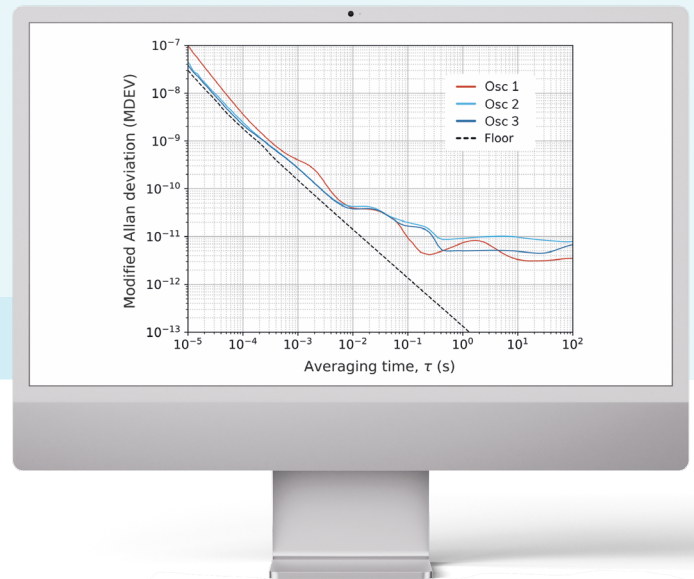


Timing & Synchronization made easy

Time Tagger Series

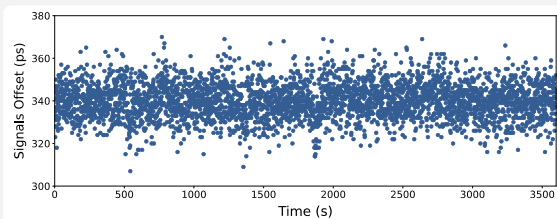
Are you looking for a versatile frequency counter or continuous time interval analyzer?

The Time Tagger Series lets you do this easier than ever.



Measurements

- » Frequency stability analysis
- » Realtime ADEV, MDEV, HDEV, phase and frequency error measurements
- » Phase noise analysis
- » Frequency counter measurements
- » Easy 1 PPS monitoring



Features

- » Up to 160 inputs simultaneously
- » Input frequency up to 700 MHz
- » Log and post process your raw data



Implement your ideas within minutes
 What makes our Time Taggers unique is their powerful software engine that offers effortless data processing capabilities (Python, MATLAB, LabVIEW, C#, and C++). You will implement your measurement ideas within minutes - promised.

Versatile input clock
 Define an input as the base clock in the software, and incoming time tags will be rescaled accordingly. Clocks with an arbitrary reference can be used beyond 10 MHz and 500 MHz!

Unlimited network capabilities
 You can stream time tags over the network and process them on client computers as if they had a hardware Time Tagger connected.

Maximum flexibility across multiple channels
 Run multiple timing and frequency measurements independently. No need for gating. You can use the internal clock or an arbitrary reference. Channels can be simultaneously and independently used for more versatile experiments.

High data transfer rate
 The high data transfer rate of 90 Mtags/s to your computer over USB 3.0 enables you to process huge amounts of events on-the-fly. Leverage our event filter for high repetition rate periodic signals.

Specifications



Key metrics	Time Tagger Ultra	Time Tagger X
noise floor ADEV @ t = 1 s	4E-13	4E-13
noise floor ADEV @ t = 1000 s	4E-16	4E-16
noise floor TDEV	200 fs	200 fs
single-shot RMS jitter	42 ps (Value) 8 ps (Performance)	2 ps
RMS jitter (HighRes)	down to 3 ps	down to 1.5 ps
digital resolution	1 ps	1 ps
Hardware features		
input channels	4 to 18 on a single system (up to 144 on synchronized systems)	4 to 20 on a single system (up to 160 on synchronized systems)
data transfer rate (USB 3.0)	90 Mtags/s	90 Mtags/s
data transfer rate (SFP+, QSFP+)	-	300, 1200 Mtags/s
onboard memory	512 Mtags	512 Mtags
timescale accuracy	± 20 ppm initial (+400 ppb/year aging)	± 300 ppb initial (+ 110 ppb/year aging)
Input signals		
recommended waveforms	rectangular, clipped sinewave	rectangular, clipped sinewave
maximum input frequency	475 MHz	700 MHz
minimum pulse width	500 ps	350 ps
input impedance	50 Ω	50 Ω / 1 MΩ
recommended input signal range	-3 to 3 V	-1.5 to 1.5 V
input signal range	-5 to 5 V	-3 to 3 V
External clock		
frequency (software clock)	100 kHz to 475 MHz	100 kHz to 700 MHz
frequency (CLK IN)	10, 500 MHz	10, 500 MHz
amplitude (CLK IN)	1 to 3 Vpp	0.5 to 4 Vpp
General parameters		
data interface	USB 3.0	USB 3.0, SFP+, QSFP+
size (L x W x H) in mm	190 x 140 x 60	380 x 480 x 90 (2U)

Endless processing capabilities

Learn more at:
[swabianinstruments.com/static/documentation/TimeTagger/](https://www.swabianinstruments.com/static/documentation/TimeTagger/)

