



Diagnostics



## AA-M Scanning 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
- Position measurement
- Fringe-resolved autocorrelation function
- Frictionless movement
- Bypass function



AA-M with its external photodetector

### Product overview

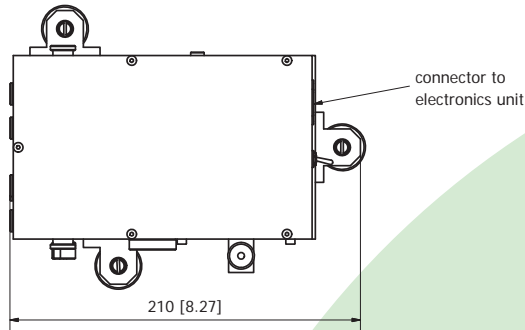
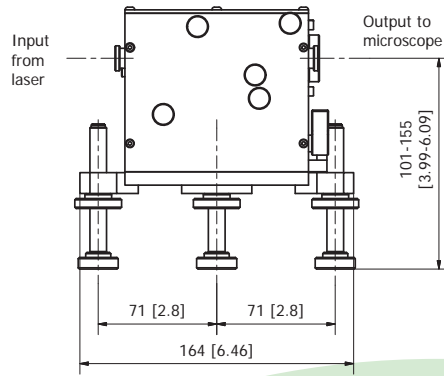
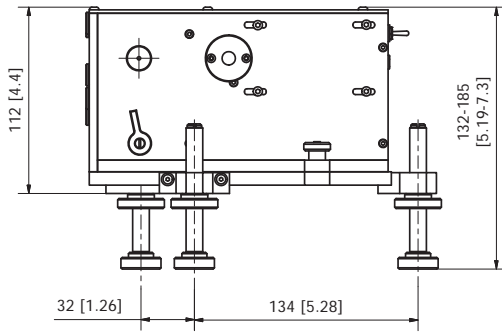
The AA-M provides two simultaneous measurement points: one at the focal plane of the microscope and the other being the point where the optical head of the device is placed, i.e. somewhere before the microscope input. The comparison of the pulse duration value obtained in these two measurements determines the pulse broadening introduced due 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 sech<sup>2</sup> 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.

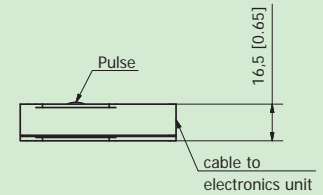
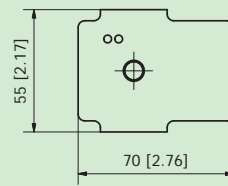
### AA-M technical specifications

Wavelength range, nm	450-700 (AA-MV) 700-1300 (AA-M) 1300-2000 (AA-MR) 450-2000* (AA-MM)
Pulse duration range, fs	20-12000
Number of photodetectors	two (incl. one external)
Input repetition rate	>10 kHz
Sensitivity	100 mW <sup>2</sup>
Input polarization, linear	horizontal (vertical upon request)
Scanning rate, Hz	0.1-20
Linear distortion, %	<1%
Collinear (interferometric and intensity) autocorrelation	yes
PC connection	USB
Necessary equipment	PC with Windows OS or oscilloscope
Signal source and detector	Two-photon conductivity in semiconductor
Dimensions, mm	210x164x132 (optical head) 225x190x45 (electronic unit) 70x55x16.5 (external photodetector)

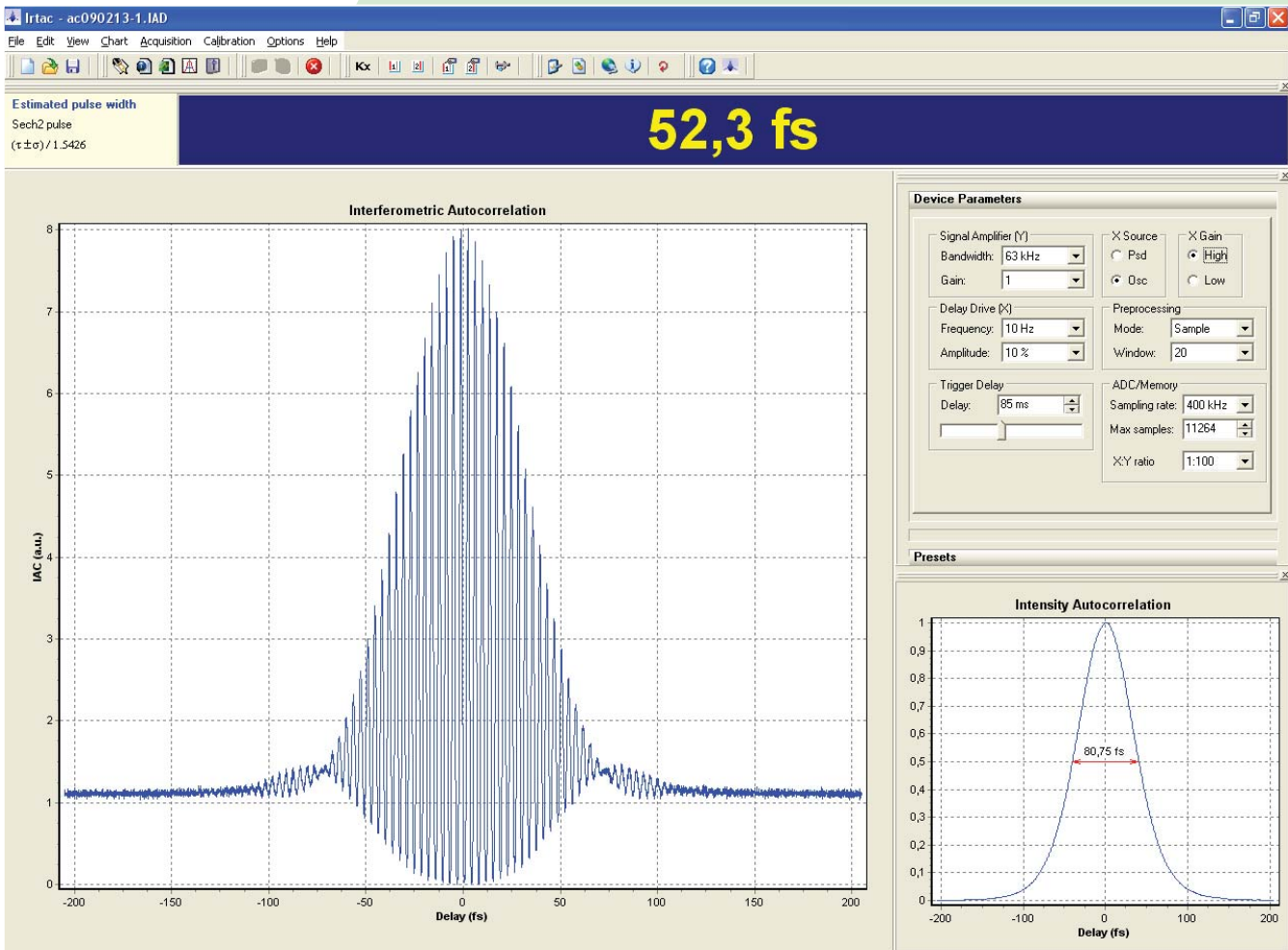
\* - model AA-MM may cover either all three ranges (450-2000 nm) or two separate ranges (i.e. 450-1300 or 700-2000 nm) with interchangeable optics and photodetectors (3 or 2 sets included). Please specify the desired range with your RFQ.



External detector:



AA-M (mm [inches])



AA-M acquisition software Irtac