 5V DC must be present on PIN 11 for lasing to occur. By the way of Example 1, 1V at this pin will cause the PWM to operate at a 20% duty cycle, 3V at 60%, etc. (Note: Gate (PIN 7) is pulled HIGH internally by the processor. PIN 7 is functional as a lasing sizable when pulled LOW by the user.)
- PIN 12 Disabled
- PIN 13 Disabled
- PIN 14 Disabled
- PIN 15 Ground



Appendix B: LC3 Laser Controller (Optional)

SPECIFICATIONS & OPERATION

Model: LC3

Features: Safety Key Switch
Safety Interlock
Power Adjustment
External Gate



Operation Procedure

- Make certain the D-sub15 Connector on the RF Driver is available to accept the connector on the end of the controller.
- Make certain that the 3 position switch is in the middle, placing the laser in standby “STBY” mode.
- Install the LC3 D-sub15 Connector; the Red “POWER” LED should light.
- Turn the key switch from the “OFF” position to the “ON” position, the Green “READY” LED should light after ~5 seconds.
- If running the DC voltage at 28V switch into “0-100% mode, the Red “MODE” LED should light up. The knob will adjust from off to CW (0-100%) as it is turned Clockwise.
- The TTL Gate on the controller can be used to turn off the laser by applying ground. When the ground is removed or 5V is applied the laser will turn on at the duty cycle setting determined by the knob position. The gate can be modulated as necessary up to 100kHz.
- The interlock connector on the LC3 can be connected to a user provided safety switch or door switch, to have the laser turn off. It is a 1/8” stereo jack; the two wires must remain shorted together for the laser to operate. The connector is self-shorting, so if not using the interlock there is no need to plug anything into it.
- If any of the interlocks are triggered or the DC power is interrupted the Keyswitch will need to be cycled OFF and back ON to turn the laser back on.

Appendix C: Returns

If a failure should occur, please contact your Access Laser Company representative, or contact our Headquarters at 1-425-582-8674 or at service@accesslaser.com. A Company representative will determine whether your laser should be returned for repair or maintenance. If the laser needs to be returned, a Return Merchandise Authorization (RMA) will be issued. Any laser returned without an RMA will be at your sole expense.

An ALC representative will make a determination regarding shipping costs. Typically, for failures within the first 45 days, ALC pays all shipping costs to and from ALC. For failures after 45 days, but within the first year, the client shall be responsible for shipping costs to ALC. ALC will pay all shipping costs to return the item(s) to the client. Special considerations may apply. Be sure to verify shipping costs with your ALC representative.

When requesting an RMA please have the following information ready:

- Date of purchase
- Laser model
- Serial number the laser
- Serial number for the RF driver
- Date the issue was first discovered
- Brief description of the issue

Fill out the RMA as completely as possible. Include a copy of the RMA in the laser package. Also fax a copy to us at 1-425-582-8679, Attention: Service. When faxing the RMA please include the tracking number for the return shipment.

For any returns, please ship the item(s) to:

Access Laser Company
Attn: Service Department
917 134th St SW, Suite A1
Everett, WA 98204

Include the laser and ALL accessories when returning the laser. This allows ALC to test each component and determine the source of the issue.

