

CONFIGURATIONS

The following are suggested optimal configurations of H300 series modules for various output wavelengths:

1. For **2nd harmonics** output only: the H300SHC module.
2. For **2nd and 3rd harmonics**:
 - a) H300SH+H300S+H300THC – for SH and TH output.
 - b) H300STH+H300ST – a cost-effective solution not requiring the replacement of modules when changing from a 532 nm to 355 nm beam and vice versa. The 532 nm beam specification will, however, be 15% lower relative to the values specified above due to extra components in the beam path.
5. For **attenuators** for all wavelengths up to the 3th harmonic: H300A1+H300SH+H300A2+H300TH+H300A3 modules.

Modules Selection Guide

Module	Description	Output ports	Output pulse energy specifications	Dimensions W×L×H, mm	Extension possible?	Notes
H300SH	Second harmonic generator	Port 1: 1064, 532 nm	N/d	154×160×128	Yes	
H300S	532 nm beam separator	Port 1: 532 nm Port 2: residual 1064 nm	See NL230 specifications for 532 nm beam	154×160×128	No	Should be used with H300SH
H300SHC	Second harmonic generator with 532 nm beam separator	Port 1: 532 nm Port 2: residual 1064 nm	See NL230 specifications for 532 nm beam	154×210×128	No	
H300TH	Third harmonic generator	Port 1: 1064, 532 & 355 nm	N/a	154×160×128	Yes	Should be used with H300SH
H300THC	Third harmonic generator with 355 nm beam separator	Port 1: 355 nm Port 2: residual 1064 & 532 nm	See NL230 specifications for 355 nm beam	154×210×128	No	Should be used with H300SH
H300STH	Second and third harmonics generator	Port 1: 1064, 532 & 355 nm	N/a	154×210×128	Yes	
H300ST	355 nm beam separator	Port 1: 355 nm Port 2: residual 532 nm	See NL230 specifications for 355 nm beam	154×160×128	No	Recommended to use with H300STH
H300A1	Attenuator for 1064 nm beam	Port 1: 1064 nm beam	Transmission in 5–90% range at 1064 nm	154×210×128	No	
H300A2	Attenuator and beam separator for 532 nm beam	Port 1: 532 nm Port 2: residual 532 nm	Transmission in 5–90% range at 532 nm	154×210×128	No	Should be used with H300SH
H300A3	Attenuator and beam separator for 355 nm beam	Port 1: 355 nm Port 2: residual 355 nm	Transmission in 5–90% range at 355 nm	154×210×128	No	Should be used with H300TH or H300STH

HARMONIC GENERATORS

For NL230 Series Lasers

Nanosecond Q-switched lasers enable simple and cost effective laser wavelength conversion to shorter wavelengths through harmonics generation. EKSPLA offers a broad selection of wavelength conversion accessories for NL230 series lasers.

The harmonics module uses a modular design that allows reconfiguration of laser output for the appropriate experiment wavelength.

A typical module houses a non-linear crystal together with a set of dichroic mirrors for separating the harmonic beam from the fundamental wavelength. Nonlinear crystals used for the purpose of wavelength

conversion are kept at an elevated temperature in a thermo-stabilized oven.

Two or more modules can be joined together for higher harmonics generation: attaching one extra module to a second harmonic generator allows for the generation of 3rd wavelengths.

It should be noted that only modules with a single output port can be joined together: it is possible to attach a H300S module to a H300SH unit for 532 nm beam separation. Modules with two output ports (e.g., H300SHC) cannot be attached to extra units.

FEATURES

- ▶ Compact harmonic modules
- ▶ Thermo stabilized crystals for long lifetime
- ▶ Dichroic mirrors
- ▶ AR coatings on crystals
- ▶ Phase matching by mechanical adjustment
- ▶ High conversion efficiency
- ▶ Wide selection of different

H300SH 2nd harmonic generator

SPECIFICATIONS

Output ports	
Port #1	1064 & 532 nm
Typical conversion efficiency ¹⁾	50 – 60% (depending on laser model)
Output pulse energy	N/A
Dimensions (W×H×L)	154×128×160 mm
Extension possibility	Yes

¹⁾ 1064 nm wavelength beam conversion efficiency.

FEATURES

- ▶ Contains SH crystal with half-wave plate for input polarization adjustment
- ▶ 532 nm and 1064 nm outputs
- ▶ SH crystal thermo stabilized for long lifetime

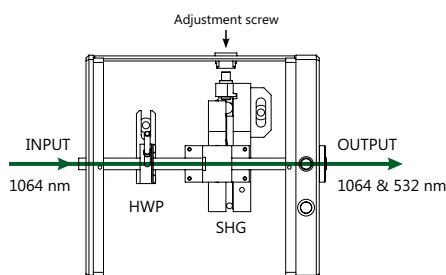


Fig.1. Optical layout of the H300SH.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

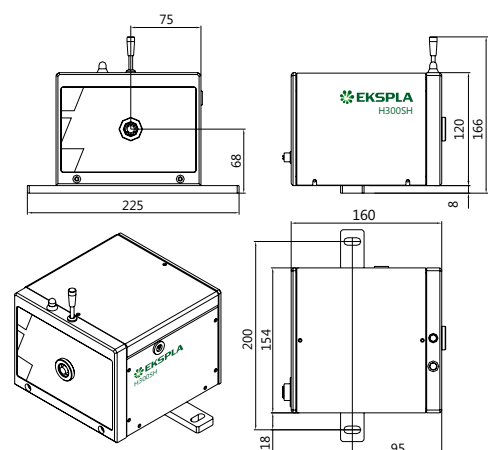


Fig. 2. Dimensions and output port position of H300SH module.

H300S separators module

SPECIFICATIONS

Output ports	
Port #1	532 nm
Port #2	residual 1064 nm
Output pulse energy	See NL230 specifications for 532 nm beam
Dimensions (W×H×L)	154×128×160 mm
Extension possibility	No

FEATURES

- ▶ 532 nm and 1064 nm outputs

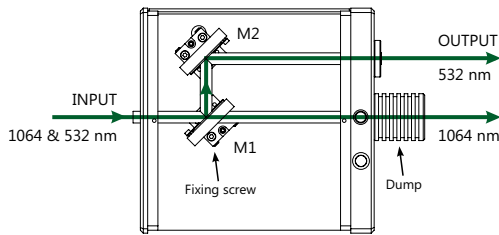
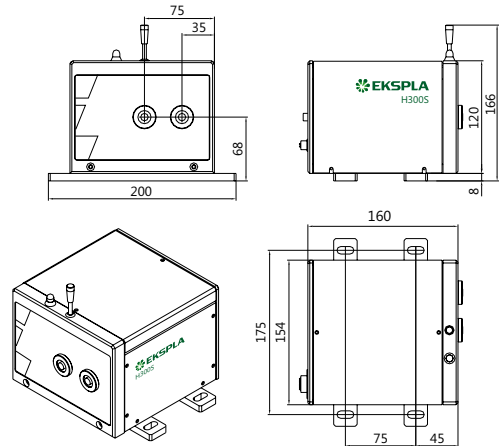


Fig.1. Optical layout of the H300S.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

Fig. 2. Dimensions and output port position of H300S module.



H300SHC 2nd harmonic generator with separator

SPECIFICATIONS

Output ports	
Port #1	532 nm
Port #2	residual 1064 nm
Typical conversion efficiency ¹⁾	50 – 60% (depending on laser model)
Output pulse energy	See NL230 specifications for 532 nm beam
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

FEATURES

- ▶ Contains SH crystal with half-wave plate for input polarization adjustment
- ▶ 532 nm and 1064 nm outputs
- ▶ SH crystal thermo stabilized for long lifetime

¹⁾ 1064 nm wavelength beam conversion efficiency.

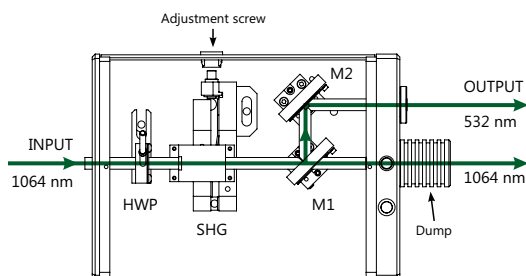
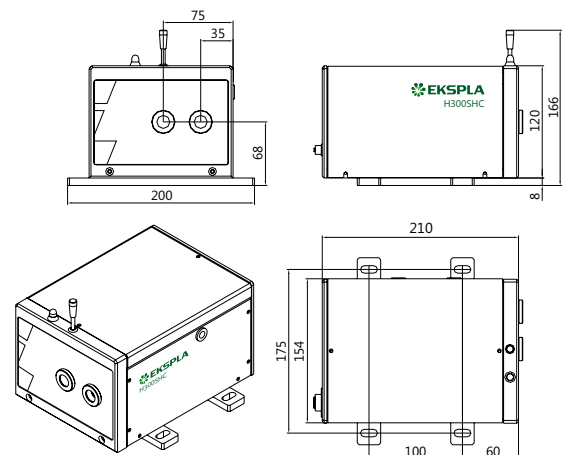


Fig.1. Optical layout of the H300SHC.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

Fig. 2. Dimensions and output port position of H300SHC module.



H300TH 3rd harmonic generator

SPECIFICATIONS

Output ports	
Port #1	1064, 532 & 355 nm
Typical conversion efficiency ¹⁾	20 – 30% (depending on laser model)
Output pulse energy ²⁾	N/A
Dimensions (W×H×L)	154×128×160 mm
Extension possibility	Yes

¹⁾ 1064 nm wavelength beam conversion efficiency.
²⁾ When used with H300SH.

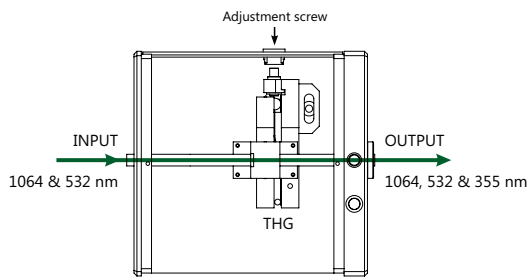


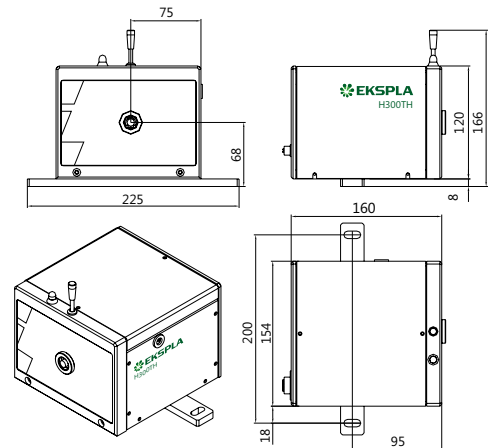
Fig. 1. Optical layout of the H300TH.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

FEATURES

- ▶ Contains TH crystal with half-wave plate for input polarization adjustment
- ▶ 355 nm, 532 nm and 1064 nm outputs
- ▶ TH crystal thermo stabilized for long lifetime

Fig. 2. Dimensions and output port position of H300TH module.



H300ST 2nd and 3rd harmonic separator

SPECIFICATIONS

Output ports	
Port #1	355 nm
Port #2	residual 532 nm
Output pulse energy ¹⁾	See NL230 specifications for 355 nm beam
Dimensions (W×H×L)	154×128×160 mm
Extension possibility	No

¹⁾ When used with H300STH.

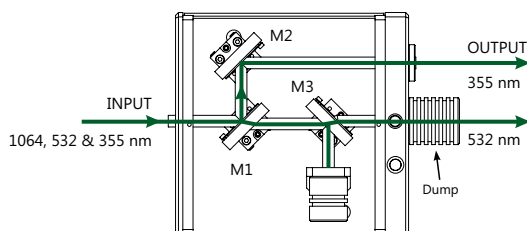


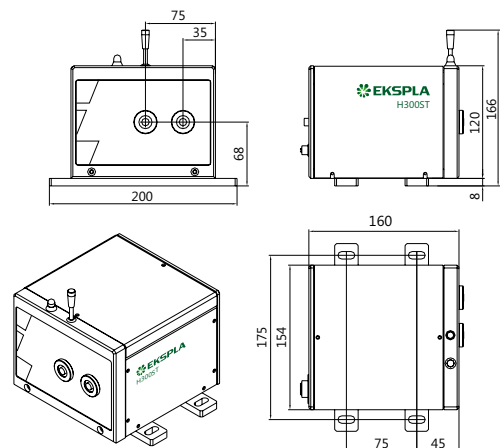
Fig. 1. Optical layout of the H300ST.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

FEATURES

- ▶ 355 nm and 532 nm outputs
- ▶ High damage threshold dielectric mirrors

Fig. 2. Dimensions and output port position of H300ST module.



H300THC 3rd harmonic generator with separator

SPECIFICATIONS

Output ports	
Port #1	355 nm
Port #2	residual 1064 & 532 nm
Typical conversion efficiency ¹⁾	20 – 30 % (depending on laser model)
Output pulse energy ²⁾	See NL230 specifications for 355 nm beam
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

¹⁾ From 1064 nm wavelength to respective harmonic wavelength.
²⁾ When used with H300SH.

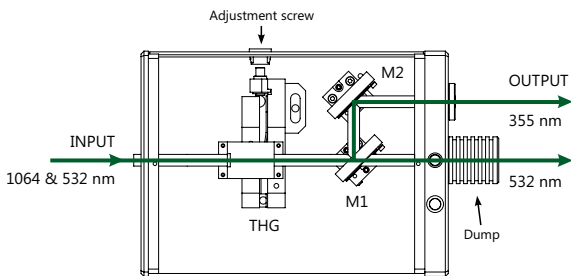
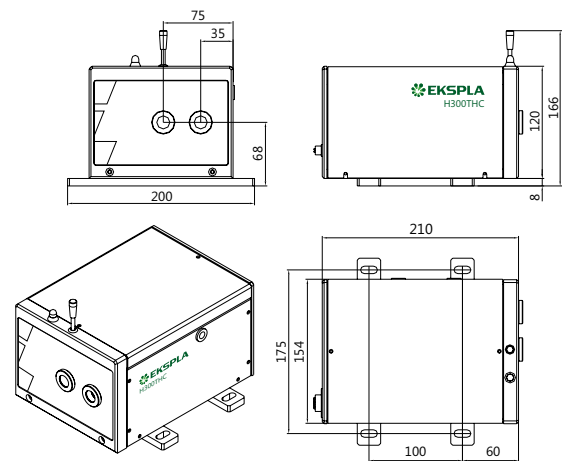


Fig. 1. Optical layout of the H300THC.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

Fig. 2. Dimensions and output port position of H300THC module.



FEATURES

- ▶ Contains TH crystal with half-wave plate for input polarization adjustment
- ▶ 355 nm and 532 nm outputs
- ▶ TH crystal thermo stabilized for long lifetime

H300STH 2nd and 3rd harmonic generator without separator

SPECIFICATIONS

Output ports	
Port #1	355 nm and residual 1064 & 532 nm
Typical conversion efficiency ¹⁾	20 – 30 % (depending on laser model)
Output pulse energy	N/A
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

¹⁾ From 1064 nm wavelength to respective harmonic wavelength.

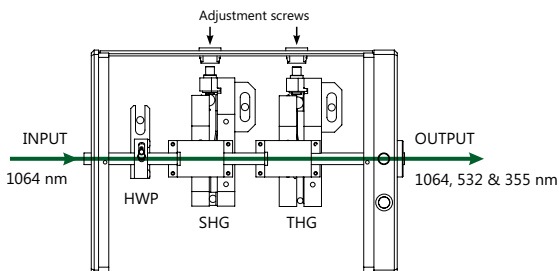
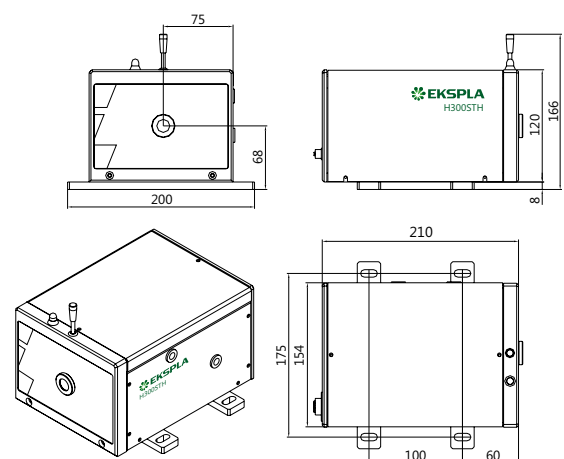


Fig. 1. Optical layout of the H300STH.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for demonstration of layout.

Fig. 2. Dimensions and output port position of H300STH module.



FEATURES

- ▶ Contains SH and TH crystals with half-wave plate for input polarization adjustment
- ▶ 355 nm, 532 nm and 1064 nm outputs
- ▶ SH and TH crystals thermo stabilized for long lifetime

ATTENUATORS

For NL230 Series Lasers

NL230 series lasers offer several options for changing output pulse energy. The easiest option is to change the timing of the Q-switch opening relative to the flashlamp pump pulse. This option is a standard feature for all NL230 series lasers. A change in Q-switch timing, however, changes other laser pulse parameters along with the pulse energy.

A decrease in pulse energy results in longer pulse duration, decreased pulse-to-pulse-stability, and possible changes in the spatial beam profile. For applications that require smooth adjustment of output pulse energy while keeping other parameters stable, EKSPLA offers H300Ax series attenuator modules.

FEATURES

- ▶ Compact design
- ▶ Motorized
- ▶ Smooth adjustment of output pulse energy

H300A1 attenuator at 1064 nm

SPECIFICATIONS

Output ports	
Port #1	1064 nm
Output pulse energy	transmission in 5 – 90 % range at 1064 nm
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

FEATURES

- ▶ Smooth adjustment of output pulse energy without change of other pulse parameters
- ▶ Motorized

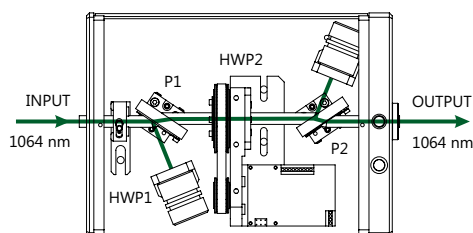
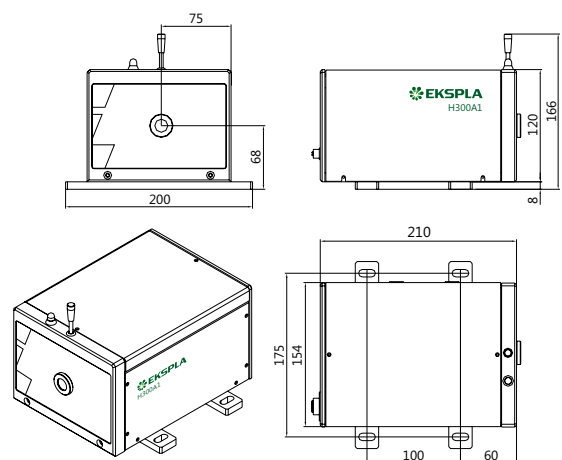


Fig.1. Optical layout of the H300A1.

Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for easier understanding. Half wave plate (HWP2) is adjusted automatically.

Fig. 2. Dimensions and output port position of H300A1 module.



H300A2 attenuator at 532 nm

SPECIFICATIONS

Output ports	
Port #1	532 nm
Port #2	residual 532 nm
Output pulse energy ¹⁾	transmission in 5 – 90 % range at 532 nm
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

¹⁾ When used with H300SH.

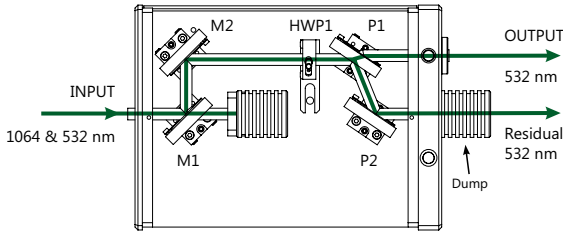
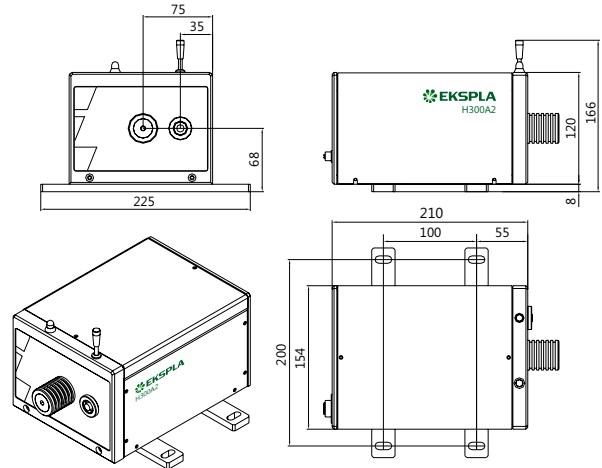


Fig.1. Optical layout of the H300A2.
 Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for easier understanding. Half wave plate (HWP1) is adjusted automatically.

Fig. 2. Dimensions and output port position of H300A2 module.



FEATURES

- ▶ Smooth adjustment of output pulse energy without change of other pulse parameters
- ▶ Motorized

H300A3 attenuator at 355 nm

SPECIFICATIONS

Output ports	
Port #1	355 nm
Port #2	residual 355 nm
Output pulse energy ¹⁾	transmission in 5 – 90 % range at 355 nm
Dimensions (W×H×L)	154×128×210 mm
Extension possibility	No

¹⁾ When used with H300TH or H300STH.

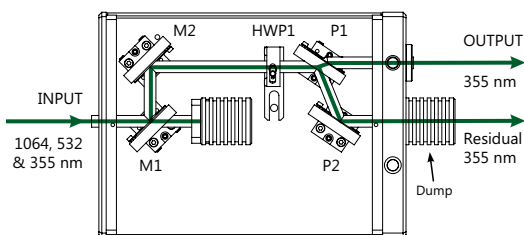
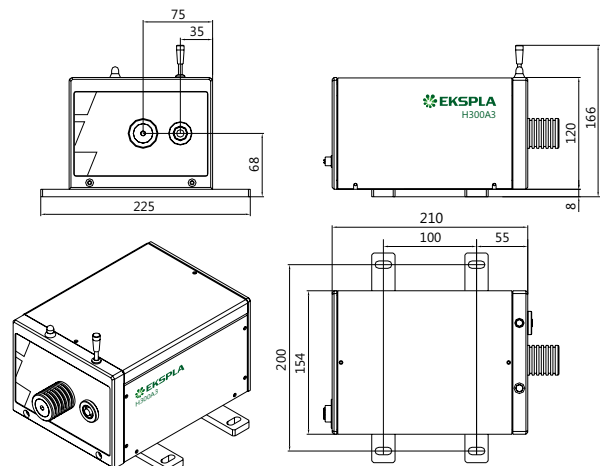


Fig.1. Optical layout of the H300A3.
 Note: The optical layout drawing does not reflect the actual positions or number of optical components – it is simplified for easier understanding. Half wave plate (HWP1) is adjusted automatically.

Fig. 2. Dimensions and output port position of H300A3 module.



FEATURES

- ▶ Smooth adjustment of output pulse energy without change of other pulse parameters
- ▶ Motorized