APC. Prism-Based Dispersion Control Unit for Femtosecond Lasers

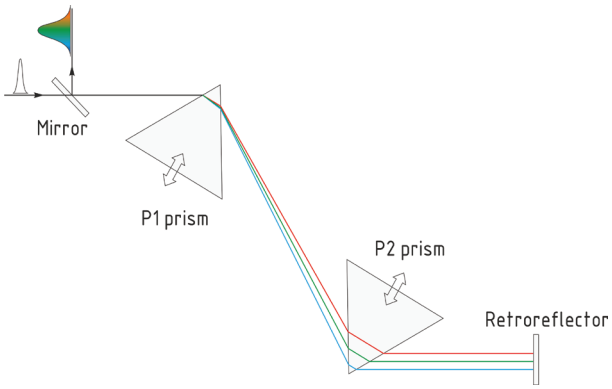
APC Pro

- GVD at 800 nm from +16500 fs^2 to -13800 fs^2
- Broad GVD tuning range
- Model with flexible distance between prisms
- Ideal for multiphoton microscopy and spectroscopy

APC Kit

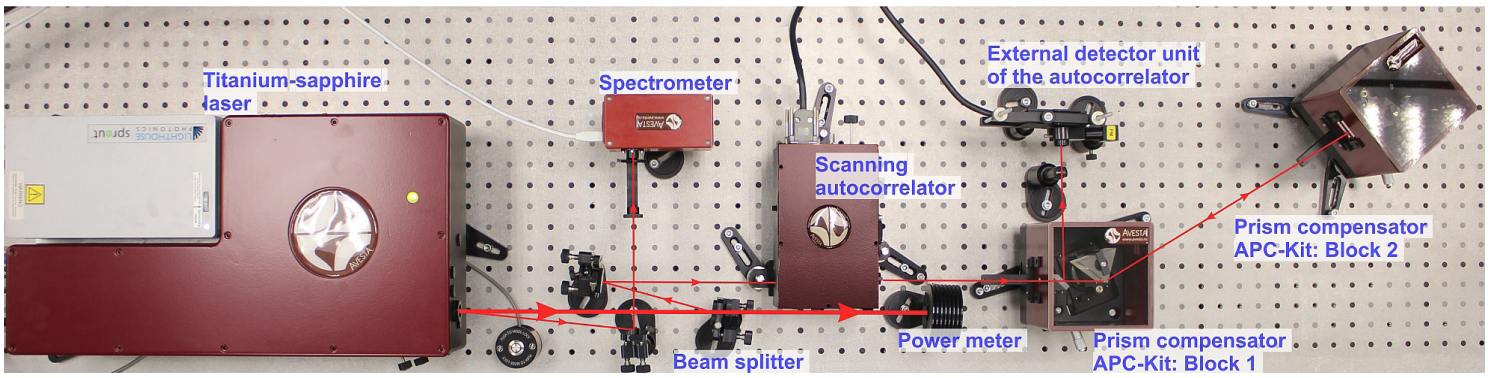
Product overview

Prism dispersion compensator provides extensive control over the duration of femtosecond optical pulses by introducing user-defined amount of second-order group velocity dispersion (GVD) into the optical scheme. It can compensate the pulse widening caused by positive GVD of transmissive elements of the optical setup such as lenses and objectives that is critically important for multiphoton femtosecond microscopy.



APC schematic layout

Propagation through any medium (including transparent ones) can influence the temporal properties of ultrashort laser pulses due to difference in the refraction index for different wavelengths, or dispersion. The dispersion makes different parts of a broadband spectrum of femtosecond laser pulses propagate with different velocities and separates them temporally from each other. For example, the second-order dispersion of glass in a microscope objective can stretch a 30-fs transform-limited laser pulse to 150 and even 300 fs. This stretching is unacceptable for scientific purposes since it results in decrease of intensity and temporal resolution. Fortunately, there are several ways to compensate the influence of the material dispersion introduced by transmissive optical elements. The most versatile and simple approach is to use a prism dispersion compensator which introduces the same amount of group velocity dispersion (GVD) but with an opposite sign (i.e. negative GVD) to the optical scheme.



Possible total dispersion control setup for multi-photon microscopy applications with APC Kit dispersion compensator and AA-M scanning autocorrelator with an external detector unit, laser source: Ti:S ultrafast laser TiF Series

AVESTA
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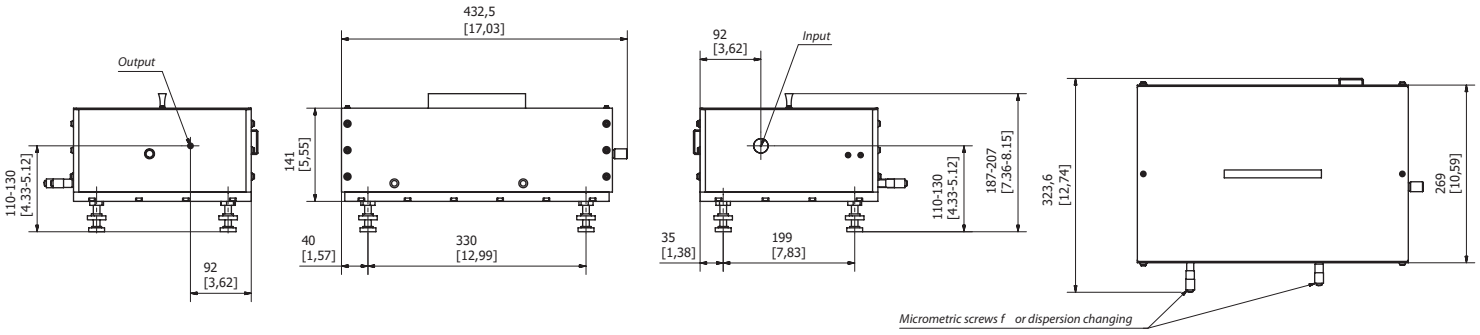
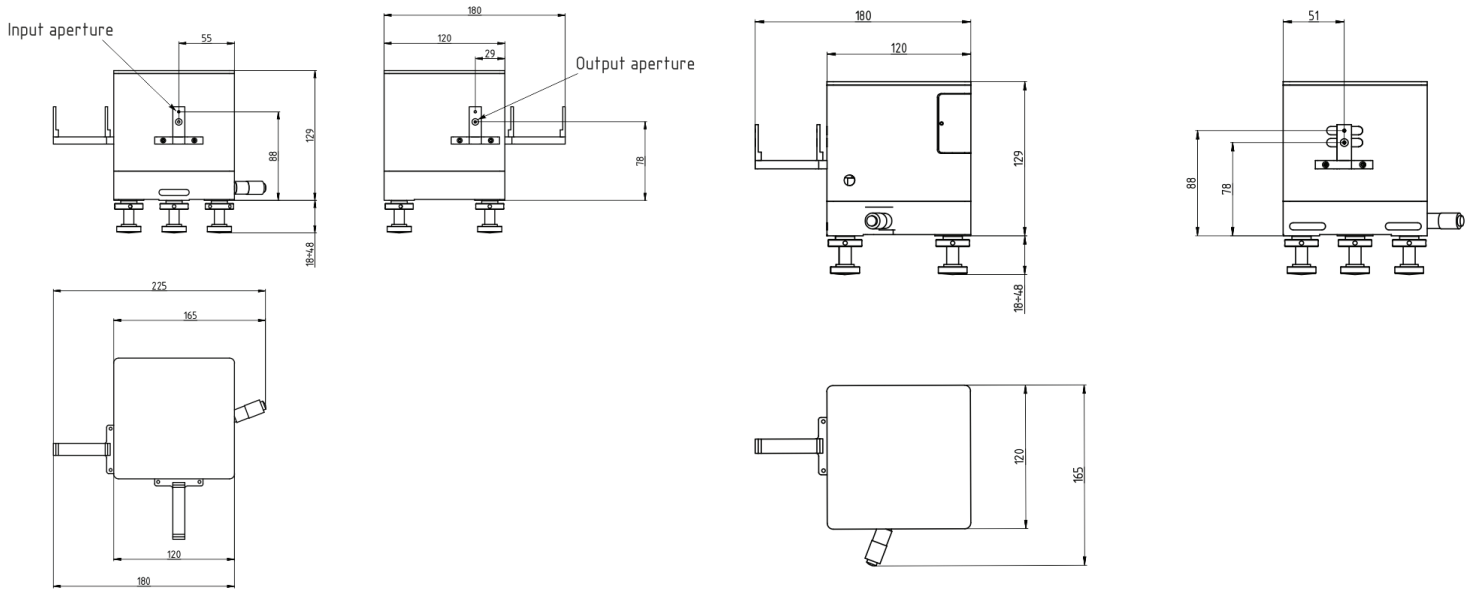
	APC Kit FS	APC Kit DF	APC Pro FS	APC Pro DF
Prism material	fused silica	dense flint	fused silica	dense flint
Wavelength	700-900* nm			
GVD range of dispersion compensator at 800 nm	user-defined, tuning range width 13000 fs^2	user-defined, tuning range width 30000 fs^2	from +6900 fs^2 to -1630 fs^2 **	from +16500 fs^2 to -13800 fs^2
Transmission	>90% @800 nm			
Polarization	linear, horizontal***			
Beam diameter	up to 4 mm			
Dimensions	two units, 165*180*129 mm each		410*324*186 mm	

** - other wavelength ranges are available upon request;*
*** - tuning range can be shifted to (+5700 fs^2 to -2830 fs^2) upon request;*
**** - vertical polarization upon request.*

APC dimensions



APC Pro dimensions in mm [inches]



APC Kit dimensions in mm

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