In complex systems, a timing block is often required as a compact module that can be built in a common housing together with other functional modules. To meet these requirements we have developed the set of the event timing modules with different performance and precision. The modules also differ with schematic complexity, sizes and power consumption.

Compact Event Timer Module (CETM) provides the same functionality as A033-ET while the size of board is only 90x150 mm and power consumption 4 W. The modified interpolator has dead-time 25 ns providing for measurement rate up to 40 MSPS. This modification allows the wider range of external conditions however degrades the resolution up to 5 ps RMS.

Doublet Event Timer Module presents two CETM’s integrated into one module. Two separate interpolators for two inputs Start and Stop provide independent registration of events arriving in these inputs allow measuring of zero or negative time intervals between these events. The size of board is 120x160 mm and power consumption is about 5 W.

Fast Event Timer Module is the timing module providing one channel measurement with very high frequency up to 80 MSP and resolution about 5 ps. In case of low event rates this resolution can be enhanced up to 2.5 ps using the replication possibility. A preliminary size of board is 160x220 mm however it can be essentially minimized. The power consumption is 8 W.

**Event Timer Test Generator (ETTG)**

100 is designed for estimation of precision parameters of Event Timers and similar timing devices (Time Interval Counter, Time Analyzer, Time-to-Digital Converter) having a picosecond resolution of time measurements. In accordance with existing standards for inputs of timing devices, the Generator ETTG-100 has two modifications:

- ETTG-100-NIM generating negative pulses in NIM standard, and
- ETTG-100-TTL generating positive pulses in LVTTL standard.

ETTG generates periodic sequences, characterized by high short-term stability of the repetition period. The standard deviation of this period is about 1 ps and that allows testing timing device and systems. ETTG may operate in stand-alone and software controlled modes. In stand-alone mode ETTG has five sequences sequentially selectable by the CTRL button. The delivered software allows via USB to change any of these settings.

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**References**

Boole, J., Bespaiko, A., Ivyakov, A., Vedin, Institute of Electronics and Computer Science; buld@ed.lv; R. Spunde (Eventech Ltd., Riga, Latvia; r.spunde@eventechsite.com)