

# RAD-Epsilon XL

## 19-Port Gigabit Automotive Ethernet Managed Switch

Intrepid's RAD-Epsilon XL is a rugged 19-port Gigabit managed switch designed specifically for bench or in-vehicle development. In addition to offering 6-way H-MTD connection systems for 100/1000BASE-T1, it features one of the latest Automotive Ethernet physical layer transceivers (PHY), the Marvell 88Q222xM. This PHY contains the functionality required for devices to meet the OPEN Alliance TC17 MACsec Automotive Profile requirements. MACsec is seeing rapid adoption by new Automotive Ethernet architectures for its ability to provide the lowest level of authentication and encryption to protect against network intrusions like man-in-the-middle and replay attacks.

The PHYs in the RAD-Epsilon XL also comply with the OPEN Alliance TC10 requirements. This means that the PHYs support the Automotive Ethernet sleep/wake-up requirements needed for partial networking and other strategies to optimize battery conservation in the vehicle without sacrificing performance.

### Features

- 2x Marvell 88Q6113 Automotive Ethernet Managed Switches
  - Embedded AVB/TSN protocol stack
  - IEEE 802.1Q tag support with 4096 VLANs
  - Port mirroring
  - Per-port address whitelisting/blacklisting
  - Ingress policing and rate limiting
  - Ternary Content Addressable Memory (TCAM)
- AVB/TSN STANDARDS SUPPORTED
  - 802.1AS – Generalized Precision Timing Protocol (gPTP)
  - 802.1Qav – Forwarding and Queuing for Time-Sensitive Streams (Credit Based Shaping)
  - 802.1Qbv – Enhancements for Scheduled Traffic (Time Aware Shaping)
  - Static Stream Reservation
- Ethernet Interfaces
  - 16x 100/1000BASE-T1 (88Q222xM)
  - 2x 10GBASE-T
  - 1G SFP supporting a variety of physical layers



- PHY register access over USB using Vehicle Spy or Intrepid's Open Source API allowing PHY status and configuration, as well as TC10 and MACsec-related operations
- 2x CAN / CAN FD and 1x LIN for legacy network monitoring and simulation
- Embedded processor for scripting and stand-alone gateways
- Ruggedized USB 2.0 connector for configuration, and firmware updates
- LEDs for network status
- Field-upgradeable firmware
- 1U half-rack (9.5") form factor



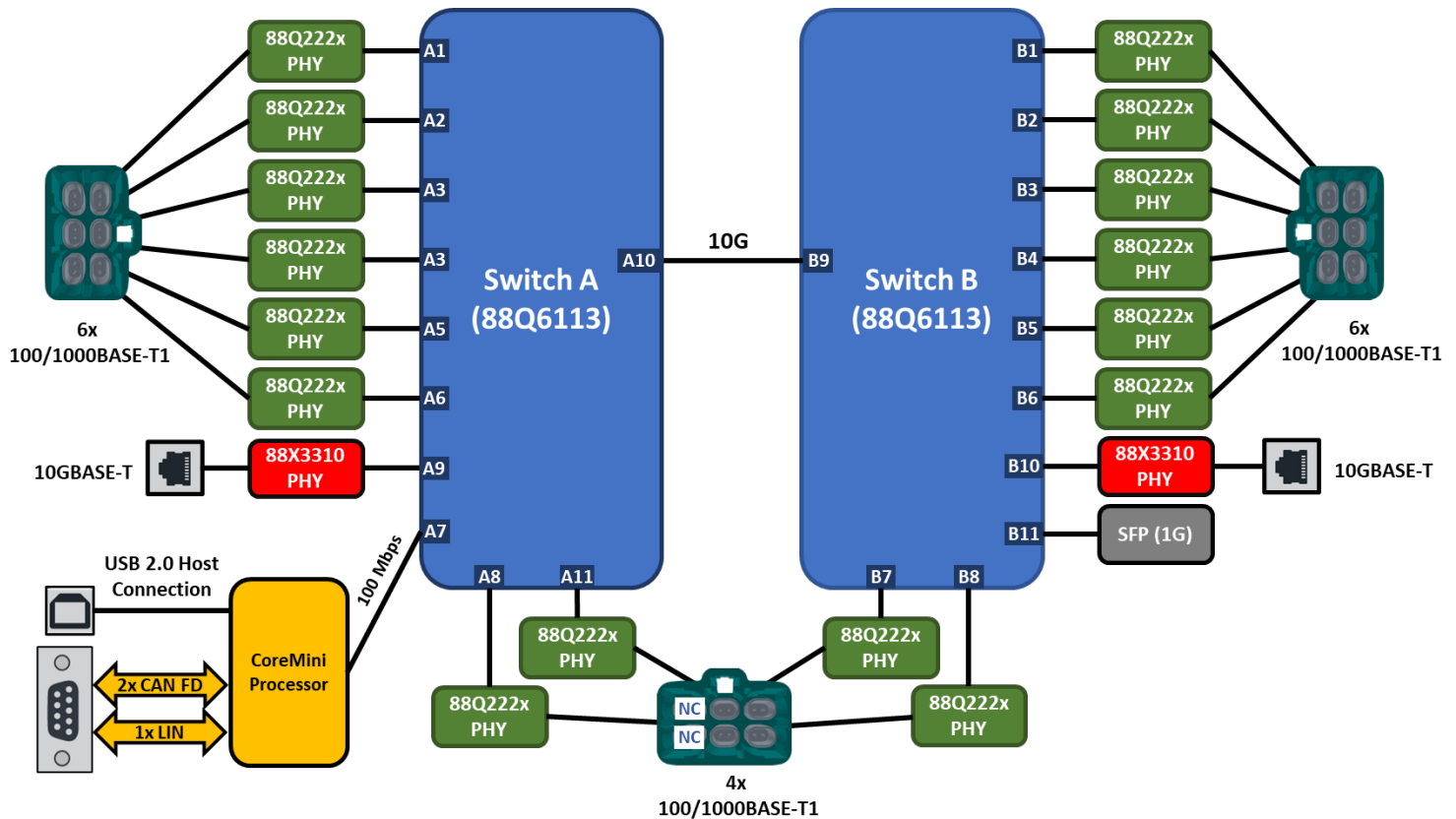
H-MTD Connectors for High-speed 1000BASE-T1 networks



# RAD-Epsilon XL

## DEVICE SPECIFICATIONS:

- Power supply: 4.5V – 40V operation
- Temperature range: -40°C to 85°C
- One-year limited warranty
- Fully-isolated USB with Microsoft-certified USB drivers
- Dimensions for RAD-Epsilon-XL: 8.25" L X 8.375" W X 1.875" H
- Weight for RAD-Epsilon-XL: 3.1 lbs



## Ordering Information

Part Number	Description
RAD-Epsilon-XL	19-Port Gigabit Automotive Ethernet Managed Switch

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