



HarmoniXX

The product line **HarmoniXX** is a series of frequency converters for ultrafast lasers, in particular for Ti:Sapphire lasers, but available for other wavelength ranges as well. The flexible architecture of these devices allows for Second Harmonic Generation (SHG), Third Harmonic Generation (THG), and Fourth Harmonic Generation (FHG) as needed. Also, a version generating the difference frequency (DFG) from two input wavelengths is available. The modular instrument design focuses on user-friendliness and compactness, with automated wavelength tuning available.

The **HarmoniXX** is equipped with quickly exchangeable optics and works with an extremely wide range of different pulse widths, it can be used with tens of picoseconds as well as with pulses down to 100 fs. Great care has been applied to the optimization of the conversion efficiency over this large pulse width range. As a result these high conversion efficiencies can now be achieved at various power levels and with minimum pulse broadening.

Unlike conventional triplers, the new **HarmoniXX** THG needs no separation and recombination of the interacting beams. This user-friendly feature is due to the use of one common optical beam path for all interacting beams. It is implemented by means of a proprietary delay compensator and provides consistent spatial overlap for optimum efficiency.

- High conversion efficiency
- Easy alignment
- Adaptable to different pulse widths and power levels
- Minimum pulse broadening
- Excellent pointing stability
- Flexible architecture

In addition to the HarmoniXX versions mentioned above, versions for other wavelength ranges are available upon request. By using other mixing processes like sum frequency mixing of e.g. the OPO Signal and Pump of the OPO it is possible to reach wavelength ranges that are not accessible with the standard versions. Depending on the OPO that is used and the choice of HarmoniXX system a wavelength range covering more than to 2000 nm is accessible.

Versions

- SHG only
- THG (includes SHG in THG)
- FHG (2 + 2) (includes SHG in THG, THG)
- FHG (3 + 1)¹⁾ (includes SHG in THG, THG, FHG (2 + 2)), no Autotracker available
- DFG (please see separate data sheet)

1) FHG (3 + 1) comes in a larger sized housing than SHG, THG, or FHG (2 + 2)



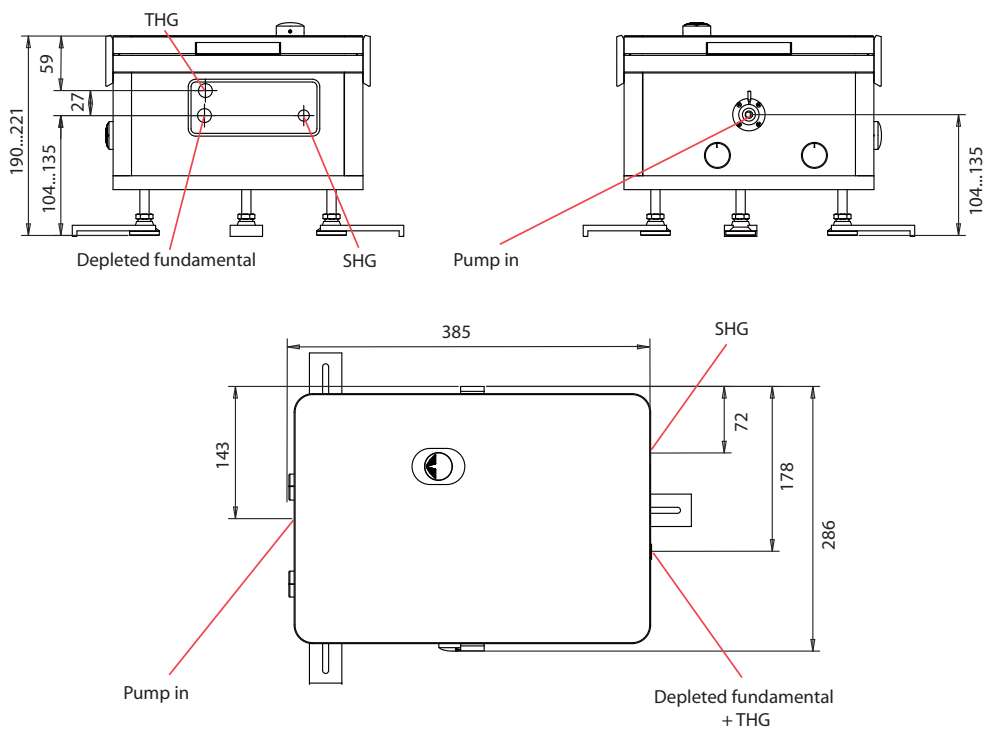
HarmoniXX



Dimensions (in mm)

SHG only, THG, and FHG (2 + 2) version 385 x 221 x 286 (W x H x D)
FHG (3 + 1) version 580 x 221 x 410 (W x H x D)

Drawing shows THG version.



Options

- Autotracker: automatic following and / or setting to an input wavelength. Details depend on laser source. Please ask for details.
- Other wavelength ranges
- Other interaction schemes, e.g. SFM

Specifications

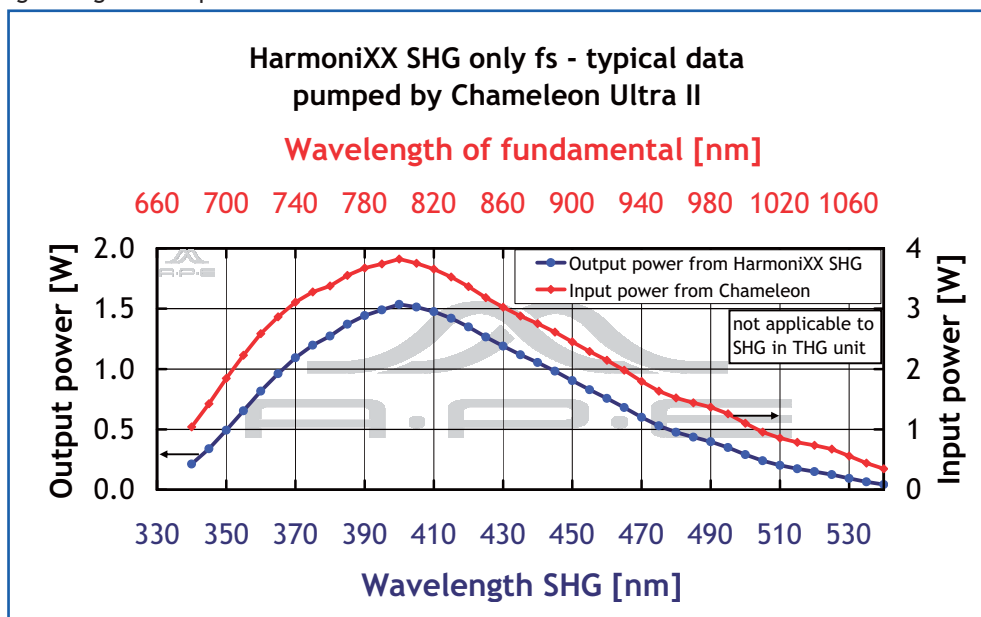
Wavelength ranges¹⁾

	Ti:Sapphire	OPO Signal
Input	680 ... 1080 nm	1000 ... 1600 nm
SHG	340 ... 540 nm	500 ... 800 nm
THG	227 ... 360 nm	
FHG (2 + 2) option	210 ... 230 nm	
FHG (3 + 1) version	190 ... 210 nm	

Conversion efficiencies

	Mira V10 @ 800 nm, 76 MHz	Chameleon Ultra II @ 800 nm, 80 MHz
Input pulse width	~ 130 fs	~ 1.6 ps
Input power for below specifications	1.3 W	1.3 W
	efficiency / power	efficiency / power
SHG (SHG only version)	40 % / 520 mW	15 % / 195 mW
SHG (in THG version)	20 % / 260 mW	10 % / 130 mW
THG	10 % / 130 mW	3 % / 39 mW
FHG (3 + 1) version	0.1 % / 1.5 mW	on request
	@ 880 nm, 1.0 W	@ 880 nm, 2.1 W
FHG (2 + 2) option	4 % / 40 mW	on request
		4 % / 85 mW

1) Other wavelength ranges on request



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