



AA-M. Scanning Real-Time Autocorrelator for Microscopy

- 20 fs - 12 ps pulse duration range
- External and internal photodetectors
- Scanning rate: 0.1-20 Hz
- Linear distortion: <1%
- USB connection and software
- All-reflective optics
- Fringe-resolved autocorrelation function
- Frictionless movement
- Bypass function



AA-M with its external photodetector

Product overview

The AA-M provides two simultaneous measurement points: one at the focal plane of the microscope and the other being the point where the optical head of the device is placed, i.e. somewhere before the microscope input. The comparison of the pulse duration value obtained in these two measurements determines the pulse broadening introduced due to the dispersion of the microscope's optical elements. In most cases of application of ultra-short pulses in microscopy it is essential to characterize the temporal and spatial profile of the beam in the focal spot of the microscope. These measurements are vital for any experiment as the shorter is the pulse the higher is the efficiency of the nonlinear imaging process (2-photon excitation) and less excitation energy is needed for successful experiment. Such beam characterization is also necessary when determining exposition of the sample. It ensures image optimization and correct intensity level estimation, as incorrect values may even lead to sample damage.

The device features USB interface and can be easily hooked up to a PC with Windows OS. The software is supplied with the device and comprises several useful tools. The acquired pulse duration data can be visualized, stored or exported to a .txt or .dat file. Autocorrelation function and final FWHM pulse duration in femtoseconds are calculated and displayed in real-time. Moreover, Gaussian or sech² fitting options are enabled, intensity function may also be observed. The statistical viewer feature allows the comparison of data acquired from several separate pulse measurements.

AA-M technical specifications

	AA-M
Possible full wavelength range*	450-2000 nm
Subranges* (exchangeable photodetectors/beam splitter sets)	V**: 450-700 nm R1: 700-1300 nm R2: 1300-2000 nm
Input pulse duration range	20 fs - 12 ps
Number of photodetectors for one range	two (internal and external for sample position)
Input pulse repetition rate	>10 kHz
Typical sensitivity (P_{av}*P_{peak})	100 mW ²
Input polarization	linear, horizontal (vertical upon request)
Scan rate	0.1-20 Hz
Linear distortion	<1%
Collinear autocorrelation	yes (interferometric and intensity)
PC connection	USB, Windows PC acquisition and analysis software is included in the standard package
Necessary equipment	Windows PC platform or an oscilloscope
Signal source and detector	Two-photon conductivity in semiconductor
Dimensions	210x164x132 mm (optical unit) 225x190x45 mm (control unit) 70x55x16.5 mm (external photodetector)

* - the autocorrelator may cover one, two or all three subranges with exchangeable photodetectors/beam splitter sets (1, 2 or all 3 sets may be included in the package depending on required laser source specifications);

** - the 450-700 nm subrange may only be purchased with the main unit order.

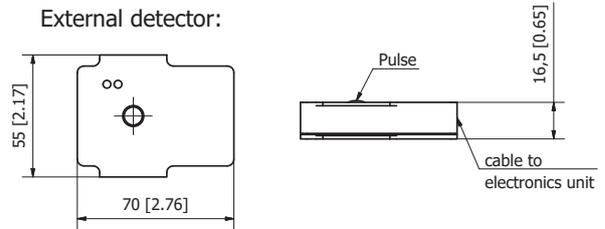
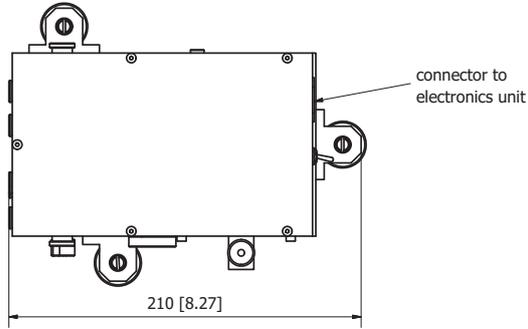
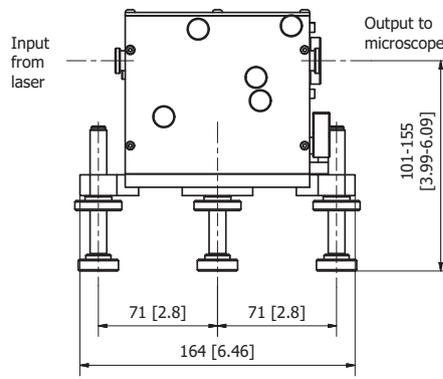
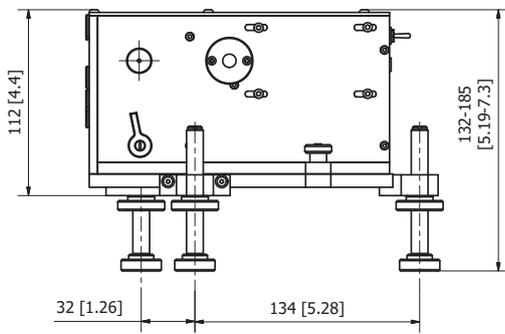


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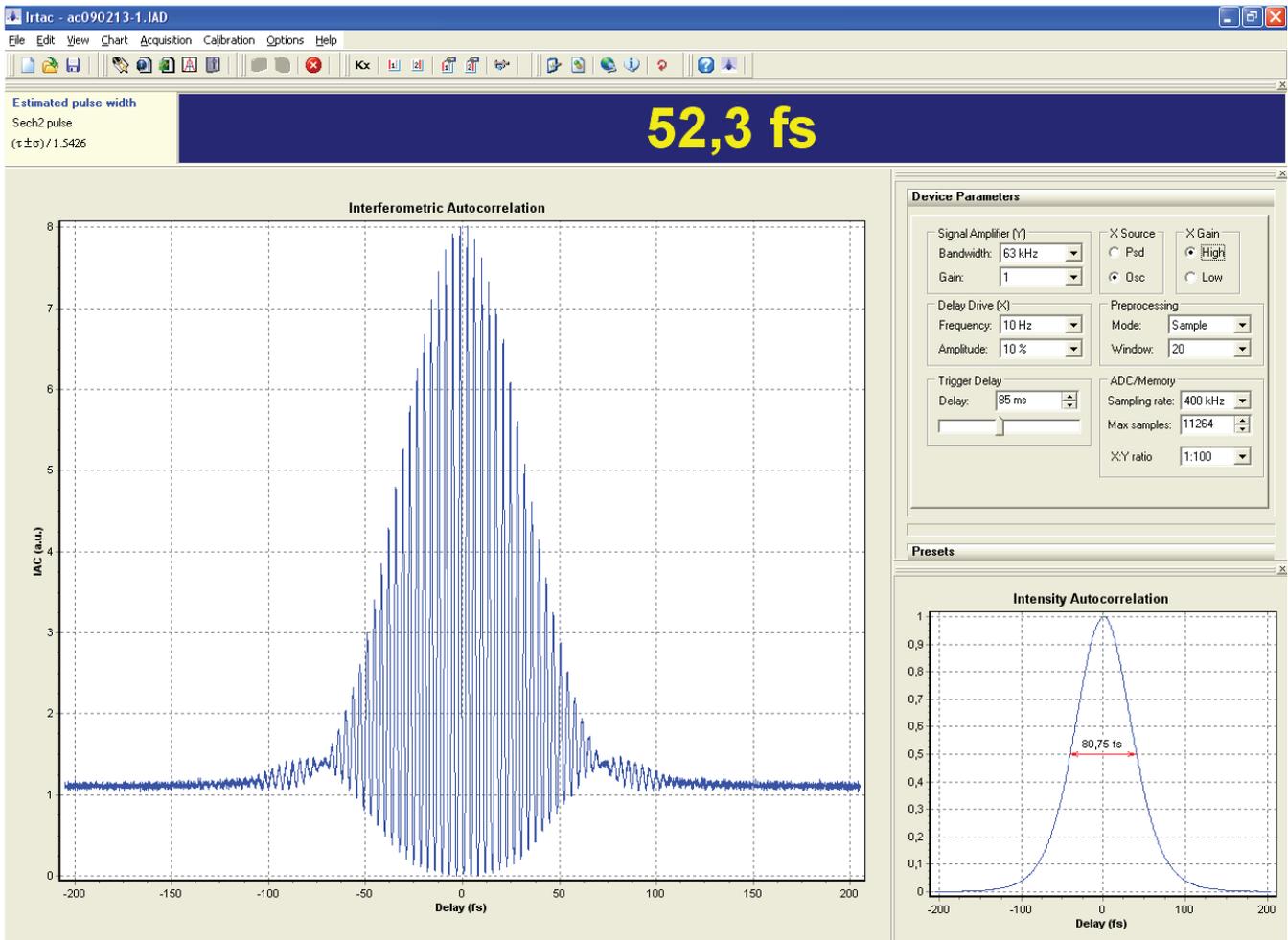
LASERS AND OPTICAL SYSTEMS

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+49 6151 425978 | info@topag.de | www.topag.de





AA-M dimensions (mm [inches])



AA-M acquisition software Irtac