Sintec Optronics

ULR Series CW Air- and Water-Cooled RF-excited CO2 Laser

- Choices - Comprehensive selection of air- and water-cooled CO2 lasers with options to suit every need
  - OEM BASIC- Available in air-cooled and water-cooled configurations
  - OEM INTEGRATED - Available in air-cooled configuration with aluminum fan shroud - ideal for "bolt on" integration; no plumbing or chillers necessary
  - Class IV - Available in air-cooled or water-cooled configurations with key switch and shutter safety interlocks
- Easy Integration - New low profile mounting plate with quick release electrical connector can be mounted in any orientation
- Construction - All lasers are RF-excited with an internal tickle and built-in interlock and can be operated from CW to their maximum modulation frequency
- Innovations - New TTL temperature warning output guards against overheating; new fault indicator LED with pinout for remote diagnostics
- Options - A variety of options are available including visible pointing laser coaxial with the main beam, integrated turning mirror and reinforced thermal resistant front mounting plate
- Reliability - Superior engineering and innovative technology result in stable power output, reliable service and the lowest recharge cost in the industry
- Customer Service - The most responsive, customer-oriented technical support in the industry
- Warranty – 12 months on materials, workmanship and rated output power
- Patents – we have devoted many years of research and development into laser technology which has resulted in numerous innovations and a multitude of U.S. patents with additional patents pending

Model	ULR10-O-IA-x ULR10-O-BA-x	ULR25-O-IA-x	ULR30-O-IA-x	ULR40-O-IA-x
Rated power**	10W	25W	30W	40W
Wavelength	10.6um	10.6um	10.6um	10.6um
Power stability	±10%	±5%	±5%	±5%
M^2	1.4±0.2	1.2±0.2	1.2±0.2	1.2±0.2
Beam size(near field)	4±1mm	4±1mm	4±1mm	4±1mm
Beam divergence(full angle)	5±1mrad	5±1mrad	5±1mrad	5±1mrad
Polarization	Linear	Linear	Linear	Linear
Pointing stability	200μrad	200μrad	200μrad	200μrad
Optical pulse rise or fall time	120±40μS	120±40μS	120±40μS	120±40μS
Optical Delay Time	38±10us	38±10us	38±10us	38±10us
Optical modulation	100% up to 5kHz	100% up to 5kHz	100% up to 5kHz	100% up to 5kHz
Modulation signal type	TTL compatible	TTL compatible	TTL compatible	TTL compatible
Cooling	Air	Air built in)	Air (built in)	Air (built in)
Weight (Basic AC)	3.3kg			
Weight (Basic WC)				
Weight (Integrated AC)	3.9kg	9.0kg	9.0kg	10.4kg
Weight (integrated WC)				
Dimension (LxWxH, Basic AC)	343x71x98mm			
Dimension (LxWxH, Integrated AC)	414x89x114mm	540x133x140mm	540x133x140mm	629x133x140mm
Ambient temperature***	10-35℃	10-35℃	10-35℃	10-35℃
Relative humidity	<90%	<90%	<90%	<90%
DC input voltage	48VDC	48VDC	48VDC	48VDC
RMS current (CW)	5A	10A	10A	12A
Recommended DC power supply	DCPS-200-48	DCPS-600-48	DCPS-600-48	DCPS-600-48

* Polorisation is linear (Perpendicular to the laser base plate).

Model	ULR50-O-IA-x ULR50-O-IW-x	ULR60-O-IA-x ULR60-O-IW-x	ULR-75-O-IA-x ULR-O-IW-x	ULCR100-O-IA-x ULRC100-O-IW-x
Rated power**	50W	60W	75W	100W
Wavelength	10.6um	10.6um	10.6um	10.6um
Power stability	±5%	±5%	±5%	±5%
M^2	1.2±0.2	1.2±0.2	1.2±0.2	1.2±0.2
Beam size(near field)	4±1mm	4±1mm	4±1mm	4±1mm
Beam divergence(full angle)	5±1mrad	5±1mrad	5±1mrad	5±1mrad
Polarization	Linear	Linear	Lear	Random
Pointing stability	200μrad	200μrad	200μrad	200μrad
Optical pulse rise or fall time	120±40μS	120±40μS	120±40μS	120±40μS
Optical Delay Time	38±10us	38±10us	38±10us	38±10us
Optical modulation	100% up to 5kHz	100% up to 5kHz	100% up to 5kHz	100% up to 5kHz
Modulation signal type	TTL compatible	TTL compatible	TTL compatible	TTL compatible
Cooling	Air/water (built in)	Air/water (built in)	Air/water (built in)	Air/water (built in)
Weight (Integrated AC)	11.8kg	11.8kg	14kg	36.7kg
Weight (integrated WC)	11.8kg	11.8kg	14kgkg	36.7kg
Dimension (LxWxH, Integrated AC)	705x133x140mm	705x133x140mm	864x133x138mm	865x250x192mm
Dimension (LxWxH, Integrated WC)	705x133x140mm	705x133x140mm	864x133x138mm	865x250x192mm
Ambient temperature***	10-35℃	10-35℃	10-35℃	10-35℃
Relative humidity	<90%	<90%	<90%	<90%
DC input voltage	48VDC	48VDC	48VDC	48VDC
RMS current (CW)	18A	18A	20A	36A
Recommended DC power supply	DCPS-800-48	DCPS-800-48	DCPS-1000-48	DCPS-2000-48
Pack Dimension				1041x508x508mm
Pack weight (gross weight)				66kg

Model	ULCR120-O-IA-x ULRC120-O-IW-x	CO2-ULCR150-O-IA CO2-ULCR150-IW-x	
Rated power**	120W	150W	
Wavelength	10.6um	10.6um	
Power stability	±5%	±5%	
M^2	1.2±0.2	1.2±0.2	
Beam size(near field)	4±1mm	4±1mm	
Beam divergence(full angle)	5±1mrad	5±1mrad	
Polarization	Random	Random	
Pointing stability	200μrad	200μrad	
Optical pulse rise or fall time	120±40μS	120±40μS	
Optical Delay Time	38±10us	38±10us	
Optical modulation	100% up to 5kHz	100% up to 5kHz	
Modulation signal type	TTL compatible	TTL compatible	
Cooling	Air/water (built in)	Air/water (built in)	
Weight (Integrated AC)	36.7kg	43kg	
Weight (integrated WC)	36.7kg	43kg	
Dimension (LxWxH, integrated AC)	865x250x192mm	1016x250x192mm	
Dimension (LxWxH, integrated WC)	865x250x192mm	1016x250x192mm	
Ambient temperature***	10-35℃	10-35℃	
Relative humidity	<90%	<90%	
DC input voltage	48VDC	48VDC	
RMS current (CW)	36A	40A	
Recommended DC power supply	DCPS-2000-48	DCPS-2000-48	

* The above specifications are subject to change without notice.

** Output power is guaranteed to exceed this level for a period of 15 months from the date of purchase, regardless of use.

*** At temperatures below 50ºF[10℃] operation may be intermittent and there is a potential for damage to the power supply optics.

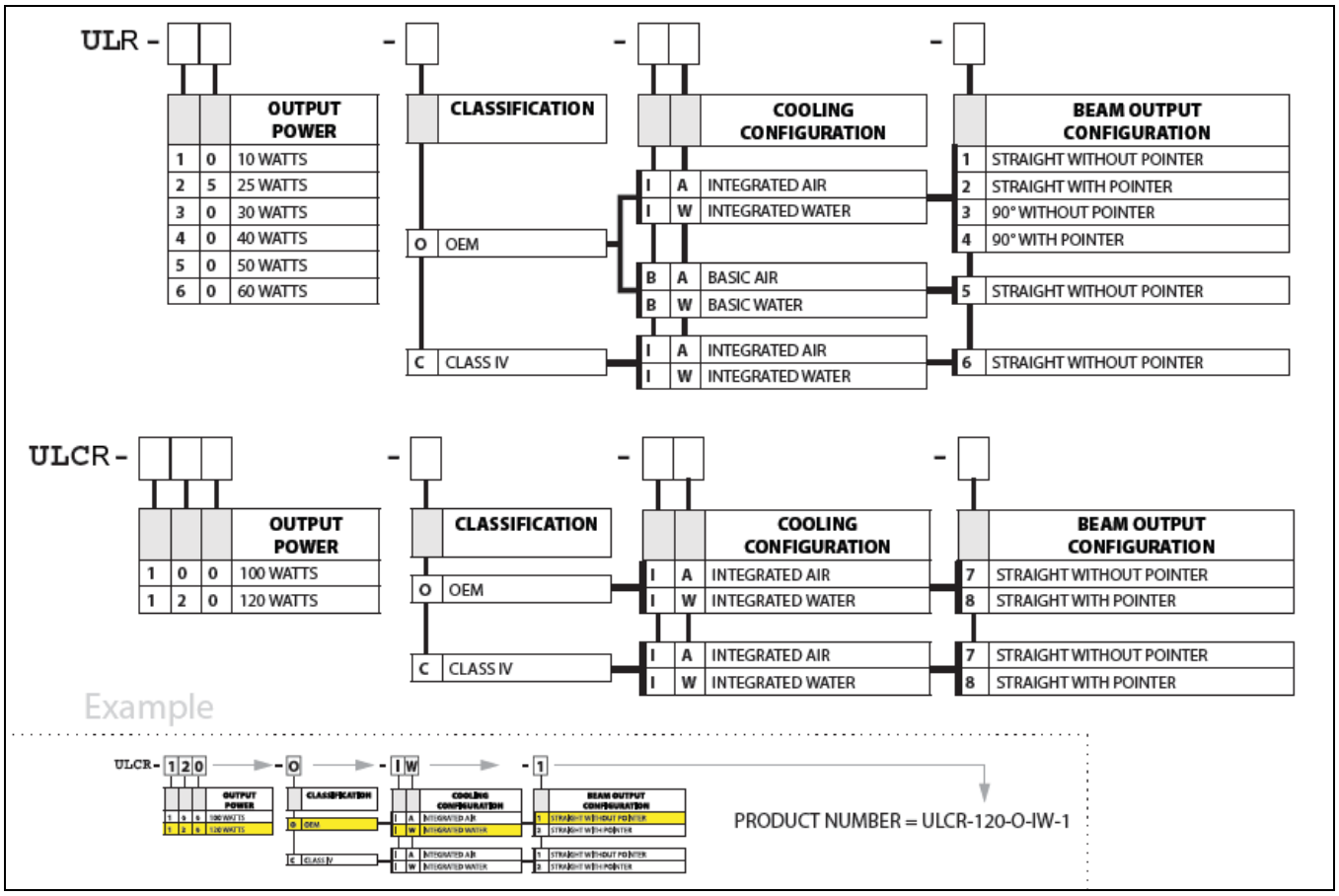
There are 3 types of configurations of each laser: OEM BASIC, OEM INTEGRATED and Class IV.

OEM BASIC: This configuration is a basic laser tube and RF power supply. There is no cover, no fans. This is for the OEM to integrate into their equipment and provide the proper cooling and protection. Air cooled or water cooled must be specified at time of ordering.

OEM INTEGRATED: This is the configuration that we have been offering for a number of years. The laser tube and RF power supply are covered with a shroud and have the fans included.

Class IV: This configuration has a cover, manual shutter, keyed lockout switch and fans or water connections, depending on type. Air cooled or water cooled must be specified at the time of ordering.

For used Universal lasers, we provide fully-refurbishing services at very low prices. The refurbishing includes replacing optics, RF power supply and refilling gas. All the jobs will be finished within 7 days.

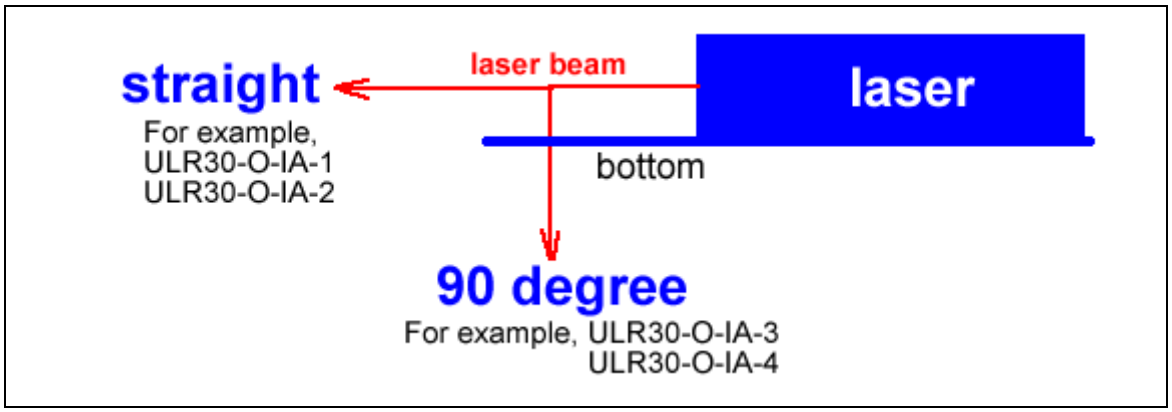


Main Difference between UL Series and ULR Series Lasers

The bottom and connector are swallow-tailed and 12PIN respectively but the bottom and connector are flat and 15PIN respectively. There is no difference on performance.

Beam Output Configuration:

With the 90 degree output the beam goes through the base plate. We cut a hole in the bottom and mount it to the face of the laser, turn it 90 degree down through the hole. We can not offer it in any other direction but through the bottom of the base plate. To offer this option on OEM lasers the beam output number is (#3) for 90 degree without pointer, (#4) for the 90 degree with pointer. This option is not offered on 10W Integrated air cooled due to the small base plate and no room to mount the out put.



ULR Series High Power CO2 Laser

ULR series high power CO2 laser is the OEM solution to industrial applications. The laser construction employs a folded, slab resonator design making it compact and adaptable to a multitude of applications with excellent beam quality and power stability.

Benefits:

- Long operating life
- Stable and reliable under the most demanding conditions
- Maintenance-free
- Excellent beam quality in both neat and far fields
- Easy integration into all types of OEM system configurations
- Compact resonator with integrated RF for size and convenience

Features:

- RoHS compliant
- Advanced Technology – RF-excited laser with an internal tickle, and RS-485 communications to query laser status during operation. Laser also can be pulse-width modulated up to CW
- Safety – TTL temperature warning output guards against overheating; fault indicator LED and built in interlock circuit
- Simplified integration – Low profile mounting plate with quick release electrical connectors can be mounted in any orientation
- Options – A variety of options available, including visible red dot pointer coaxial with the main beam, reinforced front mounting plate and water cooling.
- Customer Service – The most responsive, customer-oriented technical support in industry.
- Superior Construction – Metal construction, precision machining, and the highest quality components is fundamental to the design of the laser.

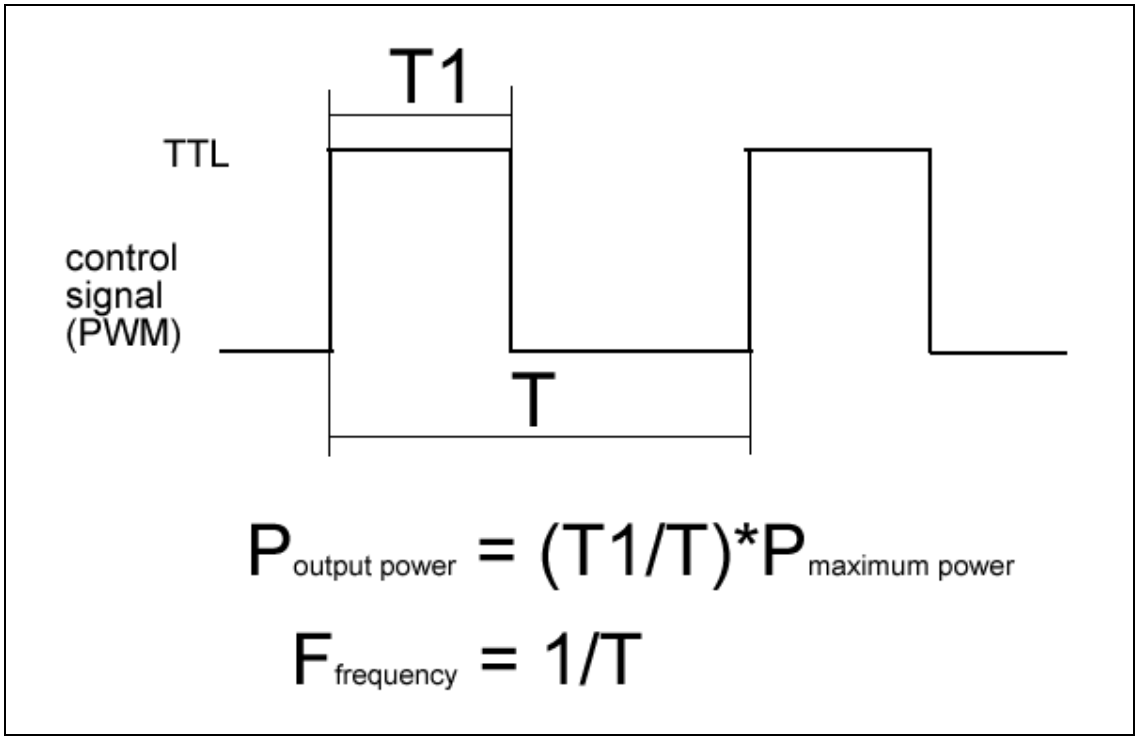
Specifications:

	ULR200-O-IA-x ULR200-O-IW-x	ULCR400-O-IA-x ULCR400-O-IW-x
Rated power	200W	400W
Wavelength	10.5-10.7um	10.5-10.7um
Power stability	±5% after 15minutes of CW operation	±5% after 15minutes of CW operation
M^2	1.4±0.2	1.4±0.2
Beam size (Near filed)	8±1mm	8±1mm
Beam divergence (Full angle)	3±1mrad	3±1mrad
Polarization	Linear	Cross-polarized
Pointing stability	200uR	200uR
Rise time	120±40us	140±40us
Duty cycle	38±10us	0-100%
Modulation signal type	TTL compatible	
Cooling	Integrated air or integrate water	Air (built in) or water (built in)
Weight	98lbs (44.5kg)	200lbs (90.7kg)
Ambient temperature	50-95°F (10-35°C)	50-95°F (10-35°C)
Relative humidity	<90% (non-condensing)	<90% (non-condensing)
DC input voltage	48VDC	48VDC
RMS current (CW, including fan)	70A max	140A max
Inrush current	100A	200A

CO2 Laser Controller

1. Principle of adjusting laser power

A TTL compatible signal must be provided to the laser of the power and signal connector to drive the laser. Output power can be controlled from 0 to 100% (CW Mode) by pulse width modulation of the input signal. The output laser power is proportional to the duty of the PWM signal.



In our controllers, the frequency is fixed at 5kHz (0.2ms). Adjusting the output laser power means adjusting pulse width T1.

2. STCB series integrated laser controller

CO2 laser controller provides DC power supply of CO2 laser, control I/Os and laser power adjustment. It is integarted with a 19" control panel. Its main specifications are

- Model: STCB28-xxxx (xxxx: CO2 laser model such as ULR10, ULR50 etc)
- Provide DC power supply according to the lasers (ULR10, ULR30, …) (optional)
- Laser power adjustable from 0 to 99% of the maximum laser power
- Two control methods available: manul and auto
- Under the manual method, a potentiameter on the panel is used to adjust the laser power and a button is used to switch on/off laser
- Under the auto method, external signal TTL is used to adjust laser power, laser pulse repetition rate and laser beam on/off
- Dimension (LxWxH): 500x302x100mm

3. STCBV series compact laser controller

This compact laser power controller is used to digitally modulate the RF amplifiers that excite the plasma within the resonating chamber of the laser. This is accomplished by using a clock frequency square wave of 5kHz and varying the duty cycle of that square wave from 0 to 99%.

The main specifications are:

- Power input: +5VDC
- Signal output: 0-99% duty cycle PWM 5kHz
- Gate input (default logic low): TTL logic (High +5VDC, Low 0VDC)
- Clock frequency: 5kHz +/-5% accuracy
- Enable input (default logic low): TTL logic (High +5VDC, Low 0VDC)
- Two control methods available: manul and auto
- Dimension (LxWxH): 6.26x4.125x1.5inch (159x105x38mm)
- Weight: 12.3 ounces (0.349kg)