

# DLT Series

## Tunable Ultra-Narrow Band Diode Lasers



### Applications

- ▶ Spin Exchange Optical Pumping
- ▶ Optically Pumped Metastable Rare Gas Laser
- ▶ Atomic Magnetometry
- ▶ Neutron Spin Filters
- ▶ Magnetic Resonance Imaging
- ▶ Diode Pumped Alkali Laser



### Features

- ▶ Ultra-narrow Linewidth of <math><10\text{ GHz}</math> at High Power
- ▶ Operational Wavelength Stability within 2.5 GHz
- ▶ High Pumping Efficiency of Rb, Cs and K with Low Gas Pressure for Highest Spin Exchange Rates
- ▶ Systems Available for D1 and D2 Transitions of Rb, Cs, K and NIR Transitions of Ar, Kr and Xe
- ▶ Tunable Wavelength from 20 to 60  $\mu\text{m}$ , 50-150  $\mu\text{m}$
- ▶ Minimum Thermal Load on Gas Cell
- ▶ Tunable Range of 300  $\mu\text{m}$  for Perfect Wavelength Matching

NEW PRODUCT



**DLT Series** tunable diode lasers have been developed for spin-exchange optical pumping, diode pumped alkali laser and rare gas lasers applications requiring high power within an extremely narrow absorption resonance of alkali metal atoms (Rubidium, Potassium and Cesium) and rare gases (Xenon, Argon and Krypton). A unique proprietary volume Bragg grating design enables ultra-narrow laser linewidth. The laser system delivers 35 to 100 W output power with linewidth and wavelength tuning options.

Polarization options are random, linear and circular. External beam expander/polarizer allows for up to 3 inch beam diameter with circular polarization. Hybrid laser systems provide several wavelengths for simultaneous pumping of several alkali metal atoms (e.g. Rb/Cs or Rb/K). Narrowband laser system for large area Raman spectroscopy for food quality control application is also available at 785 nm.

# DLT Series

## Tunable Ultra-Narrow Band Diode Lasers

### Optical Characteristics

|                                       |   |
|---------------------------------------|---|
| Central Wavelength <sup>1</sup> , nm  | 770, 780, 794.7, 785, 811.3, 811.5, 852, 894.3 and 904.5      |
| Nominal Output Power, W               | 35, 70, 100   |
| Spectral Bandwidth FWHM, GHz          | <10   |
| Tuning Range, pm                      | 300   |
| Spectral Stability <sup>2</sup> , GHz | ± 2.5   |
| Amplitude Stability <sup>2</sup> , %  | ± 0.5   |
| Laser Beam Delivery                   | Optical Fiber, Polarization Maintaining Fiber Rod, Free Space |

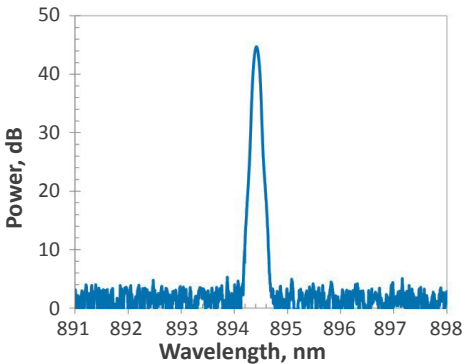
<sup>1</sup> Stable wavelength at different power levels

<sup>2</sup> Over 4 hours of operation

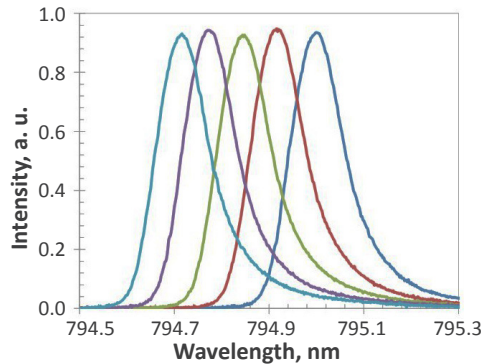
### General Characteristics

|                                      | 35 and 70 Watt           | 100 Watt        |
|--------------------------------------|--------------------------|-----------------|
| Operating Temperature, °C            | 15 - 25 (non-condensing) |                 |
| Storage Temperature, °C              | 10 - 50 (non-condensing) |                 |
| Laser Head Dimensions, W × D × H, mm | 203 × 711 × 101          | 203 × 914 × 101 |

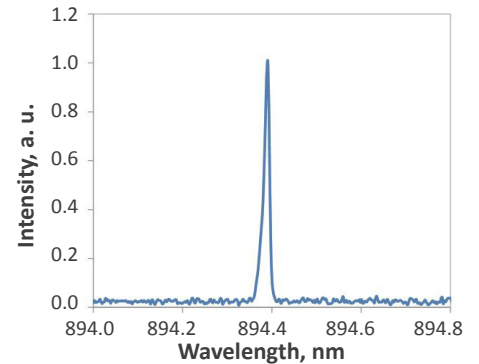
The complete laser system contains power supply, temperature controller, chiller for water cooling, as well as an intuitive software interface. The fiber delivery with single fibers, fiber rods or fiber bundles, combiners, beam expanders, beam attenuators are optional.



Narrowband Laser for Pumping of D1 Line of Cs with 40 dB Noise Suppression



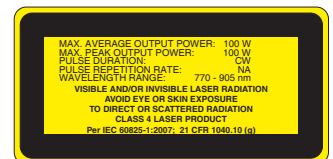
Wavelength Tunability of Narrowband Laser for Pumping D1 Line of Rb



Narrowband Laser for Pumping of D1 line of Cs with 15 pm Linewidth

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