

STx High Performances Triggered Microchip Series

Key features

- ▶ Ultra-short pulses down to 350ps
- ▶ 1064nm, 532nm, 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. Visible and UV wavelength 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

- ▶ Instrumentation
 - Ranging
 - Differential absorption LIDAR
 - Super-continuum generation
 - Distributed temperature sensing
 - Raman spectroscopy
- ▶ Biophotonics
 - Micro-dissection of cells
 - Brain nanosurgery
 - Protein cross-linking

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Technical specifications:

	STP-07E-1x0	STG-03E-1x0	STV-01E-1x0	STV-02E-1x0 ⁽⁹⁾	STU-01E-1x0
Wavelength	1064nm	532nm	355nm	355nm	266nm
Maximum Repetition Rate RR _{max} ⁽¹⁾	4kHz	4kHz	4kHz	4kHz	4kHz
Constant Pulse width (FWHM) ⁽²⁾	<0.7ns	<0.5ns	<0.4ns	<0.6ns	<0.4ns
Output energy	>7μJ	>3μJ	>1μJ	>2μJ	>1μJ
Peak Power	>10kW	>6kW	>2.5kW	>4kW	>2kW
PCD ⁽³⁾	<70μs	<70μs	<100μs	<100μs	<100μs
PCD jitter	<±1.5μs	<±1.5μs	<±1.5μs	<±1.5μs	<±1.5μs
Short term (1min) power stability ⁽⁴⁾	<±1%	<±1%	<±2%	<±2%	<±2%
Long term (6 hrs) power stability ⁽⁴⁾	<±3%	<±3%	<±5%	<±5%	<±5%
Beam profile	Gaussian TEM00	Gaussian TEM00	Gaussian TEM00	Gaussian TEM00	See note (8)
Full angle divergence Horizontal@1/e ² Vertical@1/e ²	13±5mrad 13±5mrad	10±2mrad 9±2mrad	11±2mrad 7±2mrad	11±2mrad 7±2mrad	11.5±2mrad 0.65±0.25mrad
M² ⁽⁵⁾	<1.3	<1.3	<1.3	<1.3	<1.4
Beam ellipticity ⁽⁶⁾	<1.3	<1.3	N/A	N/A	N/A
Main Lobe Gaussian Fit ⁽⁷⁾	N/A	N/A	N/A	N/A	>85%
Polarization	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB
Package dimensions	144x42x36mm	144x42x36mm	186x60x36mm	186x60x36mm	210x60x36mm
Package weight	300g	300g	500g	500g	500g
Options (table p3)	0,1,2,3,4,F,M	0,1,2,3,4	0,1,2,3,4,C	0,1,2,3,4,C	0,1,2,3,4,C
Options included	S	S	S	S	S

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 < ± 3°C and < 3°C/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 in the far field with a Wincam ^{TD} -U series camera
(8)	Beam exhibits different profile in horizontal (Gaussian) and vertical ((sin x /x) ² in far-field) plans
(9)	Contact factory for availability

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Complementary information & options:

Environment Parameters

Operating Temperature Range	0-50°C for STP and STG 15-35°C for STV and STU
Maximum Laser Head Baseplate Temperature	50°C for STP and STG 40°C for STV and STU
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 60825-1:2007	3B Except STU-01E : 4
CDRH	Yes, if used with a -DP1 controller
ROHs	Yes

Options

Fixed Repetition Rate = RR_{max}	-10x version
Fixed Repetition Rate ≠ 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 [single shot; 2kHz] range
Multimode fibering (M)	Contact factory for availability
Single mode fibering (F)	Contact factory for availability
Collimation (C)	With collimated beam
Synchronization output (S)	TTL compatible output signal for synchronization/monitoring

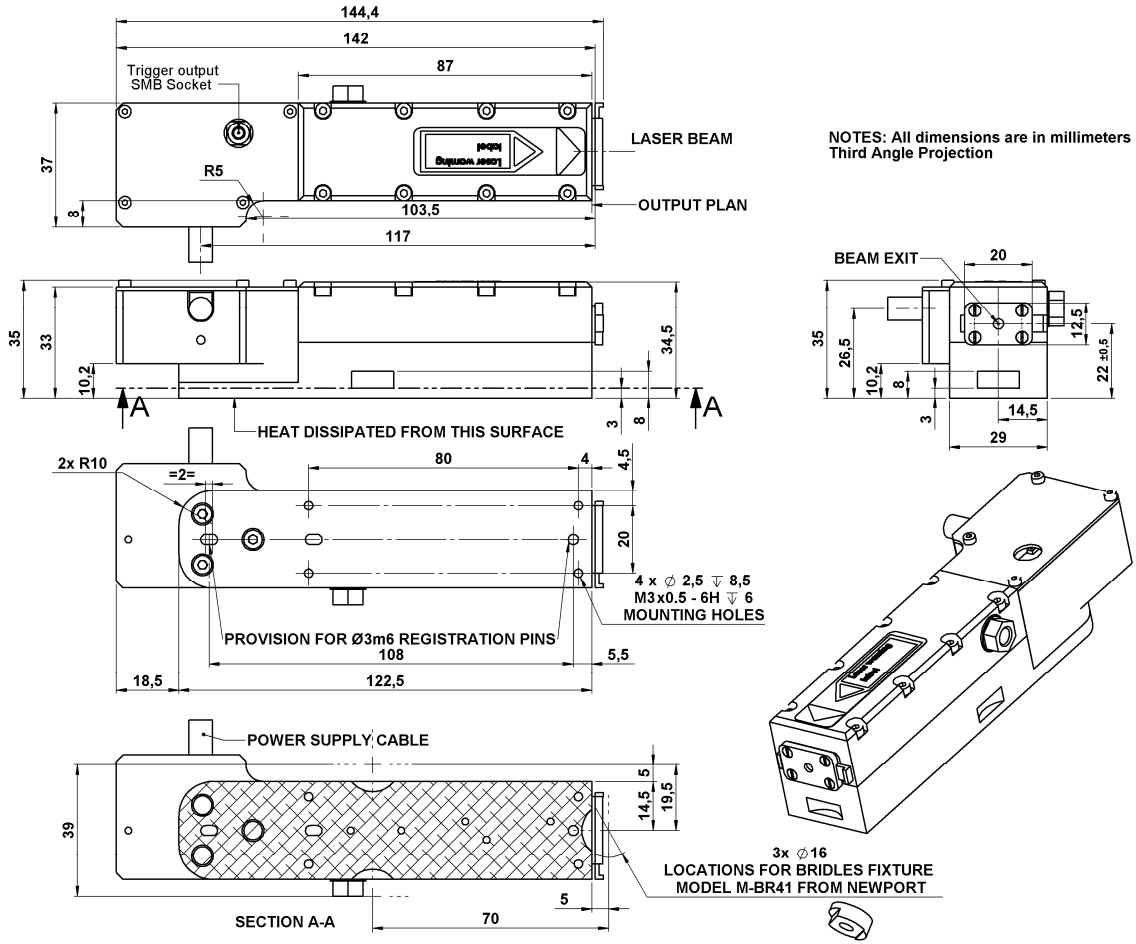
Available Controller Types

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

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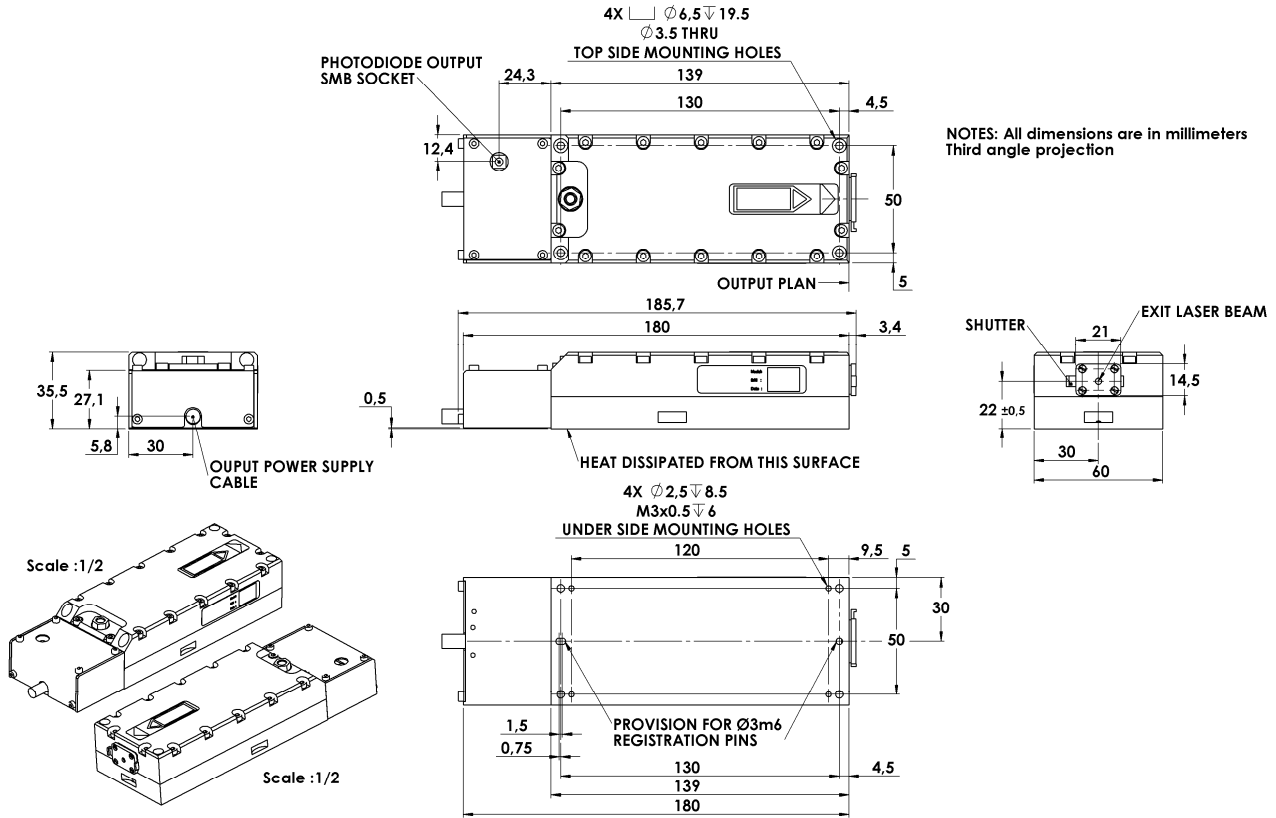
CDRH Laser Head Mechanical Drawings : STP-07E-1x0, STG-03E-1x0



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CDRH Laser Head Mechanical Drawings : STV-01E-1x0, STV-02E-1x0



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CDRH Laser Head Mechanical Drawings : STU-01E-1x0

