

Lasers

## Laser Rack Systems for Quantum Research Applications

Laser optical systems customized to your specific atomic species and application requirements:

- Full optical table functionality in a 19" rack including ECDLs, DBRs, lock modules, AOMs, and EOMs.
- Basic example: cooling/detection laser, repump laser, and ionization laser with fiber output
  - User provides modulation/stabilization – laser feedback ports and electronics provided
- Advanced example: multi-wavelength system with separate fiber outputs by function, including built-in AOMs and EOMs and laser frequency stabilization for an atomic clock or a quantum computer

Control systems for AMO applications:

- Power, analog, and digital control signals in; amplified, agile RF out
- Timing system operable as master or slave
- Window GUI device programming; Python interface over Ethernet



### Features

- ⊗ **Built to order**
- ⊗ **Customized laser optical systems**
- ⊗ **Software controlled**

## Specifications

### RF/timing controller frame 'standard' parameters

Dimensions	2U rack-mount frame
Agile DDS frequency synthesis	Up to 8 channels
Fixed frequency synthesis	Customized, hyperfine transitions
Digital I/O (LVDS or LVTTTL)	≈32 lines (differential) ≈64 lines (single-ended)
Arbitrary device SPI communication/control	Min. 8 ports, MUX
Analog Input	20 kHz, 8 channel differential inputs
Analog output ( $\pm 10V$ )	4 channels
User interface / control GUI	Windows 7, 8, 10

### Laser optical frame 'standard' parameters

Dimensions	3U rack-mount frame
Laser output wavelengths	See ECDL datasheet for available wavelengths
Laser control and functionality	See ECDL and SILC datasheets
Inputs	Laser modulation (PZT/current/RF)
Outputs	Light in PM fiber Electronic monitor signals/status LEDs
Monitors	PZT monitor Error/ramp/current/modulation w/ servo Option Laser output LED
Typical atomic species	Rb, Cs, Ca, Sr, Yb <sup>+</sup> , Ba <sup>+</sup> and others

For more information, contact us at [sales@aosense.com](mailto:sales@aosense.com).