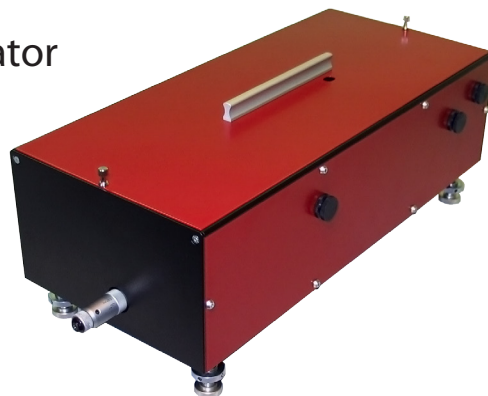




AMG. Second, Third and Fourth Harmonic Generator

- SFG modification for 800-nm Ti:S amplifiers (TH+fundamental)
- Low divergence and minimum walk-off angle
- Highly efficient
- Output wavelengths in the UV down to 195 nm



Second, third and fourth harmonic generator AMG-A-1030

Product overview

Second, third and fourth harmonic (SH, TH and FH) generator is used for conversion of optical frequency for a wide range of input wavelengths produced by various ultrafast laser sources. The sources may be titanium-sapphire femtosecond lasers (Ti:S, 780-1000 nm), various ultrafast solid-state and fiber lasers around 1030-1064 nm region, chromium-forsterite oscillators (Cr:F, 1230-1270 nm), as well as other ultra-short pulse sources including parametric light conversion systems. The units provide highly efficient stable output with good beam quality and little pulse broadening in fs scale.

The model range currently features only the AMG-A-W systems for usage with amplifier systems (single-shot to several MHz, μ J- and mJ-level output). The "W" in the model name takes on the exact central wavelength value for a certain model, e.g. the AMG-A-1064 (i.e. designed for an amplifier with \sim 1064 nm output).

The principle of operation is based on second harmonic generation in a non-linear crystal with phase-matching technique, generation of third harmonic by sum frequency generation ($\omega+2\omega=3\omega$) and fourth harmonic generation by direct doubling of second harmonic ($2\omega + 2\omega = 4\omega$).

A different approach may be taken in order to get fourth harmonic wavelengths with input wavelengths shorter than 820 nm (as there is a limit to conventional NL crystals for SH conversion for input wavelengths shorter than 410 nm). The AMG-A-800 harmonic generator system features sum frequency generation of FH signal by mixing of third harmonic and fundamental wavelengths ($\omega+3\omega=4\omega$). Such a system is indispensable when converting Ti:S amplifier output that is shorter than 820 nm.

AMG technical specifications

	AMG-A (for amplifiers)
Possible input wavelength range*	780-1600 nm
Input wavelength tuning range**	50-100 nm
Output wavelengths***	390-800 nm (SH) 260-533 nm (TH) 195-400 nm (FH)
Input pulse duration	>50 fs
Input polarization	linear, horizontal
Input average power	<10 W
Input pulse energy	0.2-10 mJ
Input beam dia at level of $1/e^2$	<8 mm
Conversion efficiency****	30-50% (SH), 5-10% (TH), 1-10% (FH)
Pulse broadening	<100 fs (SH), <250 fs (TH), <1000 fs (FH)
Output polarization	linear: SH - vertical; TH - horizontal; FH - vertical
Dimensions	480x222x192 mm

* - may be covered by several exchangeable optics sets, please indicate the desired wavelength range upon your request;
 ** - typical with one optics set, depends on exact central wavelength and pulse duration;
 *** - defined by input wavelength;
 **** - defined by input pulse energy and input pulse duration.



AVESTA

LASERS AND OPTICAL SYSTEMS



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