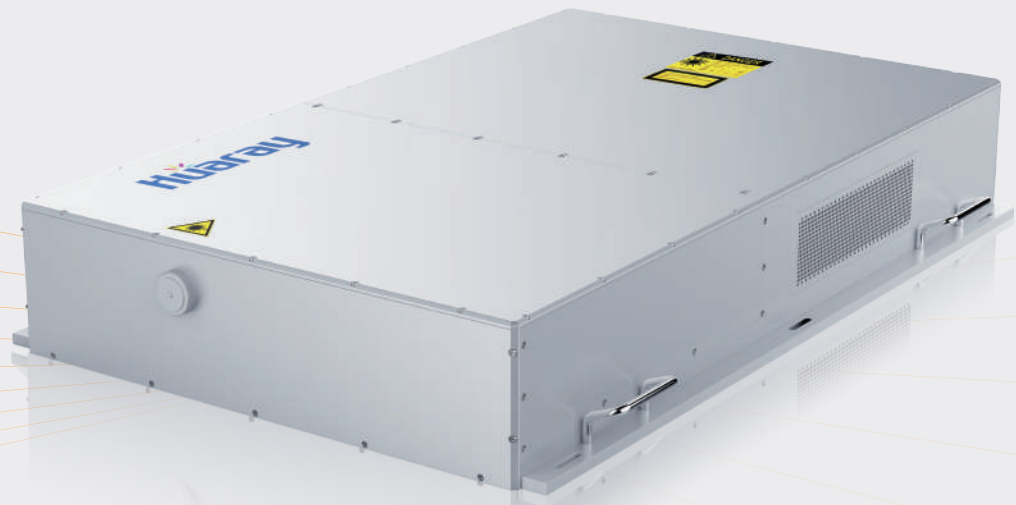


Femtosecond Pulse Fiber Laser

LEADING LASER MANUFACTURER



- ◉ Own brand seed laser
- ◉ One-click easy operation, no adjust knob
- ◉ Compact design and easily integration
- ◉ Quasi-continuous output can be realized (~50MHz), adapt to customer needs

Application.



Biomedical
Imaging



Life Sciences



Polymer
Cutting



Micro
Machining



3D Storage
Material
Cutting



Direct-Write
Medical Material
Manufacturing

Specifications : ERAI-1035-5 , ERAI-517-2 , ERAI-1035-10 , ERAI-517-5

Huaray developed our own femtosecond fiber laser to serve super fine processing field-- Erai series. With breakthrough super short pulse-width technology, Erai can be used to Biomedical Imaging, Life Sciences, Polymer Cutting, Micro Machining, 3D Storage Material Cutting, Direct-Write Medical Material Manufacturing and other high-end micro processing field. One-click easy operation, no adjust knob. Reliable 24/7 laser operation, suitable for OEM and R&D application.

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For more information please visit our website

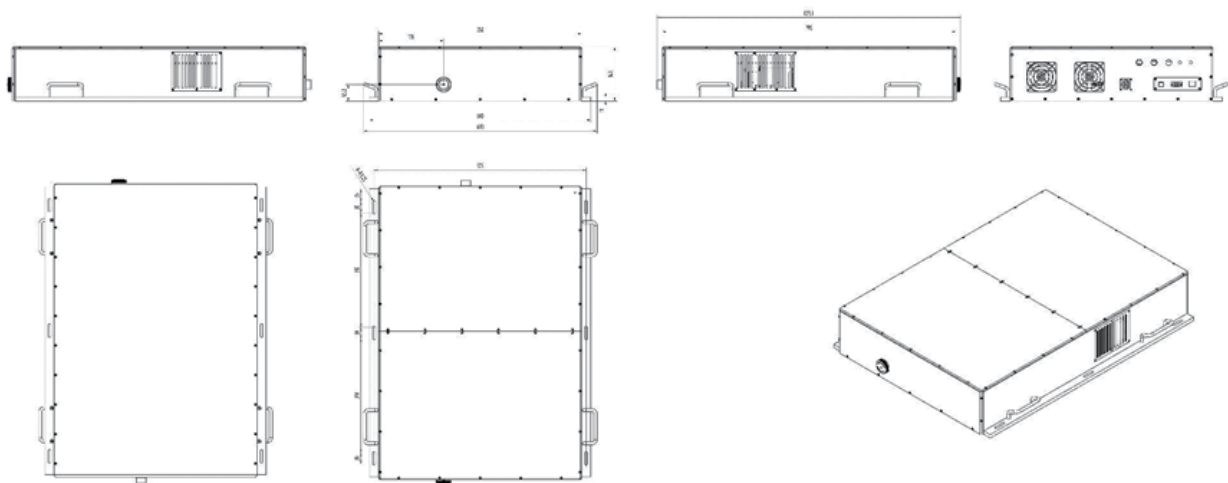
Huaray

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Femtosecond Pulse Fiber Laser Datasheet

SPECIFICATIONS	ERAI-1035-5	ERAI-517-2	ERAI-1035-10	ERAI-517-5
Center Wavelength	1035nm	517nm	1035nm	517nm
Output Power	5W	2W	10W	5W
Pulse Energy	2.5μJ	1μJ	50μJ	25μJ
Repetition Rate	100kHz to 5MHz	100kHz to 5MHz	100kHz to 5MHz	100kHz to 5MHz
Pulse Width	<400fs	<400fs	<350fs	<350fs
Spatial Mode	TEM ₀₀ , M ² ≤1.3	TEM ₀₀ , M ² ≤1.3	TEM ₀₀ , M ² ≤1.3	TEM ₀₀ , M ² ≤1.3
Beam Divergence	<1mrad,2θ	<1mrad,2θ	<1mrad,2θ	<1mrad,2θ
Beam Circularity	≥90%	≥90%	≥90%	≥90%
Beam Diameter	3±1mm,1/e ²	3±1mm,1/e ²	3±1mm,1/e ²	3±1mm,1/e ²
Polarization Ratio	>100:1	>100:1	>100:1	>100:1
Polarization Direction	Horizontal	Horizontal	Horizontal	Horizontal
Pulse Energy Stability	≤2%RMS	≤2%RMS	≤2%RMS	≤2%RMS
Power Stability	≤2%RMS	≤2%RMS	≤2%RMS	≤2%RMS
Warm-up Time	<45min(Cold Start) <15min(Warm Start)	<45min(Cold Start) <15min(Warm Start)	<45min(Cold Start) <15min(Warm Start)	<45min(Cold Start) <15min(Warm Start)
External Comms	RS-232, Ethernet, USB	RS-232, Ethernet, USB	RS-232, Ethernet, USB	RS-232, Ethernet, USB
Operating Temperature(Non-condensing)	20 to 30°C	20 to 30°C	20 to 30°C	20 to 30°C
Operating Humidity	<90%	<90%	<90%	<90%
Non-Operation(Storage) Temperature	-20 to 60°C	-20 to 60°C	-20 to 60°C	-20 to 60°C
Non-Operation(Storage) Humidity	<90%	<90%	<90%	<90%
Options	11nJ@45MHz	22nJ@45MHz	10μJ@1MHz	

Mechanical Specifications



Maple Low-Power Nanosecond Short Pulse Width Green Laser

LEADING LASER MANUFACTURER



- ◉ Compact design and easily integration
- ◉ Shorter pulse width, better processing result
- ◉ Air-cooled design, no need water chiller

Application.



3C Industry



White
Household
Appliance



Food
Packaging



Medical
Industry



3D Printing



Electronic
Component

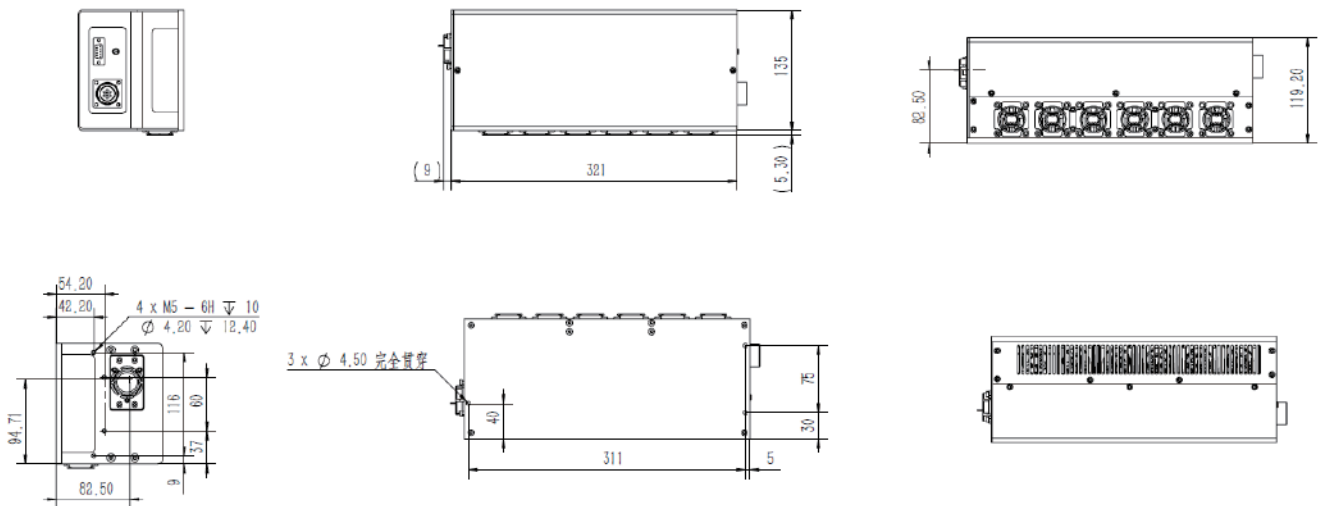
The brand new Maple Low-Power Nanosecond Green Laser is compact design and easily integration.

Cooling fan integrated into cavity, no water chiller needed. Extremely short pulse width can perform perfect processing on micro machining, which is used for high quality process requirement. It is mainly applied in the 3C industry for precision marking, marking of white household appliances, flying marking, food and medical industry, 3D printing etc.

Maple Green Laser Datasheet

SPECIFICATIONS	Maple-532-7
Fundamental Center Wavelength	532 nm
Output Power	>7W
Energy	>160μ@50kHz
Repetition Rate	20kHz-200kHz
Pulse Width	<22ns@50kHz
Spatial Mode	TEM ₀₀ (M ² ≤1.2)
Beam Divergence	≤2mrad
Astigmatism	<0.3
Beam Circularity	≥90%
Polarization Ratio	>100:1
Polarization Direction	Vertical
Beam Pointing Stability	<25μrad/°C
Pulse Energy Stability	≤3%RMS
Power Stability	≤3%RMS
Long-term Pointing Stability	<25μrad/°C
External Comms	RS-232
Beam Diameter, 0.3m in Front of Laser	≤2mm
Working Material	Nd:YVO ₄
Warm-up Time	<15min
Operating Temperature	+10 to +30°C
Operating Humidity	<65%
Non-Operation(Storage) Temperature	-10 to +45°C
Shipping Temperature(Non-condensing)	-10 to +45°C
Cooling	Air
Power Supply (Consumption)	110/220V AC, 50/60Hz (600W)
Classification	Class 4

Mechanical Specifications



Air-Cooled Low-Power Nanosecond Short Pulse Width UV Laser

LEADING LASER MANUFACTURER



- ◉ Compact design and easily integration
- ◉ Shorter pulse width, better processing result
- ◉ Air-cooled design, no need water chiller

Application.



3C Industry



White
Household
Appliance



Food
Packaging



Medical
Industry



3D Printing



Electronic
Component

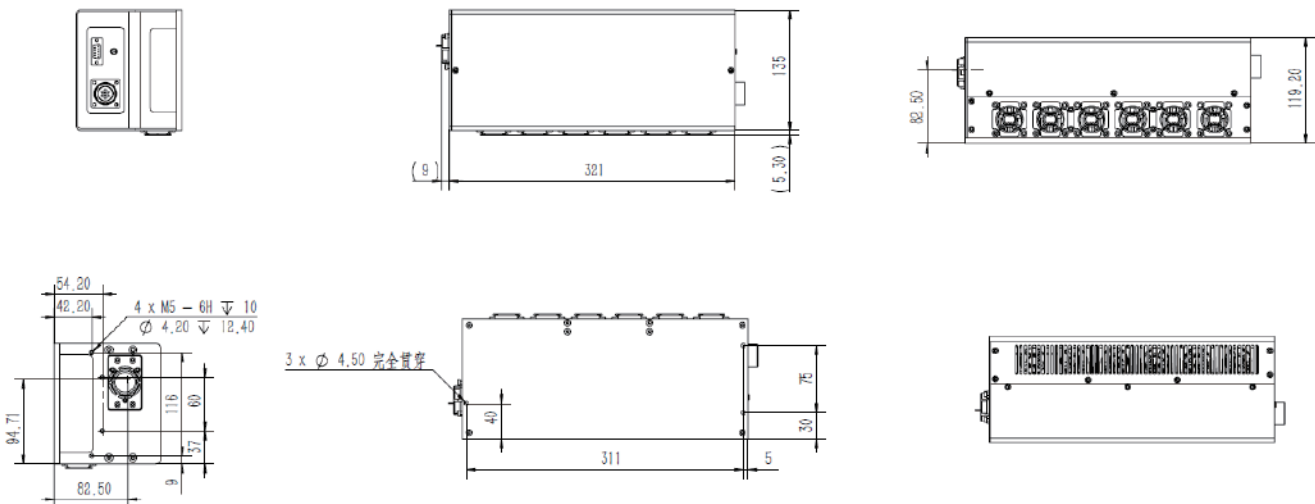
The brand new Air-Cooled Low-Power Nanosecond UV Laser is compact design and easily integration.

Cooling fan integrated into cavity, no water chiller needed. Extremely short pulse width can perform perfect processing on micro machining, which is used for high quality process requirement. It is mainly applied in the 3C industry for precision marking, marking of white household appliances, flying marking, food and medical industry, 3D printing etc.

Poplar UV Laser Datasheet

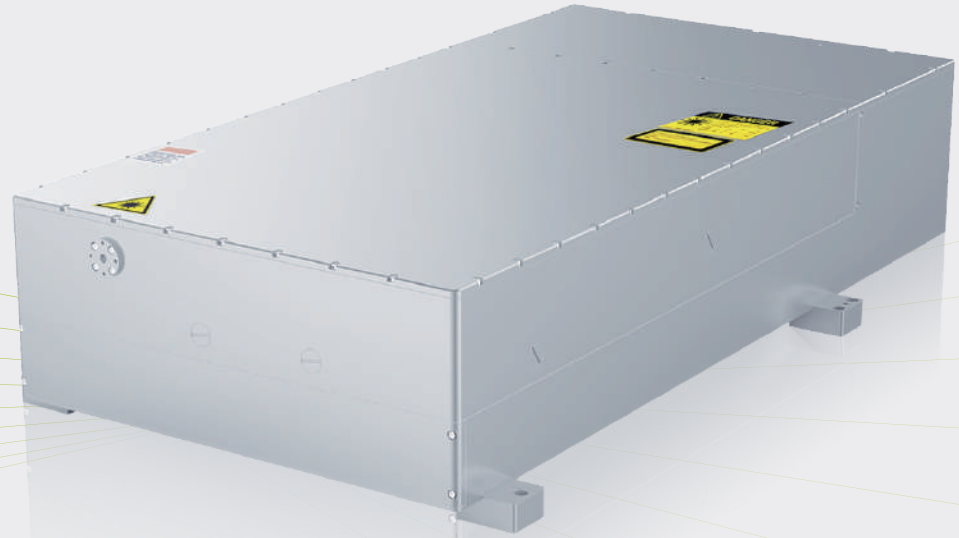
SPECIFICATIONS	Air-Cooled 3W
Fundamental Center Wavelength	355nm
Output Power	>3W
Energy	>70μJ@50kHz
Repetition Rate	20kHz-200kHz
Pulse Width	<20ns@50kHz
Spatial Mode	TEM ₀₀ (M ² ≤1.2)
Beam Divergence	≤2mrad
Astigmatism	<0.2
Beam Circularity	≥90%
Polarization Ratio	>100:1
Polarization Direction	Horizontal
Beam Pointing Stability	<25μrad/°C
Pulse Energy Stability	≤3%RMS
Power Stability	≤3%RMS
Long-term Pointing Stability	<25μrad/°C
External Comms	RS-232
Beam Diameter, 0.3m in Front of Laser	≤2mm
Working Material	Nd:YVO ₄
Warm-up Time	<15min
Operating Temperature	+10 to +30°C
Operating Humidity	<65%
Non-Operation(Storage) Temperature	-10 to +45°C
Shipping Temperature(Non-condensing)	-10 to +45°C
Cooling	Air
Power Supply (Consumption)	110/220V AC, 50/60Hz (600W)
Classification	Class 4

Mechanical Specifications



Olive Mid-Power Picosecond Ultra-Fast Laser

LEADING LASER MANUFACTURER



- ⦿ Own brand laser seed
- ⦿ Infrared, Green or UV laser output with short pulse width (<10ps), which is the best choice for precision processing
- ⦿ Outstanding beam quality ($M^2 < 1.3$)
- ⦿ Crossover and power adjust function can be integrated, easy to operate

Application.



Glass Marking



Sapphire Marking



Ceramic Cutting



Semiconductors Cutting



LED/OLDE Dicing



Cathode Tab Welding



Solar Panels Coating



Film Scribing



Wafer

Specifications : **OLIVE-355-10** · **OLIVE-532-15** · **OLIVE-1064-30**

Olive Mid-power Picosecond Ultra-Fast Laser is a high performance-to-price ratio product. It is putting out by Huaray and Attodyne, which combine the advanced technology of Attodyne's R&D centre and Huaray's manufacturing ability. Own brand laser seed, purchase & maintenance cost decrease 50%. Power stability less than 3% rms, can offer stable infrared, green or UV laser output with short pulse width (<10ps). The product can be customized according to customers' requirements concretely.

Olive features high reliability and less maintenance cost, it is the best choice for precision processing.

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For more information please visit our website

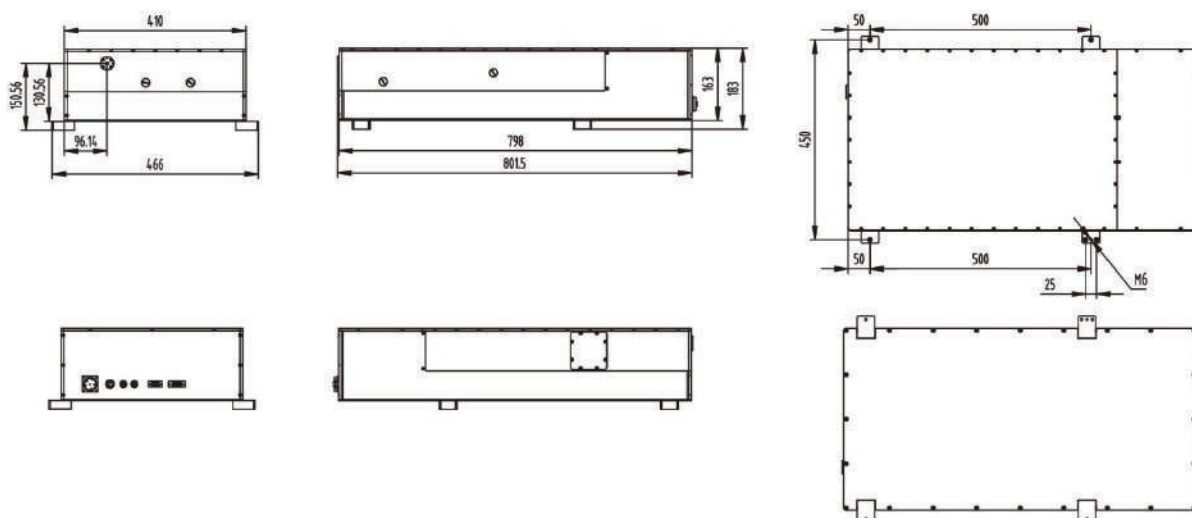
Huaray

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Olive Mid-Power Picosecond Laser Datasheet

SPECIFICATIONS	Olive-1064-30	Olive-1064-30-HE	Olive-1064-30-DF	Olive-532-15	Olive-355-10
Wavelength	1064nm	1064nm	1064nm	532nm	355nm
Output Power	>30W@500kHz	>17.5W@50kHz	>17.5W@50kHz >30W@1MHz	>15W@500kHz	>10W@1MHz
Maximum Pulse Energy	>100uj@200kHz	>350uj@50kHz	>350uj@50kHz	>50uj@200kHz	>15uj@500kHz
Repetition Rate	200kHz to 1MHz	50kHz to 100kHz	50kHz to 1MHz	200kHz to 1MHz	400kHz to 2MHz
Pulse Width	<10ps				
Power Stability	≤3%				
Peak-to-peak Stability	≤1%				
Pulse-to-Pulse Stability	≤6%				
Spatial Mode	TEM ₀₀ (M ² ≤1.3)				
Beam Diameter	2.4mm±0.2mm	2.4mm±0.2mm	2.4mm±0.2mm	1.5mm±0.2mm	1.5mm±0.2mm
Beam Divergence	≤3 mrad				
Beam-Pointing Stability	<50μrad/°C				
Beam Roundness	≥90%	≥90%	≥90%	≥85%	≥85%
Polarization Ratio	Vertical,>100:1	Vertical,>100:1	Vertical,>100:1	Vertical,>100:1	Horizontal,>100:1
Warm-up Time	<5min				
Ambient Temperature	15-35°C				
Humidity	<65%				
Cooling	Water				
Voltage	100 to 240 VAC				
Power Consumption	1000W				
Classification	Class 4				
Laser Head Size	828.9x410x163mm ³	828.9x410x163mm ³	828.9x410x163mm ³	801.5x410x163mm ³	982.9x410x163mm ³
Power Supply Model	P-1200A0				
Power Supply Size	411x484x88mm ³				

Mechanical Specifications



Poplar Low-Power Nanosecond Integrated Laser

LEADING LASER MANUFACTURER



- ◉ Integrated design, compact all in one laser
- ◉ Technical performance indicators have reached the internationally advanced level, high reliability
- ◉ Real-time monitoring and remote diagnosis are realized with on-line monitoring function.

Application.



3C Industry



White Household Appliance



Appliance Housings



Food Packaging



Medical Industry



Metal



Non-metallic

Specifications : **POPLAR-355-3** · **POPLAR-355-5** · **POPLAR-355-5AZ**
POPLAR-532-7 · **POPLAR-532-10**

POPLAR series Low Power nanosecond UV/Green laser, compact external ray and power supply control system into laser head cavity by adopt new compact design, ease of integration.

POPLAR's technical performance indicators have reached the internationally advanced level, suitable for laser precision processing, and ensures stability and reliability for a long term. POPLAR is mainly used for precision marking in 3C industry, shell marking of white household appliances and flying marking in food and medical industry etc, and is suitable for metal and non-metallic surface machining or coating processing, scribing and blind slot treatment of various materials, micropore manufacture of new ultrathin metal materials, etc

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For more information please visit our website

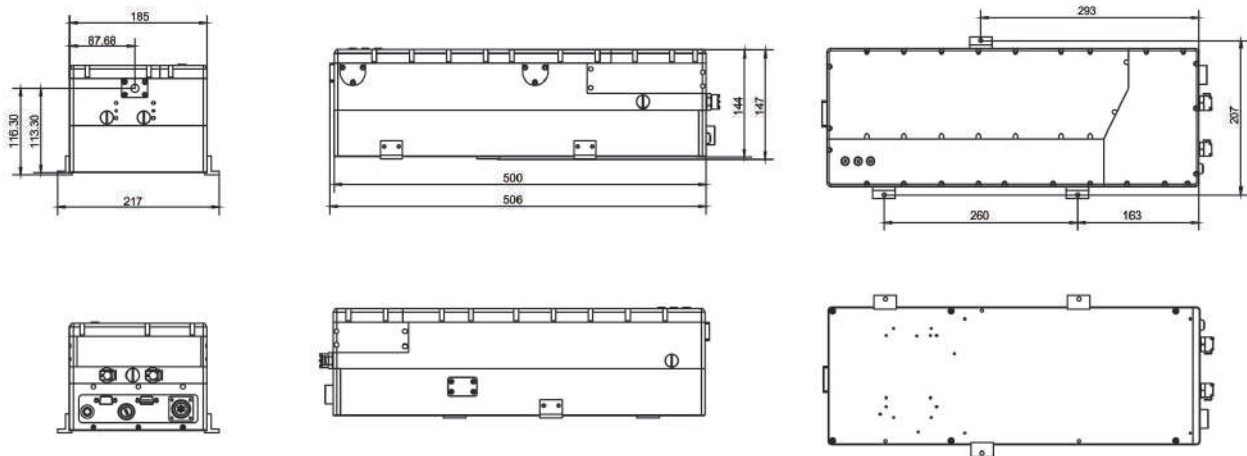
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Poplar Low-Power UV/Green Laser Datasheet

SPECIFICATIONS	Poplar-355-3	Poplar-355-5	Poplar-355-5AZ	Poplar-532-7	Poplar-532-10
Fundamental Center Wavelength	355nm			532nm	
Output Power and Energy	>3W, >70μJ@50kHz	>5W, >110μJ@50kHz	>5W, >110μJ@50kHz	>7W, >160μJ@50 kHz	>10W, >200μJ@50kHz
Repetition Rate	20kHz-200kHz			20kHz-200kHz	
Pulse Width	<22ns@50kHz	<18ns@50kHz	<10ns@50kHz	<22ns@50kHz	<18ns@50kHz
Spatial Mode	TEM ₀₀ (M ² ≤1.2)			TEM ₀₀ (M ² ≤1.2)	
Beam Divergence	≤2mrad			≤2mrad	
Astigmatism	<0.2			<0.3	
Beam Circularity	≥90%			≥90%	
Polarization Ratio	>100:1			>100:1	
Polarization Direction	Horizontal			Vertical	
Beam Pointing Stability	<25μrad/°C			<25μrad/°C	
Pulse Energy Stability	≤3%RMS			≤3%RMS	
Power Stability	≤3%RMS			≤3%RMS	
Long-term Pointing Stability	<25μrad/°C			<25μrad/°C	
External Comms	RS-232			RS-232	
Beam Diameter, 0.3m in Front of Laser	≤1mm (Without Beam Expander)				
	≤2mm (With 2x Beam Expander)			≤2mm	
	≤5mm (With 5x Beam Expander)				
Working Material	Nd:YVO4			Nd:YVO4	
Warm-up Time	<15min			<15min	
Operating Temperature	+10 to +35°C			+10 to +35°C	
Operating Humidity	<65%			<65%	
Non-Operation(Storage) Temperature	-10 to +45°C			-10 to +45°C	
Shipping Temperature(Non-condensing)	-10 to +45°C			-10 to +45°C	
Cooling	Water			Water	
Power Supply (Consumption)	110/220V AC, 50/60Hz (600W)			110/220V AC, 50/60Hz (600W)	
Classification	Class 4			Class 4	
Head Weight	19.5kg			19.5kg	

Mechanical Specifications



Poplar Mid-Power Nanosecond Integrated Laser

LEADING LASER MANUFACTURER



- Integrated design, compact all in one laser
- Technical performance indicators reach the international advanced level, high reliability
- Short pulse width under high repetition rate for minimum heat affected zone, high efficiency
- Frequency tripling point moving function ensure long service life

Application.



PCB/FPCB



Ceramic
Cutting



Glass
Marking



Sapphire
Marking



Wafer
Cutting



LED
Dicing

Specifications : **POPLAR-355-12** · **POPLAR-355-18**

POPLAR series Mid Power nanosecond UV laser, adopt new compact design, ease of integration and delivery. Poplar realized short pulse width under high repetition rate for minimum heat affected zone and high efficiency. Frequency tripling point moving function ensure long service life. On-line monitoring function is optional, applicable to the harsh working conditions of industrial machining requirements.

This series of products is mainly applied to high-end market of ultra-precision machining, including the fields of PCB/FPCB cutting and splitting, ceramic material perforation and scribing, glass/sapphire/wafer cutting, LED substrate wafer scribing, etc.

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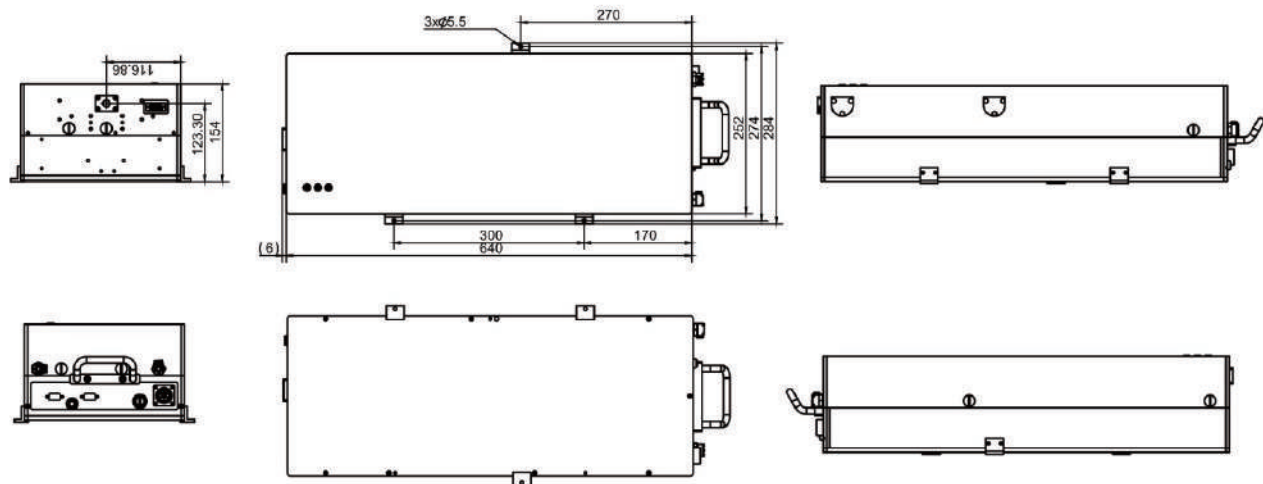
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Poplar Mid-Power UV Laser Datasheet

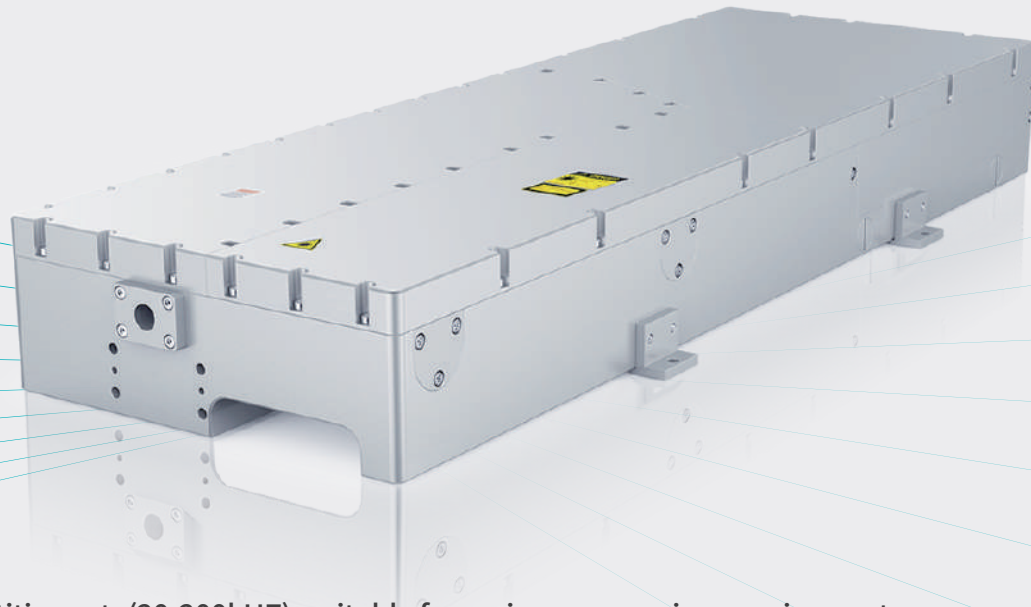
SPECIFICATIONS	Poplar-355-12	Poplar-355-18
Fundamental Center Wavelength	355nm	
Output Power and Energy	>12W, >150μJ@80kHz	>18W, >300μJ@60kHz
Repetition Rate	50kHz-200kHz	
Pulse Width	<15ns@80kHz	<15ns@60kHz
Spatial Mode	TEM ₀₀ (M ² ≤1.2)	
Beam Divergence	≤2mrad	
Astigmatism	<0.2	
Beam Circularity	≥90%	
Polarization Ratio	>100:1	
Polarization Direction	Horizontal	
Beam Pointing Stability	<25μrad/°C	
Pulse Energy Stability	≤3%RMS	
Power Stability	≤5%RMS	
Long-term Pointing Stability	<25μrad/°C	
External Comms	RS-232	
Beam Diameter, 0.3m in Front of Laser	≤4mm (With 2x Beam Expander) ≤8mm (With 5x Beam Expander)	
Working Material	Nd:YVO ₄	
Warm-up Time	<15min	
Operating Temperature	+10 to +35°C	
Operating Humidity	<65%	
Non-Operation(Storage) Temperature	-10 to +45°C	
Shipping Temperature(Non-condensing)	-10 to +45°C	
Cooling	Water	
Power Supply(Consumption)	110/220V AC, 50/60Hz (800W)	
Classification	Class 4	
Head Weight	31.5kg	

Mechanical Specifications



Spruce Mid-Power Nanosecond Green Laser

LEADING LASER MANUFACTURER



- Wide repetition rate(20-200kHz), suitable for various processing requirement
- Superior beam quality, highly-precise cutting
- RS-232 control interface, compatible with various servo software
- Stability high-power output, better processing efficiency

Application.



PCB/FPCB



Ceramic



Glass



Wafer



Special metal
material



Amorphous
silicon
membrane



Solar panel



Metal



Non-metallic

Specifications: **SPRUCE-532-25** · **SPRUCE-532-40**

Spruce Mid-Power Nanosecond Green Laser provide highly-precise cutting with superior beam quality. Stability high-power output for better processing efficiency and long-term stability in 24/7 applications, which is suitable for industrial-grade processing environment. Meanwhile, Spruce is also realized low practical cost, long service life and shortest MTTR.

Spruce is ideal for such as FPC/PCB cutting, ceramic drilling dicing, glass/wafer cutting, microporous processing on special metal material, clear the surface film, coating line on amorphous silicon membrane and solar panels coating, etc., and it is suitable for most metal and non-metallic surface machining or coating processing.

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For more information please visit our website

Huaray

WUHAN HUARAY PRECISION LASER CO., LTD.

Spruce Mid-Power Green Laser Datasheet

SPECIFICATIONS	Spruce-532-25	Spruce-532-40
Fundamental Center Wavelength	532nm	
Output Power and Energy	>25W, >300μJ@30 kHz	>40W, >650μJ@60kHz
Repetition Rate	50kHz-200kHz	50kHz-200kHz
Pulse Width	<20ns@80kHz	<20ns@60kHz
Spatial Mode	TEM ₀₀ (M ² ≤1.2)	
Beam Divergence	≤2mrad	
Astigmatism	<0.3	
Beam Circularity	≥90%	
Polarization Ratio	>100:1	
Polarization Direction	Vertical	
Beam Pointing Stability	<25μrad/°C	
Pulse Energy Stability	≤3%RMS	
Power Stability	≤3%RMS	
Long-term Pointing Stability	<25μrad/°C	
External Comms	RS-232	
Beam Diameter, 0.3m in Front of Laser	≤2mm	
Working Material	Nd:YVO ₄	
Warm-up Time	<15min	
Operating Temperature	+10 to +35°C	
Operating Humidity	<65%	
Non-Operation(Storage) Temperature	-10 to +45°C	
Shipping Temperature(Non-condensing)	-10 to +45°C	
Cooling	Water	
Power Supply(Consumption)	110/220V AC, 50/60Hz (800W)	
Classification	Class 4	
Head Weight	21kg	

Mechanical Specifications

