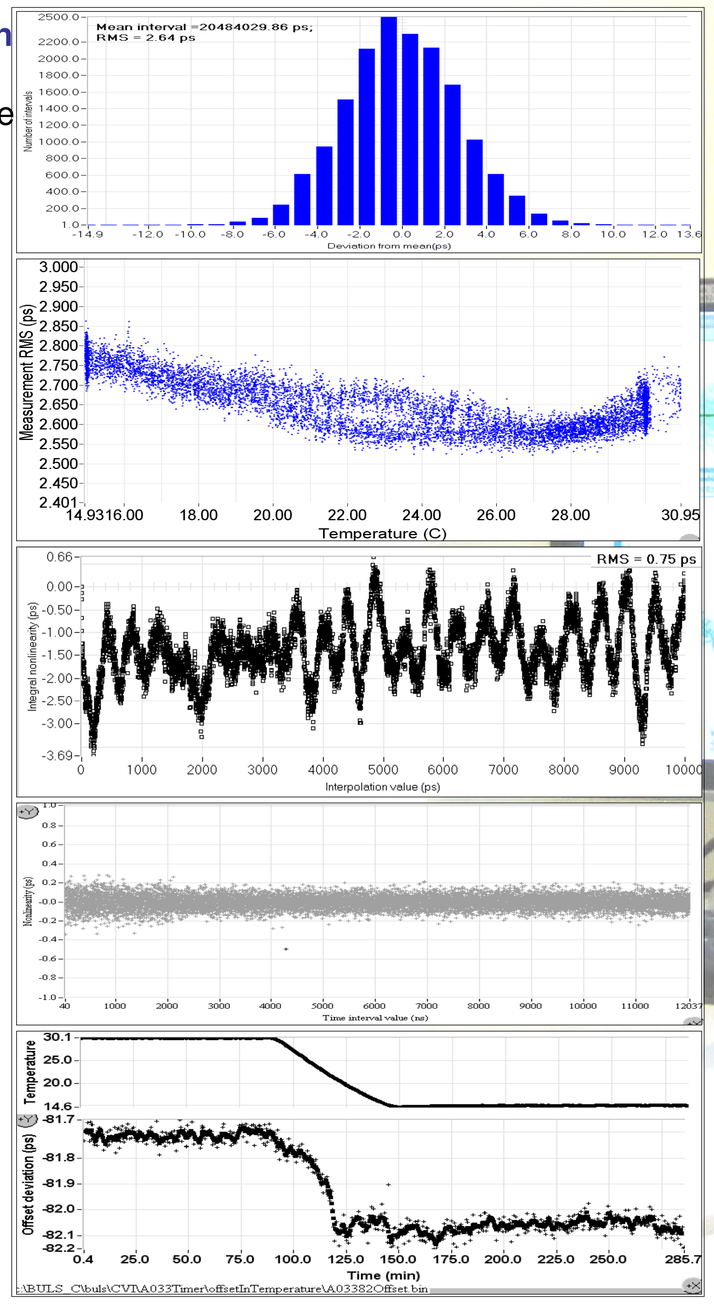
INSTITUTE OF ELECTRONICS AND COMPUTER SCIENCE

THE EVENT TIMER A033-ET FAMILY FOR SLR AUTOMATION

Event Timer: A033-ET

The Riga event timers (ET) are computer-based instruments that measure time instants when input events (represented by electrical pulses) occur. The Riga ETs are based on the innovative DSP-based technology for event timing (proposed by Yuri Artyukh in 2001), which uses a generation of a specific analogue signal directly from input events with its following digitizing and processing. This novel technology allowed to create the extreme precision and high-speed Event Timers having world-competetive performance characteristic and attractive price.

Single-shot RMS resolution for the A033-ET is in the range 2.5-3.0 ps, allowing the repetition rate in burst up to 20,000,000 time-tags/sec

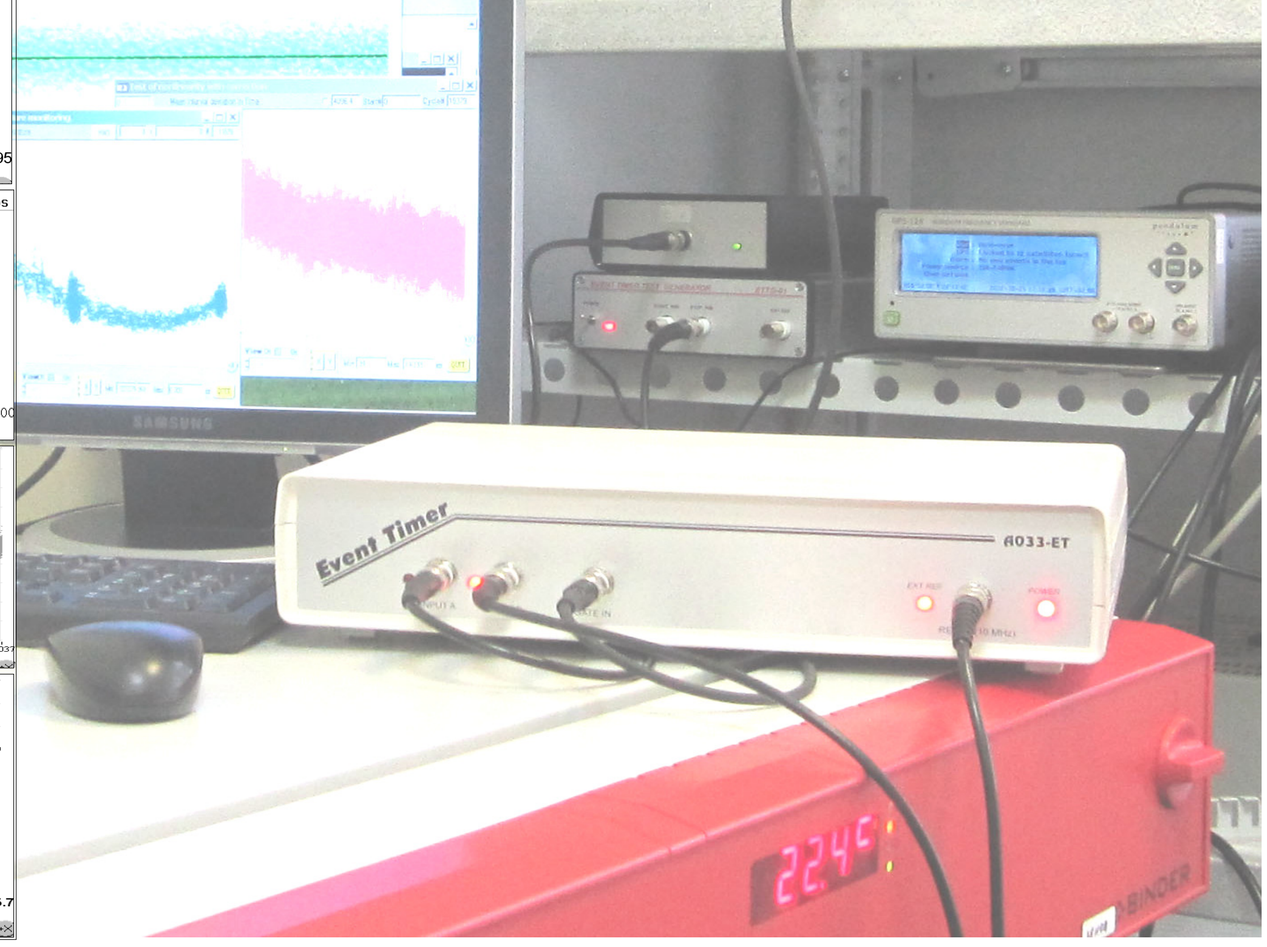


Temperature stability: Thanks to termo-compensated schematic the RMS resolution after calibration degrades only 0.3 ps in temperature variation ± 7.5 °C .

Integral non-linearity is an error depending on the position of measured event over interpolation interval 10 ns and is included in RMS resolution.

Interval non-linearity error for full measurement range from 50 ns up to 1.5 hours does not exceed ± 0.25 ps

Input-to-input offset drift impacts on measured Start-Stop time interval value dependent on temperature. There it is less than 0.1 ps/oC.



New embedded server system Event Timing Server Console (ETSC) is designed for providing the TCP/IP interface for the A033-ET devices with parallel interface. This solves problem of PC with Parallel Port and increases the average measurement rate up to 160,000 time-tags per second.

ETSC software is implemented at Raspberry Pi and executes all functions of the Server 1 and Server 2 of the Event Timer A033-ET system providing the time measurements for distributed Clients of this system. The Client-Server configuration allows to create automated multi-user systems working with multiple ranging devices. Raspberry Pi resources in the ETCS can be used for additional application specific and automation software. Only a part of GPIO Raspberry interface is used for software interactions with A033-ET device so the remaining GPIO pins may be used to control other devices.

Distributed network of
A032-ET
A033-ET
A033-ET/usb
A033-ET/R

A032-ET	A033-ET	A033-ET/usb	ETSC
12,000 time-tag/sec	30,000 time-tag/sec	1,000,000 time-tag/sec	160,000 time-tag/sec

Countries	Sales of Event Timers A032-ET and A033-ET around the world			Total	Expected sales
China	12	25	3	40	37?
USA	0	12*	0	12	12?
Russia	1	10	3	14	11?
Japan	3	4	0	7	7?
Lithuania	0	1	5	6	1?
Latvia	2	1	0	3	3?
Korea	1	3	0	4	4?
Finland	1	2	0	3	3?
Poland	2	0	1	3	2?
Switzerland	2	0	0	2	2?
Germany	2	2	1	5	4?
Austria	1	0	1	2	1?
Spain	1	0	0	1	1?
UK	0	1	0	1	1?
Total are sold	28	61	14	103	0

The models A032-ET and A033-ET are well known in ILRS community and are using in many SLR stations around the world.
In 2011 under Licensee Agreement the rights for manufacturing and distributing of all A033-ET systems are transferred to Eventech Ltd.
Today 91 devices and 12* sets of ET modules are sold not only for SLR applications but also for Time Transfer by Laser Link, Gravimetry, Jitter Measurement and Analysis etc.
New Event Timing Server Console solves the problem of PC with Parallel Port and essentially increases the measurement rate.
Client-Server configuration gives wide possibilities for SLR automation and ETCS implementation in Raspberry allows to expand ranging functions with built-in application-specific SW.

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