

# TSN Evaluation Kit

Evaluate TSN features with any standard Ethernet device

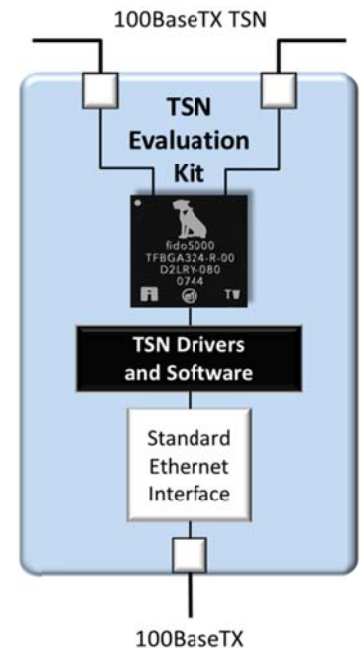


## The TSN Evaluation Kit is a complete TSN gateway solution that allows any standard 100Base-TX Ethernet device to connect to a TSN Network

The Innovasic TSN Evaluation kit contains everything needed to evaluate the features of the emerging IEEE 802.1 *Time Sensitive Networking (TSN)* standards. The kit is pre-installed with the most mature TSN features starting with **802.1AS** and **802.1Qbv**. As the TSN standards evolve, new features and updates will be made available as free downloads through Innovasic's Developer Portal. The kit is designed to support the following TSN standards:

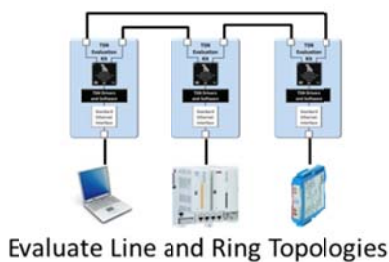
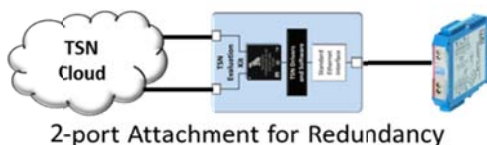
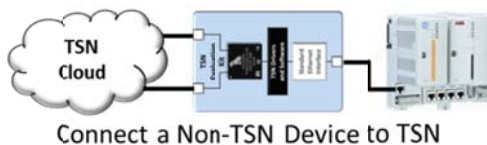
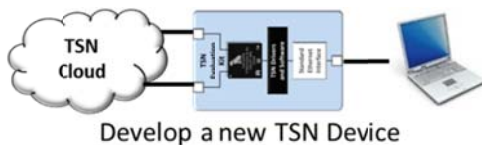
- **802.1AS, AS-REV – Time Synchronization**
- **802.1Qbv – Scheduled Traffic.**
- **802.1Qci – Ingress Policing**
- **802.1CB – Seamless Redundancy**
- **802.1Qcc – Stream Reservation Protocol**
- **802.1Qbu / 802.3br – Preemption**

More on these TSN standards is available at [www.deterministicethernet.com](http://www.deterministicethernet.com).



## Flexible and Easy to Use

The Evaluation kit acts as a “gateway” between a standard 100BaseTX Ethernet port and two 100BaseTX TSN ports. The ability to use 2 TSN ports greatly expands the use of TSN by enabling evaluation of any network topology including star, redundant star, lines, and rings. At the heart of the kit is the embedded fido5000 Real-Time Ethernet Multiprotocol (REM) programmable 3-port switch chip that manages TSN functionality.



As new features are released or when changes to the TSN standards are announced, firmware for the fido5000 REM switch is programmed using the downloads from the Innovasic Developer Portal. This unique reprogramming capability is important as TSN features continue to evolve through the standards process over time.

The kit is designed to enable you to quickly connect any existing Ethernet device, or even a laptop, via the standard Ethernet port. Then you configure the gateway to use the TSN features you wish to evaluate. This configuration allows your non-TSN application to exchange TSN datastreams with TSN talkers or listeners on the TSN network. You can also evaluate highly reliable, deterministic operation on a converged network even in the presence of other data streams and best-effort traffic. Evaluation of full redundancy can also be achieved ensuring a guarantee of service under any network conditions.

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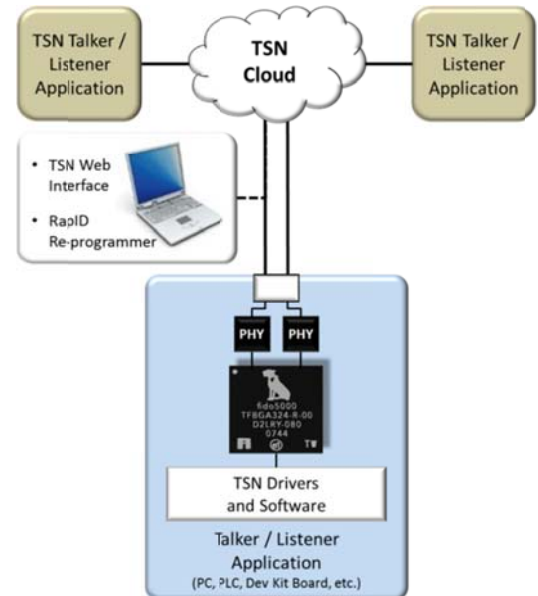


A PC-based tool is provided in the kit that supports selection of the desired TSN standards. A second PC-based tool is provided that supports configuration of specific features for the selected TSN standards.

## Migration to TSN-compliant Device

The TSN Evaluation Kit also serves as a *reference design* where elements of the platform's hardware and software can be integrated directly into your new product. On the hardware side, the fido5000 REM switch along with any suitable PHY can be integrated with your application's host processor. On the software side, your application software interfaces to the APIs in the Innovasic TSN Drivers and software. You now have a complete solution that can connect to any TSN network in any topology.

As the TSN standards emerge, your applications can keep up with the evolving standards. The kit is perfect vehicle for testing and development. The kit is already being used as part of the Industrial Internet Consortium's TSN Testbed. Please see, [www.iiconsortium.org/time-sensitive-networks.htm](http://www.iiconsortium.org/time-sensitive-networks.htm).



## Where to Find What You Need

The TSN Evaluation Kit is available directly from Innovasic. **Order your kit now at [www.innovasic.com/products/tsn-kit](http://www.innovasic.com/products/tsn-kit).** All of the software and User's Guide is available through the Innovasic Developer Portal. Login to the Developer the Developer Portal and go to the section for the TSN Evaluation Kit. Everything is available as a free download.

## TSN Evaluation Kit Contents

The TSN Evaluation Kit consists of hardware and software. The hardware items are delivered in a box containing the following items:



- 2-port TSN Ethernet Module
- Standard Ethernet Module
- Baseboard with Power Supply
- RJ-45 Ethernet Cables

The software items are delivered via download on the Innovasic website in the Developer Portal:

- TSN Drivers and Software
- TSN Software User's Guide

Updates to the drivers, software and documentation will be made available on an on-going basis. Users will be notified when updates are uploaded to the Developer Portal.