



# ESS OFFERS

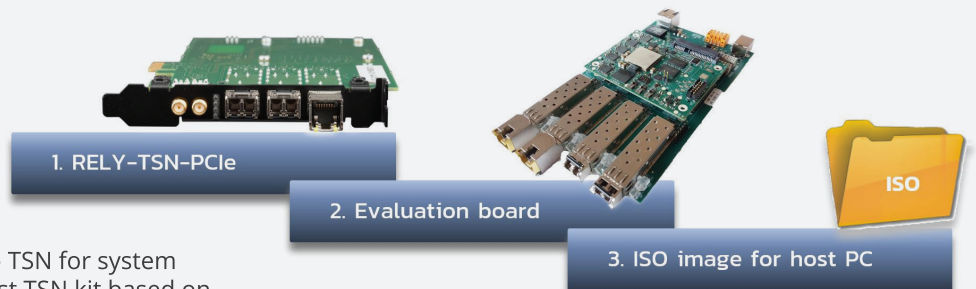
## SOC-E & RELYUM SOLUTIONS IN AUTOMOTIVE TSN

The connectivity requirements in Automotive are very different, both from the end-to-end latency and from the bandwidth requirements. Ethernet, with the latest innovations, is the best candidate to face this challenge of ensuring determinism and, at the same time, high data bandwidth. Other enabling technologies are: AUTOSAR, Time Synchronization/Time Triggered Ethernet/Time-Sensitive Networking and AV Bridging.

SoC-e along with **Relyum**, is a pioneer developing a complete portfolio of IP and end products for Ethernet networking and synchronization. Among other solutions, SoC-e offers to the automotive sector the following products

- **RELY-TSN-KIT** : Time-Sensitive Networking Evaluation Kit
- **MTSN KIT** : A Comprehensive multiport TSN Setup
- **RELY-REC** : For Capture of Ethernet Traffic
- **Multiport FMC Board** : FPGA based connectivity platform for Ethernet, CAN and LIN

### RELY-TSN-KIT: TIME-SENSITIVE NETWORKING EVALUATION KIT



In order to allow an effective approach to TSN for system integrators, RELYUM has launched the first TSN kit based on end products that allows to evaluate:

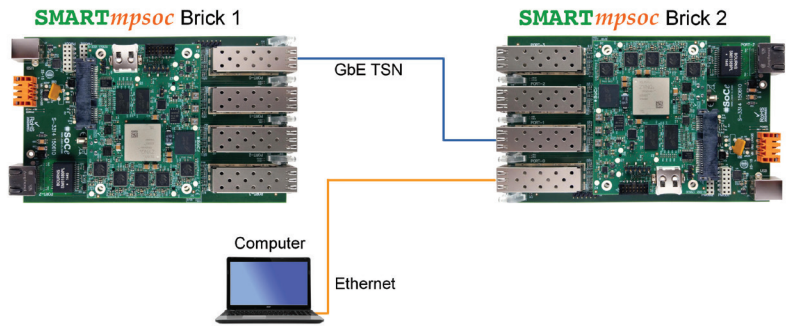
- The importance of a common sense of time based on IEEE 1588 AS synchronization.
- The deterministic delivery of real-time traffic thanks to the Time Aware Shaper.
- The benefit of bandwidth distribution and reservation between traffic classes through a Credit Based Shaper

**Learn More:** [www.relyum.com/web/rely-tsn-kit](http://www.relyum.com/web/rely-tsn-kit)

## MTSN KIT : A COMPREHENSIVE MULTIPOINT TSN SETUP

Multiport Time Sensitive Networking (MTSN) is SoC-e solution for any customer that requires an all-in-one solution to introduce Time Sensitive Networking in their equipment

MTSN can be implemented optimally depending on the application. It can be configured to generate from a simple 2-ports TSN adaptor to a complex multipoint switch. The designer can select, among other parameters, the number of ports and memory distribution for the switch implemented in the FPGA section. This entire configuration is done graphically using Xilinx Vivado Tool



**Learn More:** [www.soc-e.com/mtsn-kit-a-comprehensive-multipoint-tsn-setup](http://www.soc-e.com/mtsn-kit-a-comprehensive-multipoint-tsn-setup)

## RELY-REC: TIME AWARE NETWORK RECORDER

Relyum has launched RELY-REC, a highly specialized analysis tool for seamless capture of Ethernet traffic, with the possibility to register the timestamp for all the stored messages. This stand-alone device embeds all the logic for monitoring, filtering, times tamping and capturing the traffic of the most complex Ethernet networks in a low-consumption compact format.



- Ability to **View** live traffic transmitted in the network and Filter traffic on the fly.
- Ability to **Collect** real-time data, time stamped according to the vehicle synchronization plane (IEEE 802.1AS, for instance)
- Ability to **Trigger** data capture action based on multiple configurable user-defined event
- Ability to **Save** data to an internal data logger and later transfer to the PC for post-analysis tasks

**Hence RELY\_REC helps address the new need that arises for the validation and integration of new devices in automotive networks.**

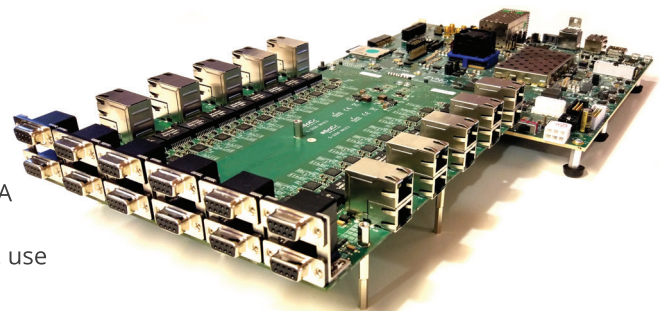
- **Conformance Testing:** The idea is to validate protocol compliance and interoperability. TCP/UDP/IP conformance tests for automotive stacks and components.
- **Protocol Validation and Performance Testing:** The main aim here is to validate the data plane-based application performance, as well as lower level synchronization plane accuracy and behaviour.
- **Central Gateway and Domain Gateway Ethernet switching functionality testing:** AVB capability, getting expected packet loss, bandwidth, and latency for each class of service (QoS), switchover and convergence times after a link failure, behaviour under certain nodes misbehaving situation, etc.

**Learn More:** [www.relyum.com/web/rely-rec](http://www.relyum.com/web/rely-rec)

## MULTIPOINT FMC BOARD

Multiport FMC Board is a pluggable board that is compatible with FPGA based platforms that feature 1 or 2 FMC (HPC) ports. It is an excellent choice for automotive companies that use FPGA based platforms and need an off-the-shelf solution for development & testing phase

- It provides Ethernet, CAN-FD and LIN hardware connectivity to your FPGA based platform
- 18x Gigabit (10/100/1000Mbps) Ethernet Ports (16 use SGMII interface, 2 use RGMII interface) over RJ45 connectors.
- 8x CAN-FD ports over DB9 connectors and 8x LIN ports over DB9 connectors
- The board can be splitted into 2x smaller FMC boards, each one using 1x FMC (HPC) port and featuring 9x Ethernet, 4x CAN-FD and 4x LIN ports.



**Learn More:** [www.soc-e.com/products/multiport-fmc-board](http://www.soc-e.com/products/multiport-fmc-board)



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