

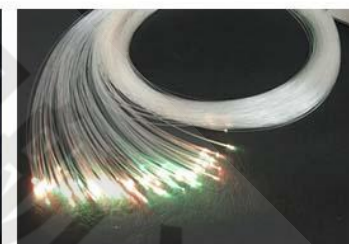
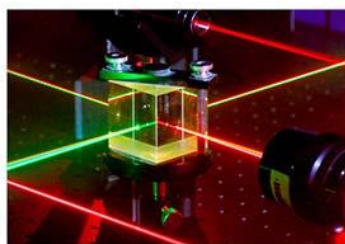
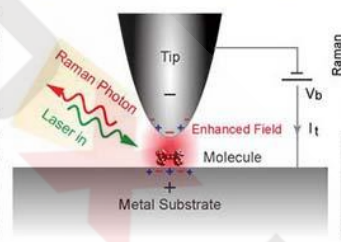
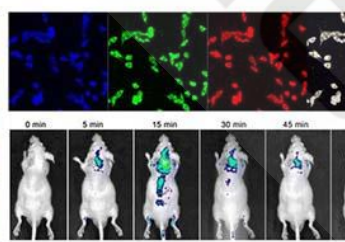
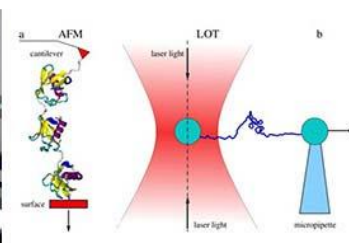
## 高稳定中远红外量子级联激光器

## Stabilized Mid and Far Infrared QCL Laser Systems

### 9550nm Stabilized Mid and Far Infrared QCL Laser System

#### Applications:

|                       |                          |                           |
|-----------------------|--------------------------|---------------------------|
| Science Research      | Photoelectronic Industry | Physics                   |
| Chemistry             | Materials Science        | Biology and Life Science  |
| Medicine and Pharmacy | Agriculture and Forestry | National Defence Industry |



#### Features:

- ★ Stabilized Spectrum Technology
- ★ Patented Sealed Optical Cavity
- ★ CDRH Compliant
- ★ Excellent Beam Quality
- ★ PID Temperature Control Built-in for Excellent Performance
- ★ Precision Current Source
- ★ Low Noise Technology
- ★ Clean-up filter optional

- ★ Easy operation & Free maintenance
- ★ High Reliability and High Power Stability
- ★ Free Space Output or Fiber Coupled Output is optional
- ★ High Polarization Ratio is Optional
- ★ External Analog Modulation and Digital Modulation
- ★ APC Function is Optional

#### Free Space Output and Fiber Coupled Output Versions

All of the LA-LS have free space output and fiber coupled output versions. There are single mode fiber and multi-mode fiber for your choice. The fibers for the laser are available at various core diameter from 3um to 800um.



#### External Analog Modulation Versions

The LA-LS Series can perform analog modulation of up to 10KHz, 50KHz, 100KHz, 500KHz and 20 MHz. To modulate the LA-LS Series Laser modules from below-threshold (at 0 V) to full power (at +3V) requires an external 3 VDC analog input. The modulation sources must be provided by the user.

#### External Digital Modulation Versions

The LA-LS Series can perform digital modulation (via TTL) of up to 50KHz, 100KHz, 20MHz, 30MHz, 40MHz, 50MHz, 80MHz and 200 MHz. To modulate the LA-LS Series from below-threshold to full power requires a user-supplied external 0-5 V TTL modulation signal (5V yields full power).

#### High precision Power Controller

LAERO's LA-LS-PS Series power supply and controller are recommended for use with LA-LS series laser. The power controller is available to provide DC power and support CDRH safety requirements. This is a key device that will make the LA-LS laser modules CDRH compliant. It provides an interlock input, CDRH ON/OFF key switch, delayed start-up, local control, remote control and external modulation. Warranty is not applicable when a custom power supply is used to drive the module.

#### Power Controller



## Specifications:

### 9550nm Free Space Output

#### 9550nm Stabilized Infrared QCL Laser System

|                                         |                                                                                                                  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Model                                   | LA-LS-9550-XY (X is output power,Y is special parameter)                                                         |
| Center Wavelength                       | 9550nm $\pm$ 100nm( $\pm$ 60nm, $\pm$ 30nm Optional)                                                             |
| Output Power                            | 1mW-80mW(Optional)                                                                                               |
| Power Adjustable Range                  | 0%~100%                                                                                                          |
| Transverse Mode(Spatial Mode)           | TEM00 or TEMmn (Optional)                                                                                        |
| Operation Mode                          | CW (Analog or TTL Modulation Version is Optional)                                                                |
| Spectral Line Width                     | A: 1~10nm(Typ.); 10~150nm(Max.)<br>B: 2~10MHZ Narrow Linewidth and Single Frequency Type is Optional             |
| Beam Diameter                           | ~2mm(Typ.); ~5mm(Max. )                                                                                          |
| Beam Shape                              | Round or Ellipse (Optional)                                                                                      |
| Customized Beam Diameter                | 10um~70mm (Depend on the Lens Module)                                                                            |
| Beam Divergence,Full Angle(mrad)        | <1mrad(Typ.)                                                                                                     |
| Pointing Stability@25℃                  | <0.05mrad                                                                                                        |
| Polarization Extinction Ratio           | $\geq$ 60:1 (Type P60) $\geq$ 100:1(Type P100); ( $\geq$ 200:1, $\geq$ 500:1, $\geq$ 1000:1,>1500:1 is Optional) |
| Polarization Orientation                | Vertical or Horizontal $\pm 2^\circ$ (Optional)                                                                  |
| Stabilized Spectrum Technology          | Optional                                                                                                         |
| Cooling Technology                      | TEC with FANS or TEC without FANS(Optional)                                                                      |
| Temperature Control                     | PID Temperature Control Built-in for Excellent Performance                                                       |
| APC Function                            | Optional                                                                                                         |
| Output Power Stability(RMS,Over 8hours) | $\leq$ 2% @25℃ (Standard); $\leq$ 1% (APC Optional)                                                              |
| External Digital Modulation(TTL)        | 0~50KHz(Standard);0~100KHz(HM01), 0~10MHz(HM10),0~20MHz(HM20)<br>(Up to 200MHz High Modulation Type is Optional) |
| External Analog Modulation              | Optional                                                                                                         |
| Fall Time                               | <50ns,<1us, <22us, <50us(Optional)                                                                               |
| Accessories                             | Base Plate & Vertical Positioners &Optical Components for Laser (Optional)                                       |
| Warm up time                            | $\leq$ 5minutes                                                                                                  |
| Expected Operating Lifetime             | >12000hours                                                                                                      |
| Input Voltage (Power Controller)        | 90-250VAC,50/60Hz                                                                                                |
| Storage Temperature                     | 10℃~60℃                                                                                                          |
| Operation Temperature                   | 10℃~40℃                                                                                                          |
| Laser Head Dimensions                   | 100(L)*35(W)*35(H); 140(L)*40(W)*40(H)(Depend on the output power of the laser)                                  |



|                  |                                                                                             |
|------------------|---------------------------------------------------------------------------------------------|
| CDRH Class       | Class 1~Class4(Depend on the output power of Laser)                                         |
| EU Compliance    | CE Mark Certified with Power Controller                                                     |
| ROHS Compliance  | EU and China                                                                                |
| Power Controller | Type A(Standard);Type B(Module);Type CU(Customized);<br>Type C(Self-contained and Compact); |
| Warranty time    | 1 Year                                                                                      |

Notice: 1, Specifications guaranteed only at full power

2, Other special specifications and custom-made design are available. Please Contact us to discuss your needs.

## 9550nm Fiber Coupled Output

### 9550nm Stabilized Infrared QCL Fiber Laser System

|                                            |                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------|
| Model                                      | LA-LS-9550-XFCY (X is output power,Y is special parameter)               |
| Center Wavelength                          | 9550nm $\pm$ 100nm( $\pm$ 60nm, $\pm$ 30nm Optional)                     |
| Output Power@Fiber End                     | 1mW-80mW(Optional)                                                       |
| Power Adjustable Range                     | 0%~100%                                                                  |
| Output Power Stability(RMS,Over 8hours)    | $\leq$ 2% @25 $^{\circ}$ C (Standard); $\leq$ 1% (APC Optional)          |
| Operation Mode                             | CW (Analog or TTL Modulation Version is Optional)                        |
| Fiber Type                                 | Multimode Fiber,Single Mode or PM Fiber (Optional)                       |
| Fiber Diameter                             | 200um (3~10um Depend on the wavelength, 50um,105um,400um,600um Optional) |
| Fiber Connector                            | FC/PC,FC/APC or SMA905                                                   |
| Numerical Aperture                         | 0.22 $\pm$ 0.02(Mulimode Fiber); 0.11 $\pm$ 0.01(Single Mode Fiber)      |
| Fiber Cable Bend Radius                    | 200mm(300mm Optional) (Optional)                                         |
| Fiber Length                               | 1.0m(Standard),Other Fiber Length is Optional                            |
| Optical Lens Module                        | Customized Collimating Lens Module or Focusing Lens Module ( Optional)   |
| Customized Beam Diameter After Lens Module | 50um~70mm(Depend on the Lens Module)                                     |

Notice: 1, Specifications guaranteed only at full power,

2, Other special specifications and custom-made design are available. Please Contact us to discuss your needs.

### Optical Accessories for Laser System

★ **LA-LENS- $\alpha$ FC-C $\beta$  Series** Customized Collimating LENS Module for 9550nm Fiber Laser System;

The  $\alpha$  Stands for the laser wavelength.The  $\beta$  stands for the collimating beam diameter;

Beam Diameter:1.5,2.5mm,5mm,10mm,22mm,40mm.55mm,70mm(Optional).

★ **LA-LENS- $\alpha$ FC-F $\beta$  Series** Customized Focusing LENS Module for 9550nm Fiber Laser System.

The  $\alpha$  Standards for the laser wavelength.The  $\beta$  stands for the focusing beam diameter at the work distance.

Beam Diameter: 10um, 50um, 100um, 200um, 400um, 800um (Optional).

★ **LA-LENS-S $\alpha$ -BE $\beta$  Series** Customized Laser Expander and Adapter; The  $\alpha$  stands for the specific laser wavelength from 200nm to 12um; The  $\beta$  stands for the magnification;  $\beta$ : 1.2X, 1.5X, 2X, 3X, 4X, 5X, 6X, 7X, 8X, 10X, 12X, 15X, 20X or Adjustable from 2X to 10X.

★ **LA-MT-FL Series** Customized LENS Mount for Fluorescence Spectrometer (LEOPTICS, LAEROX, HORIBA/JOBIN YVON, Edinburgh Instruments, Andor, Princeton Instruments, Hitachi, Simadzu, Jasco..)

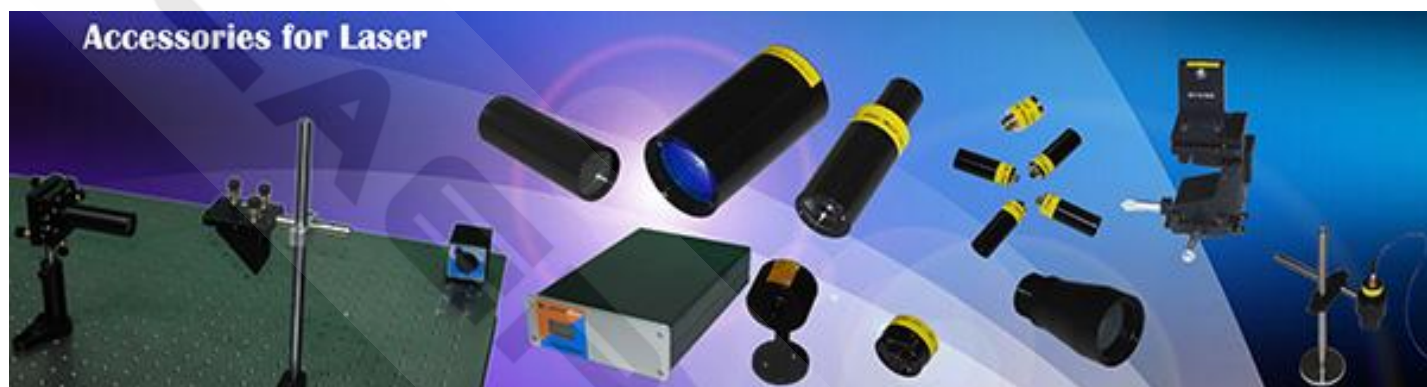
★ **LA-MT-MIC** Customized Adapter and Mounts for Microscope (NIKON, OLUMPUS, LEICA, ZEISS).

★ **LA-MT-B series** Base for Laser and Optical Table.

★ **LA-MT-BEM22A** Series Kinematic Optical Mounts Assemblies for Laser Expander.

★ **LA-MT-MR30RA** Series Kinematic Optical Mirror Mounts Assemblies for Beam Routing.

★ **LA-LS-PS Series** High precision power supply and controller are recommended for use with LA-LS series laser.



**NOTICE:** Due to the continuous improvement of the products, the technical parameters and specifications in this catalog are modified without prior notice. Please contact our Optical Engineer for the newest catalog and quotation.



**TEL: +86-15928606469 (7X24 Hours Service)**



**Visible or Invisible Laser Radiation  
Avoid Eye Skin and Direct Exposure!**

## Focusing on Photonics!

For further information and ordering details please contact LAEROX at:

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