STP / STG Microchip Series High Performances IR & Green Triggered Lasers

KEY FEATURES

- **Ultra-short pulses down to 300ps**
- **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, 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. With these devices, the user is able to trigger pulse emission on demand from single-shot to 4 kHz.

APPLICATIONS

- Laser Ranging & Time-of-Flight
- Compact LIDAR & 3D Sensing
- Time-Resolved Raman Spectroscopy
- Laser-Induced & Time-Resolved Fluorescence
- Micro-LIBS
- Laser Desorption / Ionization
- Supercontinuum Generation
- Nonlinear Optical Measurements
- Laser Ultrasonics
- Optical Metrology

TECHNICAL SPECIFICATIONS

	STP-40K-1x0	STP-07E-1x0	STP-10E-1x0*	STG-03E-1x0	STG-05E-1x0*
Wavelength	1064nm	1064nm	1064nm	532nm	532nm
Maximum Repetition Rate RR_{max} (1)	500Hz	4 kHz	4.5 kHz	4 kHz	1 kHz
Constant Pulse width (FWHM) (2)	[0.3;0.4]ns	<0.7ns	>8ns	<0.5ns	<0.7ns
Output Energy	>12 µJ	>7 µJ	≥14 µJ	>3 µJ	>5 µJ
Peak Power	>30kW	>10kW	>1kW	>6kW	>7.1kW
PCD (3)	<160µs	<70µs	<100µs	<70µs	
PCD jitter	<±1.5µs	<±1.5µs	<±1.5µs	<±1.5µs	
Power Stability (4)					
Short term (10min)	<±1%	<±1%	<±1%	<±1%	<±1%
Long term (6 hrs)	<±3%	<±3%	<±3%	<±3%	<±3%
Spectral properties	Single Longitudinal Mode	Single Longitudinal Mode	Single Longitudinal Mode	Single Longitudinal Mode	Single Longitudinal Mode
Beam profile	Gaussian TEM00	Gaussian TEM00	Gaussian TEM00	Gaussian TEM00	Gaussian TEM00
Full angle divergence					
Horizontal@1/e²	15±2mrad	13±5mrad	4.3±0.5mrad	10±2mrad	10±2mrad
Vertical@1/e²	15±2mrad	13±5mrad	4.3±0.5mrad	9±2mrad	9±2mrad
M^2 (5)	<1.3	<1.3	<1.2	<1.3	<1.3
Beam ellipticity (6)	<1.1	<1.3	<1.2	<1.3	<1.3
Main Lobe Gaussian Fit (7)	N/A	N/A	N/A	N/A	N/A
Polarization	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB	Linear PER>20dB
Package dimensions	144x42x36mm	144x42x36mm	144x42x36mm	144x42x36mm	144x42x36mm
Package weight	300g	300g	300g	300g	300g
Options (table p3)	0,1,2,3,4,F,M	0,1,2,3,4,F,M	0,1,2,F,M	0,1,2,3,4	0,1,2,3,4
Options included	S	S	S	S	S

*** This model is an OEM and has not followed the Performance Development Planning (PDP) process completely yet. For the moment, the specifications are preliminary, which means that the final laser parameters might be different than the current specifications.**

NOTES >> see page 4.

COMPLEMENTARY INFORMATION & OPTIONS

Environment Parameters	
Operating Temperature Range	0-50°C; 15-35°C for STP-10E-1x0
Maximum Laser Head Baseplate Temperature	50°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

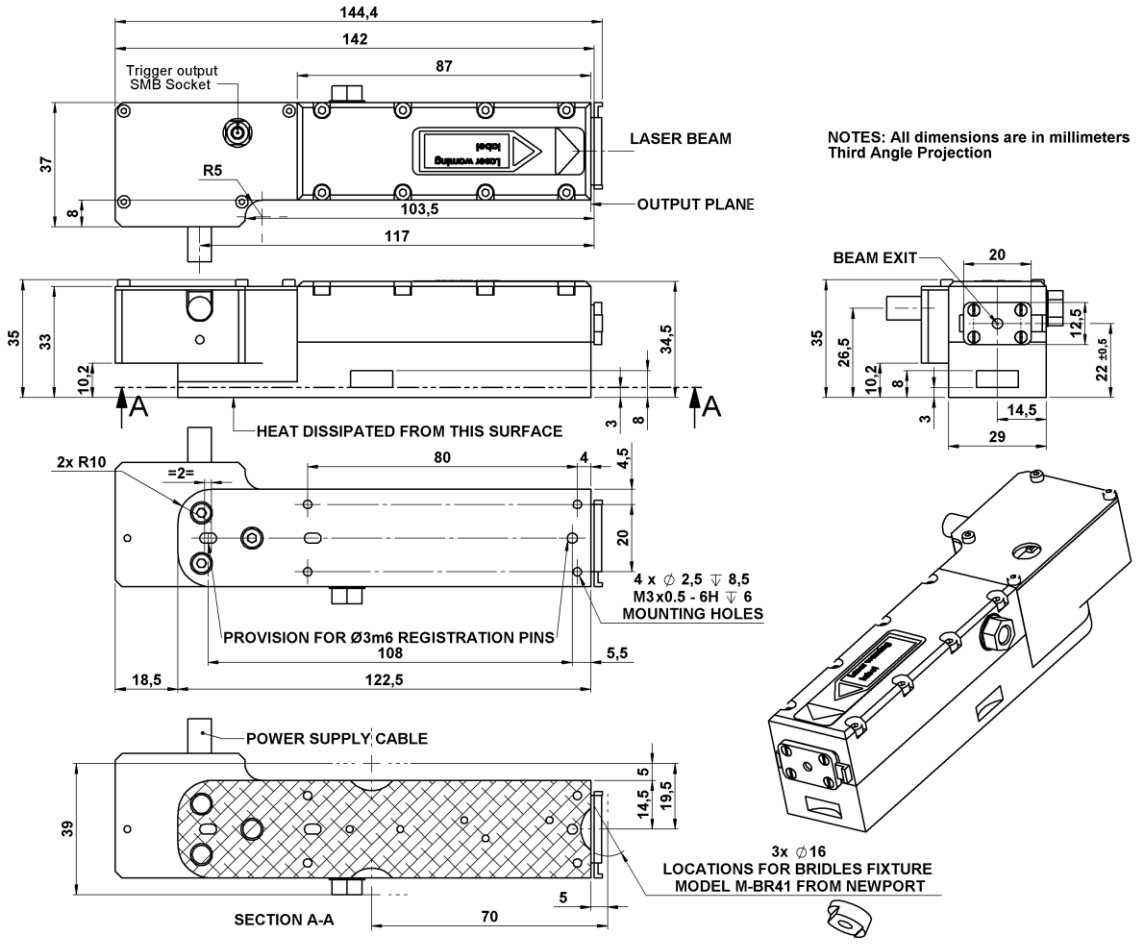
Certification	
Laser classification according to IEC 60825-1:2014	3B
CDRH	Yes, if used with a MLC-03A-DP1 controller
RoHS	Yes

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 [10Hz-RRmax] if RRmax ≤ 2kHz; or [10Hz - 2kHz] if RRmax > 2kHz;
Multimode fibering (M)	Contact factory for availability
Single mode fibering (F)	Contact factory for availability
Collimation (C)	Contact factory for availability
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: STP-40K-1X0, STP-07E-1X0, STP-10E-1X0, STG-03E-1X0 & STG-05E-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 < ± 3°C and < 3°C/hour, stability is measured with calorimeter – detector band [DC, 2Hz].
(5) Mean average value M = √(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.