

## Time Tagger Series

### Digital Data Acquisition redefined

#### Key hardware features

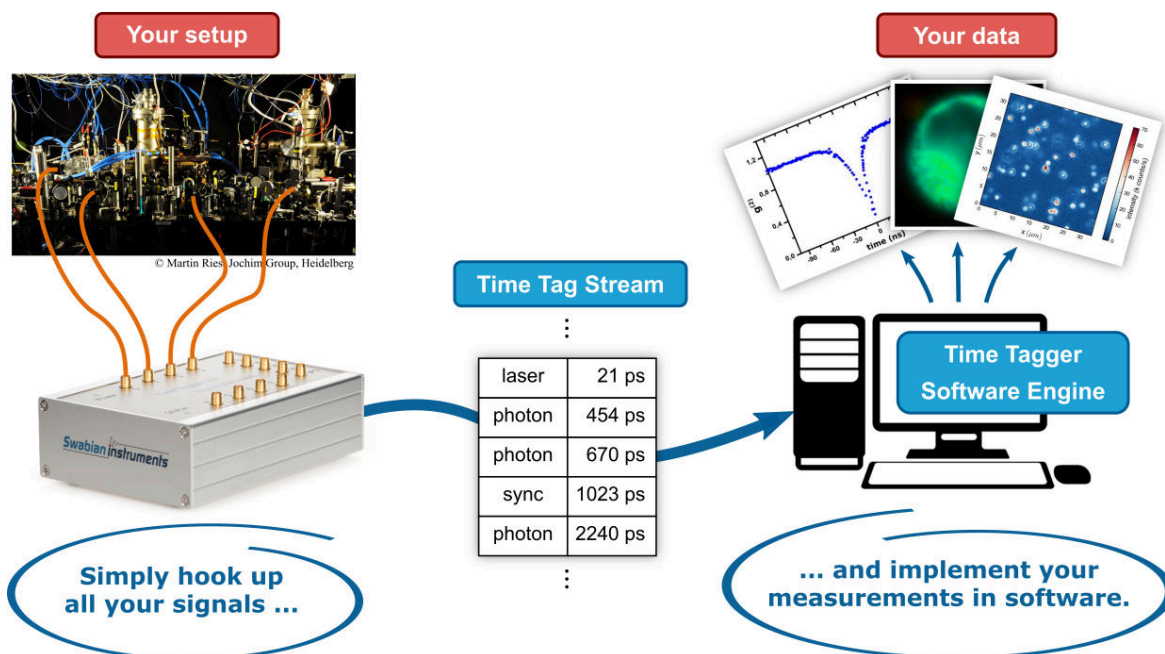
- time resolution down to 12 ps (RMS jitter)
- 8 or 18 fully equivalent input channels, up to 144 in sync mode
- detect rising and falling edges

#### Key software features

- full on-the-fly access to the time tag stream
- define your own measurements in software
- run various measurements simultaneously
- auto- and cross-correlation, multiple-start / multiple-stop

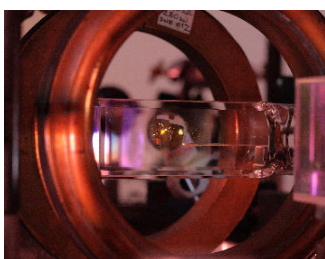
## Encounter the power of software defined data acquisition

Our customers benefit from the Software Defined Data Acquisition architecture of the Time Tagger devices that enables them to implement complex digital data acquisition tasks strikingly faster, and helps them to realize their research ideas much quicker.

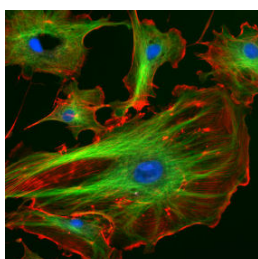


## Applications

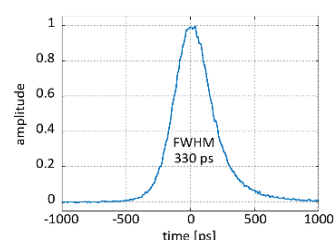
The Time Tagger Series digital data acquisition systems enables your creative research, today and in the future. You can easily implement digital measurement in software and run an arbitrary number of measurements simultaneously and on-the-fly.



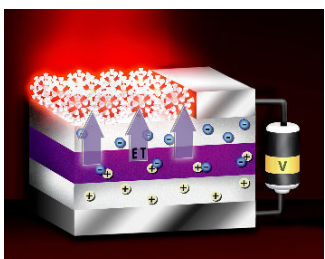
Cold Atoms, Ions, EIT



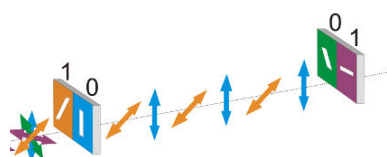
Fluorescence Lifetime



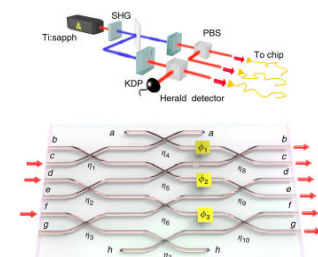
Pulsed Lasers



Quantum Dots



Quantum Cryptography



Quantum Photonics

Hardware Specifications	TIME TAGGER 20	TIME TAGGER ULTRA
<b>Time Resolution</b>		
RMS jitter (FWHM) <sup>1</sup>	34 ps (80 ps)	12 ps (29 ps)
Progressive mode <sup>2</sup>	24 ps (56 ps)	10 ps (24 ps)
<b>System Performance</b>		
Dead time	6 ns	2.25 ns
Sustained data rate	8.5 M tags/s	> 40 M tags/s
Sustained sync rate	167 MHz	444 MHz
Burst memory	8 M tags	40 M tags
Input signal range into 50 $\Omega$	0 to 3.0 V	-3.0 V to 3.0 V
Maximum input level	5 V	$\pm 5$ V <sup>3)</sup>
Trigger level range	0 to 2.5 V	-2.5 V to 2.5 V
Input delay adjust	1 ps to > 1 s	1 ps to > 1 s
Edge detection	rising and falling	rising and falling
<b>General Parameters</b>		
Input channels	8x SMA	8x or 18x SMA
Data interface	USB 2.0	USB 3.0
Dimensions	145 x 100 x 50 mm	190 x 140 x 60 mm
<b>Available upon request</b>		
General purpose I/Os	4x SMA	4x SMA
External clock input	1x SMA	1x SMA
Sync Time Tagger Ultra 18+	-	up to 144 channels

1) Typical RMS and FWHM jitter for a single channel

2) The progressive mode improves the time resolution by  $\sqrt{2}$  at the cost of an increased TDC artefact.

In normal mode, the Time Taggers provides outstanding small TDC artefacts. Contact us for details.

3)  $\pm 5$  V should be applied only with a 50% duty cycle or lower for the Time Tagger Ultra

All specifications are subject to change without notice.

## Measurements & Features

### Features

- virtual channels: sums, coincidences, gates
- arbitrary input delays
- small TDC artefacts

### Native Software Libraries

- Python
- Matlab
- LabVIEW
- C++
- C#, .NET

### Graphical User Interface

- based on modern web application

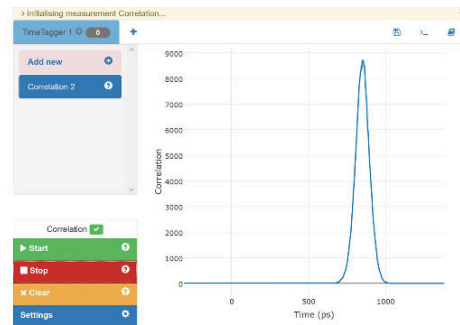
### Measurements

- auto- and cross-correlation
- multiple-start / multiple-stop histograms
- 2D-histograms (parameter scan)
- counters, countrates
- start-stop
- fluorescence lifetime imaging
- logic analyzer
- custom defined measurements
- on-the-fly time tag stream processing

# Implement your research ideas strikingly faster.



Hardware



Software Package

## Time Tagger bundle

- streaming time tagging system
- full software package included
- three-year warranty
- free software and firmware updates

## Your Time Tagger options

### TIME Tagger 20

34 ps rms jitter  
8.5 M tags / s  
8 channels

### ULTRA 8

12 ps rms jitter  
> 40 M tags / s  
8 channels  
upgradable to 18+

### ULTRA 18+

12 ps rms jitter  
> 40 M tags / s  
18 channels  
syncable

## Request a quotation

Send an email to [sales@swabianinstruments.com](mailto:sales@swabianinstruments.com) to get a quotation or to place a purchase order.

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