

tunable mid-IR external-cavity

# CW-MHF LASERS



**Room Temperature — No Cryogenic Cooling! —**  
(water chiller required)

**Center Wavelengths:** 5.2, 6.1, 9.7, 10.5  
(units in  $\mu\text{m}$ )  
(call for additional  
wavelengths)

**Total Tuning Range:** up to  $100\text{ cm}^{-1}$   
( $30\text{ cm}^{-1}$  minimum)

**Average Power Min.:**  $\geq 1\text{ mW}$

**Average Power Max.:** Greater than  $10\text{ mW}$   
(higher powers available  
upon request)

**Power Variation:**  $< 1\%$  short term (5 min)  
 $< 4\%$  long term ( $> 1$  day)

**Min. Spot Size:**  $< 2.5\text{ mm}$

**Pointing Stability:**  $< 1\text{ mrad}$

**Beam Waist:** 30–50 cm from laser

**Beam Divergence:**  $< 5\text{ mrad}$

**Polarization:** Horizontally Polarized  
 $> 100:1$

**Read/Set Resolution:**  $0.1\text{ cm}^{-1}$

**Accuracy:**  $\pm 0.5\text{ cm}^{-1}$

**Coarse Scanning Resolution:**  $< 0.001\text{ cm}^{-1}$

**Repeatability:**  $< 0.02\text{ cm}^{-1}$ , without PZT

**Linewidth:**  $< 0.001\text{ cm}^{-1}$

**Tuning Speed:** full range  $< 3\text{ sec}$

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## Wavelength Modulation with PZT

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**Range:** up to  $1\text{ cm}^{-1}$

**Frequency:** up to  $100\text{ Hz}$

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**Package Size:** 6.5" L x 4.45" W x 3.81" H

**Control:** RS-232 and GPIB

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Daylight Solutions is pleased to provide the world's first broadly tunable, room-temperature, mid-IR lasers based on quantum-cascade-laser technology. Center wavelengths span the mid-IR spectrum from  $4\text{ }\mu\text{m}$  to  $12\text{ }\mu\text{m}$  and provide continuous tuning of up to  $100\text{ cm}^{-1}$  ( $\pm 5\%$  for a  $10\text{-}\mu\text{m}$  center wavelength). Offering excellent linewidth characteristics, these CW lasers tune mode-hop-free across that range. The coarse tuning resolution is further enhanced by PZT actuation to allow fine-resolution wavelength tuning and modulation. All lasers offer superb wavelength accuracy and stability throughout their tuning range.

Designed by the world's leading experts in tunable lasers, these sources are small, robust, and utilize specially designed miniature lenses to optimize system performance. Each system integrates TEC technology for behind-the-scenes temperature control, so only a water chiller is needed—no cryogenic cooling!

To round out the turn-key system, each tunable laser is shipped with an intuitive, easy to use multifunction controller. The controller is accessible to a PC through RS-232 and GPIB interfaces, future firmware upgrades will enable USB interface. This allows external control of the tunable laser for a variety of applications, including scientific research and its development. The controller is also manually accessible through its easy to use front panel.

Daylight Solutions' overall system leverages the last 15 years in tunable-laser development and manufacturing, and incorporates the company's latest patent-pending tuning and packaging technology for the mid-IR.

The availability of robust, easy-to-use tunable lasers in the  $4\text{--}12\text{-}\mu\text{m}$  region of the spectrum is now a reality. These lasers enable application research in the field of molecular detection and imaging. Common applications include industrial process control, the detection of biomarkers in the breath, cellular imaging, and the detection of chemical and biological agents.

Daylight Solutions' mid-IR laser platform technology opens up the mid-IR to all researchers—today.

Call today for pricing and availability of specific wavelengths

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