Melles Griot® High-Power Laser Engines

SPEC SHEET

Description

The Melles Griot® High-Power Laser Engines are a series of compact, cost-effective, multi-wavelength light engines that can deliver uniform flat-top illumination for large field of view fluorescence imaging applications. Beam shaping is matched to the sample field of view and camera sensor geometry to maximize photon budget enabling large field of view (FOV) and high-throughput fluorescence imaging applications including Next Generation Sequencing, Next Generation Proteomics, and Spatial Biology. These laser engines are suited for both large FOV step and shoot imaging systems with 2D sensors and rapid line scan imaging systems using TDI sensors. When coupled with large FOV diffraction-limited high numeric aperture (NA) objectives including the Melles Griot® XPLAN series objectives and tube lenses, enable high-throughput high-resolution imaging.

Key Options

The Melles Griot High-Power Laser Engine series offers the following:

- Fiber-coupled laser engines
  - Single wavelength
  - Dual wavelength
  - Triple wavelength
- Maximum power levels ranging from 5W to >20W
- Wavelength options include 638 nm, 532 nm, 525 nm, 488nm, 465 nm and 455 nm
- Beam shaping optics options
  - Square and Rectangular FOV format for 2D sensor
  - Single and Dual line beam format for TDI sensor
- Control options
  - External analog controller unit
  - Built in digital control unit
- Thermal management options
  - TEC control assembly
  - Fan cooling
  - Water cooling

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Product Diagram

Fig. 1 shows a fiber coupled single wavelength high-power laser engine with fiber delivery and speckle reducer. Fig. 2 shows an external controller unit and Fig. 3 shows a triple wavelength high-power laser engine with built-in controller, air cooled thermal management and beam shaping optics Fig. 4 shows an example of a rectangular, single and dual line beam shaping generated by the beam shaping optics with horizontal and vertical flat-top line profiles.



Figure 1



Figure 2



Figure 3

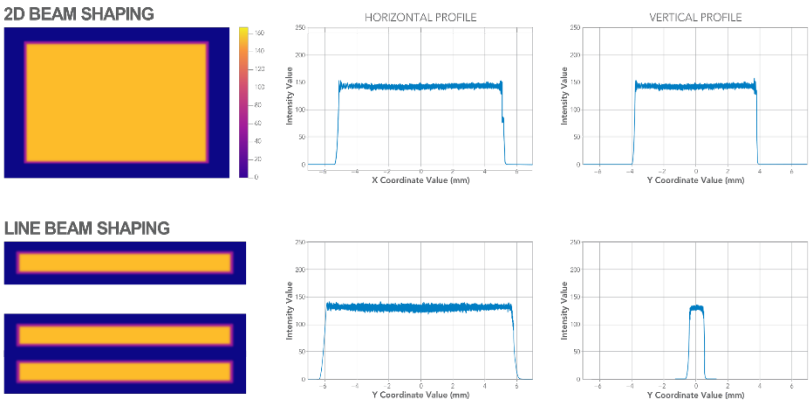


Figure 4

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SPEC SHEET

Single Wavelength Options

Power	638	532	525	488	465	455
~5 W	85-R-638-5	85-G-532-5	85-G-525-5	85-B-488-5	85-B-465-5	85-B-455-5
~10 W	85-R-638-10	85-G-532-10	85-G-525-10	—	85-B-465-10	85-B-455-10
~15 W	85-R-638-15	85-G-532-15	85-G-525-15	—	85-B-465-15	85-B-455-15
>20 W	—	—	85-G-525-20	—	85-B-465-20	85-B-455-20

Dual Wavelength Options

Power	638 532	638 525	532 488	525 488	532 465/455	525 465/455
~5 W	85-RG-638-532-5	85-RG-638-525-5	85-GB-532-488-5	85-GB-525-488-5	85-GB-532-455-5 85-GB-532-465-5	85-GB-525-455-5 85-GB-525-465-5
~10 W	85-RG-638-532-10	85-RG-638-525-10	—	—	85-GB-532-455-10 85-GB-532-465-10	85-GB-525-455-10 85-GB-525-465-10
~15 W	—	85-RG-638-525-15	—	—	85-GB-532-455-15 85-GB-532-465-15	—

Triple Wavelength Options

Power	638 532 488	638 525 488	638 532 465/455	638 525 465/455
~5 W (2W 488)	85-RGB-638-532-488-5	85-RGB-638-525-488-5	85-RGB-638-532-465-5	85-RGB-638-532-455-5 85-RGB-638-532-465-5
~10 W	—	—	85-RGB-638-532-465-10	85-RGB-638-532-455-10 85-RGB-638-532-465-10
~15 W	—	—	—	85-RGB-638-532-455-15 85-RGB-638-532-465-15

Fiber: Multimode, 400 µm, 0.20 NA; 2 m length with speckle reducer

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Add on Accessory Options

P/N	Laser Controller
85-AC-01	External Analog Controller
85-DC-01	Built in Digital Controller

P/N	Thermal Management
85-TEC-01	TEC Controller Assembly
85-FAN-01	Fan Cooling
85-WAT-01	Water Cooling

P/N	Beam Shaping Optics
85-SQ-FOV-01	Square FOV Format
85-REC-FOV-01	Rectangular FOV Format
85-LIN-FOV-01	Line Beam Shaping – Single Beam
85-LIN-FOV-02	Line Beam Shaping – Dual Beam

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Optical Specifications

Laser diode type	Multimode
Centroid wavelength	638 nm, 532 nm, 525 nm, 488 nm, 465 nm, 460 nm
Spectral width (standard)	+/- 4 nm
Fiber type	Multimode
Fiber core diameter	400 µm (Other diameters available on request)
Fiber numerical aperture	0.20 (Other NA available on request)
Fiber length	2 m (Other fiber lengths available on request)
Speckle reducer	Optional
Single Wavelength Laser engine	**Maximum Output Power**
638 nm	Laser output 5W – 15W
532 nm	Laser output 5W – 15W
525 nm	Laser output 5W – >20W
488 nm	Laser output 5W
465 nm	Laser output 5W – >20W
455 nm	Laser output 5W – >20W
Dual Wavelength Laser Engine	**Maximum Output Power**
638 nm & 532 nm	Laser output 5W – 10W
638 nm & 525 nm	Laser output 5W – 15W
532 nm & 455 or 465 nm	Laser output 5W – 15W
525 nm & 455 or 465 nm	Laser output 5W – 15W
532 nm & 488 nm	Laser output 525 nm (5W); 488 nm (2W)
525 nm & 488 nm	Laser output 525 nm (5W); 488 nm (2W)
Triple Wavelength Laser Engine	**Maximum Output Power**
638 nm & 532 nm & 455 or 465 nm	Laser output 5W – 10W
638 nm & 525 nm & 455 or 465 nm	Laser output 5W – 15W
638 nm & 532 nm & 488 nm	Laser output 638 nm & 535 nm (5W), 488 nm (2W)
638 nm & 525 nm & 488 nm	Laser output 638 nm & 535 nm (5W), 488 nm (2W)
Interfaces	USB, RS-232 external control box or inbuilt control
Thermal control	Air cooled or water cooled and/or TEC control

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Beam Shaping Options	
Square	4.9° x 4.9° Output
Rectangular	4.7° x 3.1° Output or 5.2° x 3.5° Output
Single line beam shaper	Contact for details
Dual line beam shaper	Contact for details

Dimensional Drawings

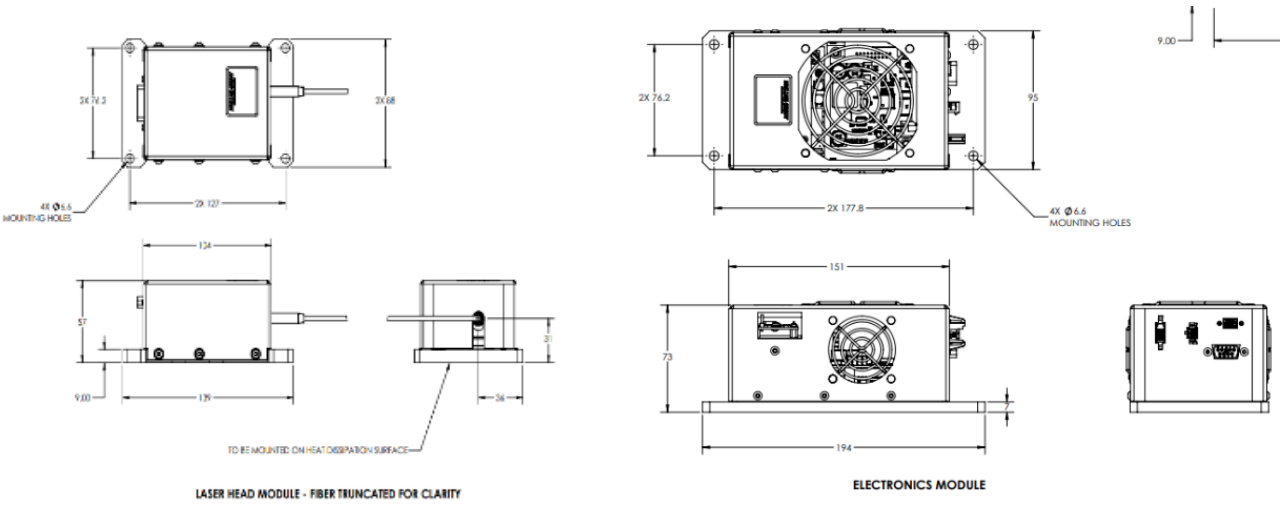


Figure 2. Typical dimension of laser head module and external electronics module.

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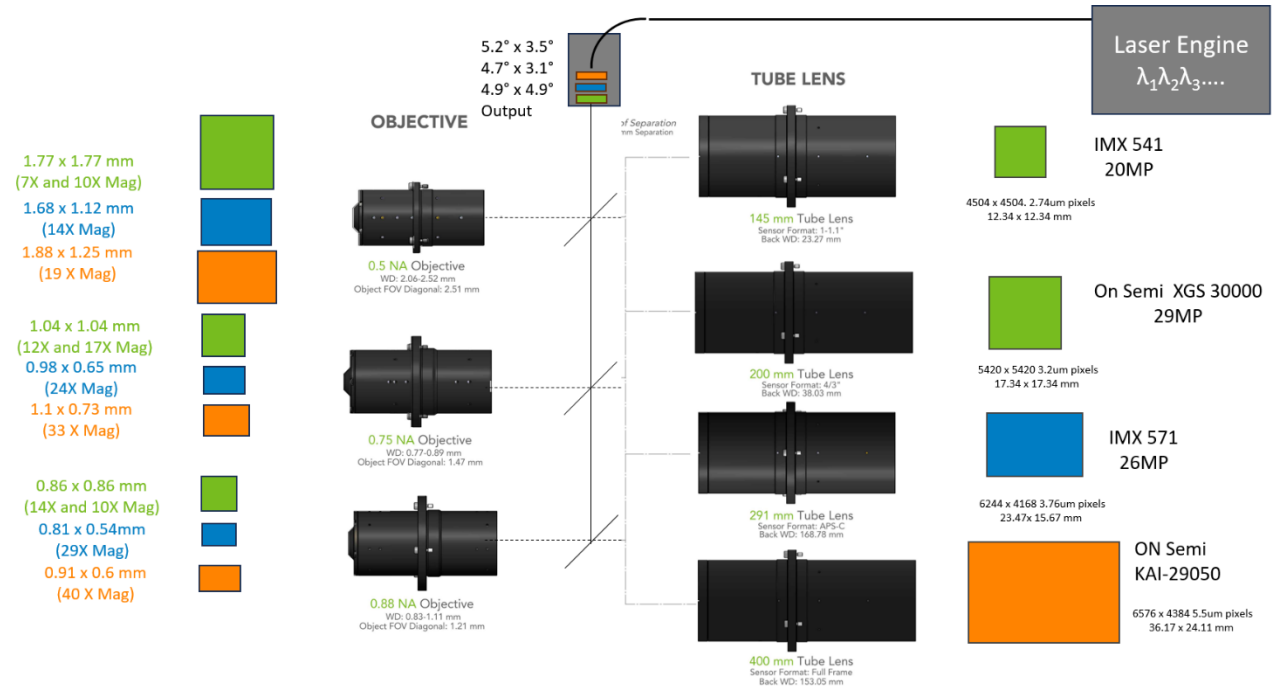
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Three standard beam shapers offered for 12 different Melles Griot XPLAN lens combination and 4 sensors.

Square Beam Shaper	4.9° x 4.9°
Rectangular Beam shaper	4.7° x 3.1°
Rectangular Beam shaper	5.2° x 3.5°

Melles Griot XPLAN	Objective EFL (mm)	IDEX Tube Lens EFL (mm)	Mag.	NA	Sample FOV (mm)	Beam shaper output angles	Sensor Format	Sensor	Pixel Size	um/pix
XPLAN 0.5 NA	20.78	145	7	0.5	1.77 x 1.77	4.9° x 4.9°	1.1.1"	IMX541	2.4	0.34
XPLAN 0.5 NA	20.78	200	10	0.5	1.77 x 1.77	4.9° x 4.9°	4/3"	On-semi XGS30000	3.2	0.32
XPLAN 0.75 NA	12.12	145	12	0.75	1.04 x 1.04	4.9° x 4.9°	1.1.1"	IMX541	2.4	0.20
XPLAN 0.75 NA	12.12	200	17	0.75	1.04 x 1.04	4.9° x 4.9°	4/3"	On-semi XGS30000	3.2	0.19
XPLAN 0.88 NA	10.3	145	14	0.88	0.86 x 0.86	4.9° x 4.9°	1.1.1"	IMX541	2.4	0.17
XPLAN 0.88 NA	10.3	200	20	0.88	0.86 x 0.86	4.9° x 4.9°	4/3"	On-semi XGS30000	3.2	0.16
XPLAN 0.5 NA	20.78	291	14	0.5	1.68 x 1.12	4.7° x 3.1°	APS-C	IMX 571	3.76	0.27
XPLAN 0.75 NA	12.12	291	24	0.75	0.98 x 0.65	4.7° x 3.1°	APS-C	IMX 571	3.76	0.16
XPLAN 0.88 NA	10.03	291	29	0.88	0.81 x 0.54	4.7° x 3.1°	APS-C	IMX 571	3.76	0.13
XPLAN 0.5 NA	20.78	400	19	0.5	1.88 x 1.25	5.2° x 3.5°	Full Frame	On-Semi KAI-29050	5.5	0.29
XPLAN 0.75 NA	12.12	400	33	0.75	1.10 x 0.73	5.2° x 3.5°	Full Frame	On-Semi KAI-29050	5.5	0.17
XPLAN 0.88 NA	10.03	400	40	0.88	0.91 x 0.60	5.2° x 3.5°	Full Frame	On-Semi KAI-29050	5.5	0.14



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