

STV / STU Microchip Series High Performances DUV Triggered Lasers



KEY FEATURES

- Ultra-short pulses down to 350ps
- 355nm and 266nm
- Single-shot to 4kHz
- Multi-kW peak power
- Excellent beam quality
- Efficient, air-cooled
- Sealed package, extremely long life

For generating high peak power pulses of a few hundred picoseconds, microchip lasers are economical, compact, and reliable. UV wavelengths are generated from the harmonic conversion of an IR passively Q-switched Nd:YAG microchip engine, within a sealed package ensuring incredibly long lifetime even in harsh industrial environment.

The triggered series offer the highest peak power and shortest pulses of the entire Microchip family, and span the full wavelength spectrum down to 266nm. With these devices, the user is able to trigger pulse emission on demand from single-shot to 4kHz.

APPLICATIONS

- Laser-Induced Fluorescence (LIF)
- Time-Resolved Fluorescence
- Bioaerosol & Biohazard Detection
- Chemical & Environmental Sensing
- Laser Microdissection
- MALDI-TOF Mass Spectrometry
- Semiconductor Inspection
- Precision UV Micro-ablation
- Micro-LIBS
- UV Spectroscopy & Photochemical Excitation

TECHNICAL SPECIFICATIONS

	STV-01E-1x0	STV-02E-1x0	STU-01E-1x0	STU-03E-1x0
Wavelength	355nm	355nm	266nm	266nm
Maximum Repetition Rate $RR_{max}^{(1)}$	4 kHz	4 kHz	4 kHz	4 kHz
Constant Pulse width (FWHM) ⁽²⁾	<0.4ns	<0.6ns	<0.4ns	<0.8ns
Output Energy	>1 μ J	>2 μ J	>1 μ J	>2.8 μ J
Peak Power	>2.5kW	>4kW	>2kW	>3.5kW
PCD⁽³⁾	<100 μ s	<100 μ s	<100 μ s	<150 μ s
PCD jitter	< $\pm$ 1.5 μ s	< $\pm$ 1.5 μ s	< $\pm$ 1.5 μ s	< $\pm$ 2.0 μ s
Power Stability⁽⁴⁾				
Short term (10min)	< $\pm$ 2%	< $\pm$ 2%	< $\pm$ 2%	< $\pm$ 2%
Long term (6 hrs)	< $\pm$ 5%	< $\pm$ 5%	< $\pm$ 5%	< $\pm$ 5%
Spectral properties	Single Longitudinal Mode Linewidth: 0.5pm	Single Longitudinal Mode Linewidth: 0.3pm	Single Longitudinal Mode Linewidth: 0.3pm	Single Longitudinal Mode
Beam profile	Gaussian TEM00	Gaussian TEM00	See note (8)	See note (8)
Full angle divergence				
Horizontal@1/e²	11 $\pm$ 2mrad	11 $\pm$ 2mrad	11.5 $\pm$ 2mrad	11.5 $\pm$ 2mrad
Vertical@1/e²	7 $\pm$ 2mrad	7 $\pm$ 2mrad	0.65 $\pm$ 0.25mrad	0.65 $\pm$ 0.25mrad
M²⁽⁵⁾	<1.3	<1.3	<1.4	<1.4
Beam ellipticity⁽⁶⁾	<1.3	<1.3	N/A	N/A
Main Lobe Gaussian Fit ⁽⁷⁾	N/A	N/A	>85%	>85%
Polarization	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB
Laser head dimensions	186x60x36mm		210x60x36mm	
Laser head weight	500g	500g	500g	500g
Options (table p3)	0,1,2,3,4,C	0,1,2,3,4,C	0,1,2,3,4,C	0,1,2,3,4,C
Options included	S	S	S	S

NOTES >> see page 5.

COMPLEMENTARY INFORMATION & OPTIONS

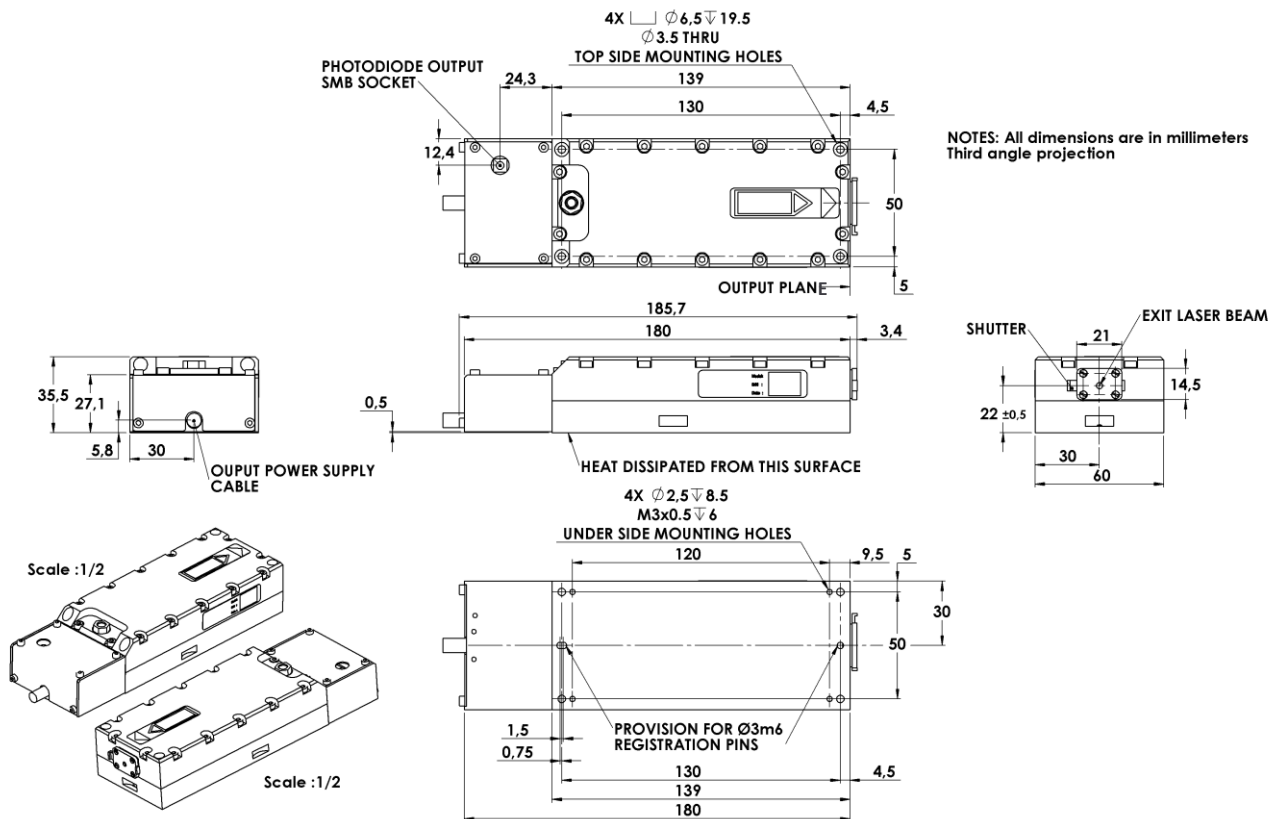
Environment Parameters	
Operating Temperature Range	15-35°C
Maximum Laser Head Baseplate Temperature	40°C
Maximum Power Consumption	<40W
Laser Head Thermal Dissipation	<15W
Storage Temperature	0-50°C
Shock of 11ms according to IEC 68-2-27, non operating	25g
Vibration 5Hz to 500Hz sinusoidal according to IEC 68-2-6	2g

Certification	
Laser classification according to IEC 60825-1:2014	Class 3B for STV-series Class 4 for STU-series
CDRH	Yes, if used with a MLC-03A-DP1 controller unit
RoHS	Yes

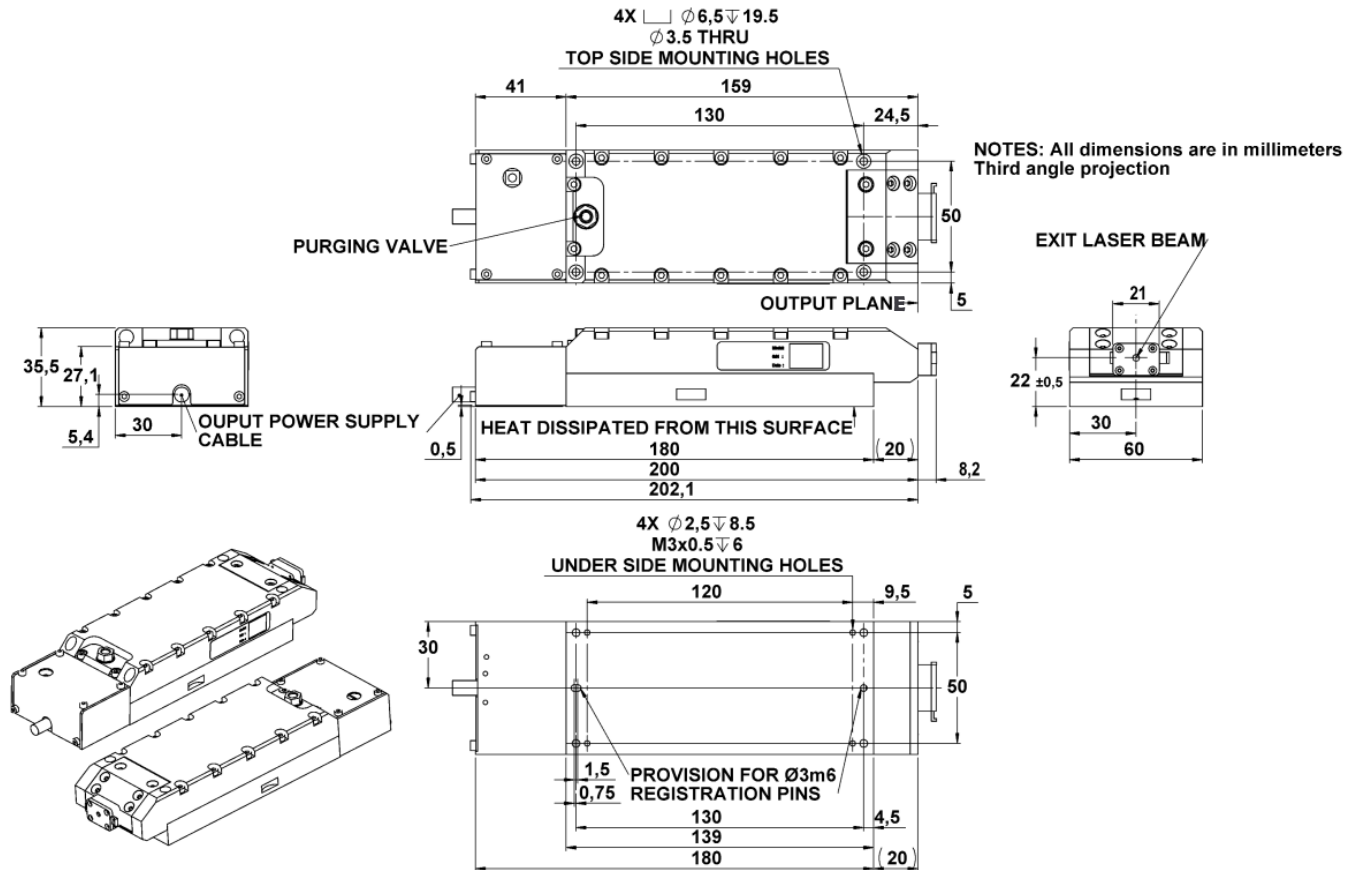
Options	
Fixed Repetition Rate = RR_{max}	-10x version
Fixed Repetition Rate $\neq RR_{max}$	-11x version ; RR to be chosen over 10Hz- RR_{max}
External Variable Repetition Rate	-12x version ; single shot to RR_{max} , 1 optimized RR value
External Variable Multi-Repetition Rate	-13x version ; single shot to RR_{max} , 3 optimized RR values
External Continuous Variable Repetition Rate	-14x version ; optimized over [10Hz- RR_{max}] if $RR_{max} \leq 2\text{kHz}$; or [10Hz - 2kHz] if $RR_{max} > 2\text{kHz}$
Multimode fiber (M)	Contact factory for details
Single mode fiber (F)	Contact factory for details
Collimation (C)	Contact factory for details
Synchronization output (S)	TTL compatible output signal for synchronization/monitoring

Available Controller Types			
Model	Type	Input Power	CDRH
MLC-03A-DP1	Desktop	100-240 V AC	Yes
MLC-03A-MP1	Module	12 V DC	No
MLC-03A-BP1	Board	12 V DC	No

CDRH LASER HEAD MECHANICAL DRAWINGS: STV-01E-1X0, STV-02E-1X0



CDRH LASER HEAD MECHANICAL DRAWING: STU-01E-1X0, STU-03E-1X0



NOTES

- (1) See options p3.
- (2) Measured with 1Ghz photodiode and 1GHz/10GS/s oscilloscope.
- (3) PCD = Pulse Creation Delay, the delay between the trigger command and the effective pulse firing.
- (4) For temperature variation $\leq \pm 3^\circ\text{C}$ and $< 3^\circ\text{C}/\text{hour}$, stability is measured with calorimeter – detector band [DC, 2Hz].
- (5) Mean average value $M = \sqrt{(XY)}$, X and Y being respectively the major and minor axis of the ellipse.
- (6) Beam ellipticity is calculated as the ratio of the main axis far field divergence.
- (7) Measurement performed on acquisition of the beam profile with a WincamTD-U series or Blade cam2-HR series Camera.
- (8) Beam exhibits different profile in horizontal (Gaussian) and vertical ($(\sin x / x)^2$ in far-field) plans.