TRIUS Laser PL.TR1500

Features

* 3 color channels on same optical axis
* RGB
* Up to 1.5 W multiline VIS
* Modulation up to 50 kHz

Applications

* Triangulation
* Laser display
* Long range alignment
* Process control

Related Products

The PEGASUS TRIUS is a high power laser module with 3 color channels, combined to same optical axis at the output. The VIS version is provided with "red" (638 nm), "green" (532 nm) and "blue" (445 nm), other wavelengths are available on request.

With adapted electronics driver, the intensity of each color channel can be adjusted. Mainly for laser display applications any mixed color in the VIS range can be received at the output, with same laser.

The combination with high optical power, makes it also the easiest solution for high speed triangulation systems with different colored samples to reach highest contrast.

Specifications

Optical	Available wavelengths	nm	405	445	532	638	660	810	1.064
	Optical power (source)	mW	150	500	500	500	500	1.000	500
	Power Stability	%	< +/- 5 (over 1h)						
	Beam diameter ($1/e^2$) *	mm	--	3.5 x 3.5	3.5	3.5 x 3.5	--	--	2.0
	Divergence *	mrad	--	1.0	1.0	1.0	--	--	1.5
	Spatial mode		Multimode						
	Laser Class (EN 60825-1)		4						
Mechanical	Dimension laserhead	mm^3	170 x 90 x 25						
	Weigh laser head	g	560						
Environmental	Cooling		must be attached to external heatsink						
	Operating temperature	°C	10 - 30						
	Warm-up time	min	< 15						

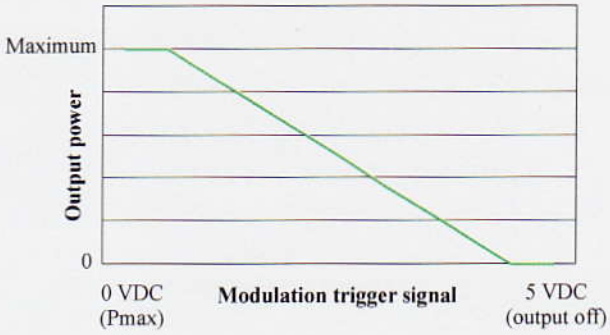
* customized specifications on request

Specifications are given for T = 22°C at constant environment

Power control

The optional laboratory driver with 3 analog modulation inputs allows the user to control the output power of each color channel independently via external 0 - 5 VDC signal. Maximum output will be received for 0 VDC while for 5 VDC the corresponding channel is

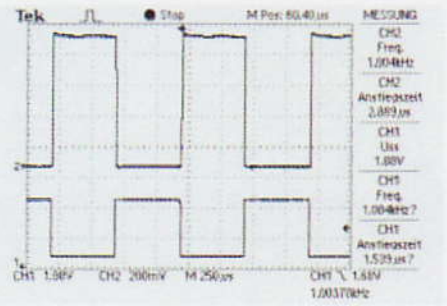
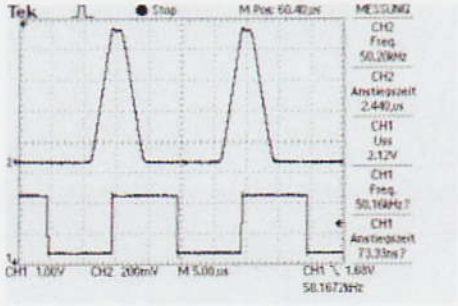
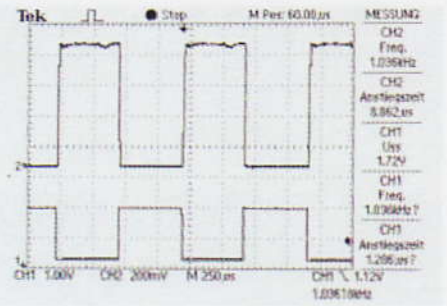
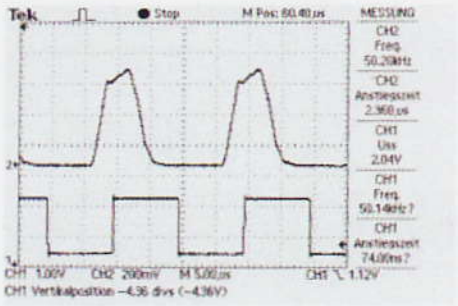
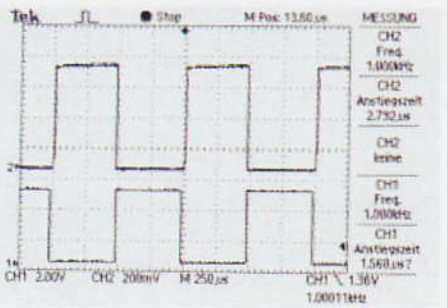
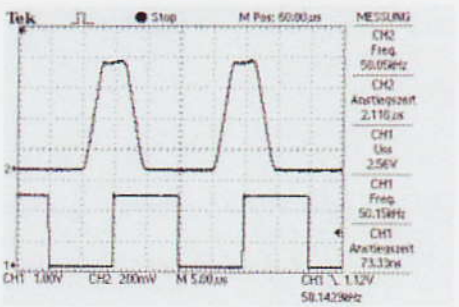
Principle measurement



Amplitude modulation

With the PEGASUS TRIUS-controller, each color channel of the TRIUS laser can be directly modulated up to 50 kHz (-3dB) independently.

Typical modulation behaviour of the 3 TRIUS channels with adapted optional OEM or laboratory driver. The lower curve shows the control trigger signal with frequencies of 1 kHz (left) and 50 kHz (right) while the upper curve is the measured laser power.

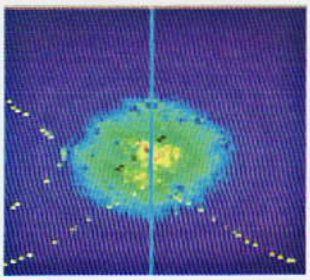
	Modulation 1 kHz	*Modulation 50 kHz*
Channel 1 445 nm / blue		
Channel 2 532 nm / green		
Channel 3 638 nm / red		

Beam profile

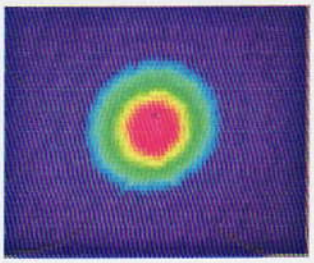
Main application for the TRIUS is to achieve highest contrast for any kind of projection colored surface or any environment.

In RGB standard version (445 nm, 532 nm, 638 nm) the laser module has a nearly rectangular output beam 3.5 x 3.5 mm (445 nm, 638 nm) and a round beam shape for 532 nm with 3.5 mm diameter. The typical divergence for all beams is < 1 mrad, repectively.

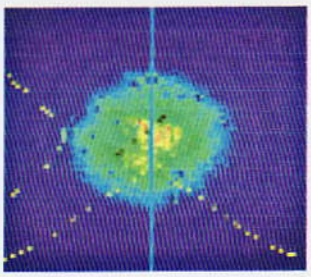
Typical free space beam profiles



Channel 1
(445 nm / 500 mW)



Channel 2
(532 nm / 500 mW)

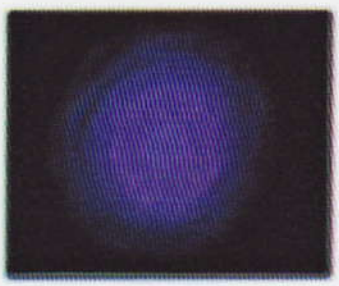


Channel 3
(638 nm / 300 mW)

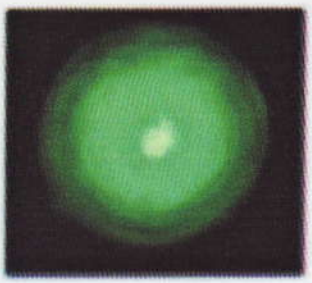
Fiber coupling

Thanks to its good beam quality, the TRIUS laser beam can be coupled into fiber very easy. With standard 50 µm core multimode fiber (NA 0.22, length 30 m), the typical coupling efficiency for all 3 RGB color channels is > 70 %, respectively.

Example:
Beam shape at output of 50 µm fiber with NA 0.22 and length 30 m, for all 3 RGB color channels.



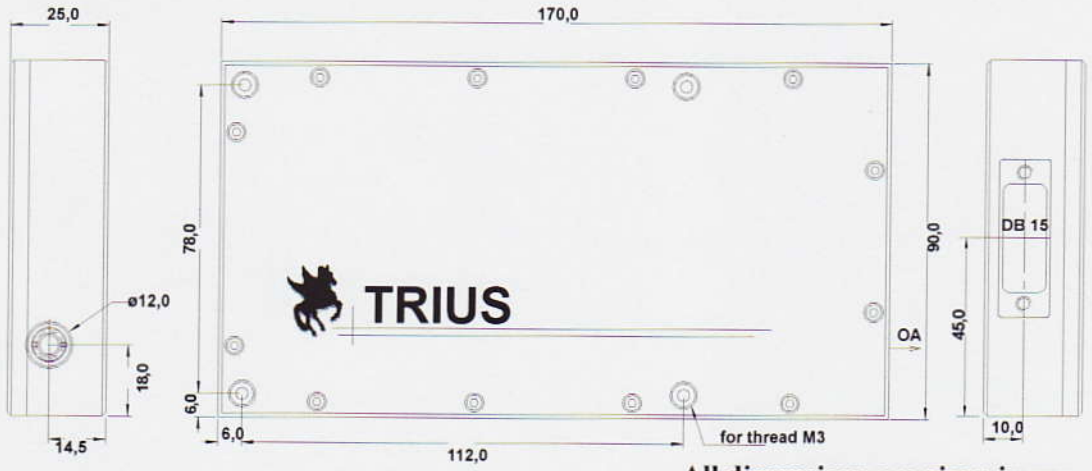
Channel 1
(445 nm / 500 mW)



Channel 2
(532 nm / 500 mW)

Channel 3
(638 nm / 300 mW)

Laser head



All dimensions are given in mm

26 PIN connector			
PIN 1	LD+ channel 1	PIN 14	Temp. control +
PIN 2	LD+ channel 1	PIN 15	Temp. control -
PIN 3	LD- channel 1	PIN 16	---
PIN 4	LD- channel 1	PIN 17	---
PIN 5	TEC channel 1	PIN 18	---
PIN 6	TEC channel 1	PIN 19	---
PIN 7	TEC channel 1	PIN 20	---
PIN 8	TEC channel 1	PIN 21	NTC channel 1
PIN 9	LD- channel 2	PIN 22	NTC channel 1
PIN 10	LD+ channel 2	PIN 23	NTC channel 2, 3
PIN 11	LD+ channel 2, 3	PIN 24	NTC channel 2, 3
PIN 12	LD- channel 3	PIN 25	TEC- channel 2, 3
PIN 13	LD+ channel 3	PIN 26	---

Ordering information

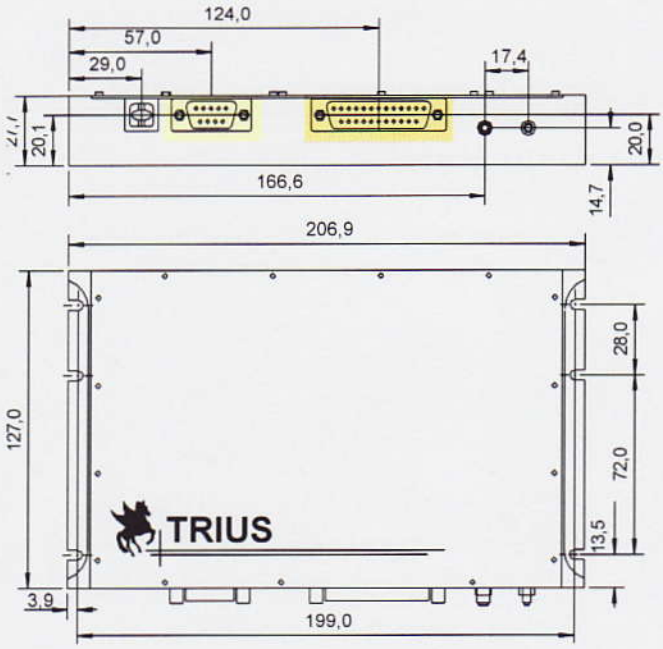
Model	Article No.	Channel (nm / mW) *			Laserclass
		1	2	3	
PL.TRBGR-01	014 - 130000	405 / 150	532 / 500	638 / 500	4
PL.TRBGR-02	014 - 130001	445 / 500	532 / 500	638 / 300	4
PL.TRBGR-03	014 - 130002	445 / 500	532 / 500	660 / 500	4
PL.TRBGI-01	014 - 131000	445 / 500	532 / 500	808 / 1000	4
PL.TRBGI-02	014 - 131001	445 / 500	532 / 500	1064 / 500	4
	* other combinations on request				

PEGASUS reserves the right to make changes in specifications without any notice

OPTION: Adapted electronic drivers

*OEM driver PL.TRD.9V-***

In industrial applications the OEM controller model PL.TRD.9V-** can be used to operate the TRIUS laser in customer systems. To protect the laser from overheating, the OEM driver inhibits an overtemperature switch off, which is indecated with red LED. A optional remote control panel allows the user to adjust the intensity of all 3 channels simultaneously.

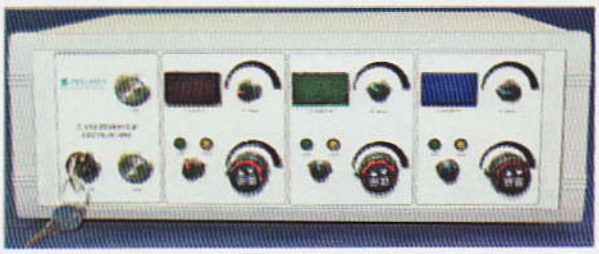


All dimensions are given in mm

9 PIN power connector	
PIN 1	Ground
PIN 2	OUT + 5 VDC
PIN 3	Mod In channel 1
PIN 4	---
PIN 5	IN + 9VDC
PIN 6	Ground
PIN 7	Mod In channel 2
PIN 8	Mod In channel 3
PIN 9	IN + 9VDC

*Laboratory driver PL.LD230-3C-***

For laboratory applications the corresponding TRIUS 230 VAC controller can be used in order to follow a plug and play system.



Features:

* Adjustable LD current for each channel
* Adjustable maximum LD current for each channel
* Internal/External modulation operation
* Active air cooling
* Key switch
* Safety interlock
* 230 VAC power supply voltage
* Housing 352 x 260 x 120 mm³

OPTION: Adapted cooling modules

Air cooling modules

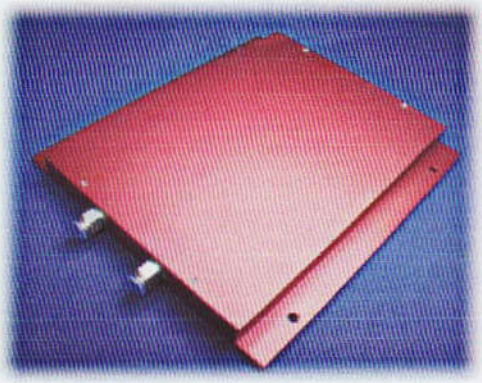
The baseplates of the laser head and the electronic driver have to be adequately heat sinked, respectively in order to prevent the system from overheating. Therefore adapted air cooling modules with low vibrational fan is available for laser head and OEM driver.

Ordering information		
Adapted to	Laser head	OEM driver
Model	PL.LMK1.170.TR	PL.LMT.207.P
Material	Black anodized Al	
Supply voltage	24 VDC	
Dimension	170 x 100 x 40 mm³	207 x 150 x 60 mm³
Power consumption	< 10 W	< 20 W

Water cooling modules

The water cooling modules are usually applied, if heat has to be dissipated with low space or if the laser system should be operated in high environment temperature.

The water cooler have adapted threads to ensure a proper installation of the TRIUS laser head and optional driver.



Ordering information		
Adapted to	Laser head	OEM driver
Model	PL.WMK.170.TR	PL.WMT.207.TR
Dimensions	170 x 100 x 20 mm³	207 x 150 x 20 mm³
Material	Anodized Al	
Water connectors	1/4"	
Min. flow rate	< 2 l/min	