



COMPACT ETHERNET SWITCH MANAGED ETHERNET SWITCH AND NG-ETB ROUTER



COMPACT ETHERNET SWITCH

Compact Ethernet Switch Managed Ethernet switches and routers are designed specifically for an onboard Ethernet communication infrastructure of rail vehicles. Due to their flat mechanical construction Compact Ethernet Switch devices can fit easily into constrained spaces with limited depth. Wide range power supplies allow the integration into all kinds of rail projects.

With combination of 2.5 Gbps, 1 Gbps and 100 Mbps Compact Ethernet Switch devices can be used for both high speed communication backbones as well as to connect various end devices to the network. Integrated PoE power supply can provide up to 40 W of power to connected devices with maximum of 15 W per port.

Compact Ethernet Switch Ethernet switches support a fault-tolerant ring network topology with fast recovery times under 50ms. Multiple rings may be combined in one network.

Compact Ethernet Switch devices can also be configured as ETBN routers for ETB network. Next generation, dual plane ETB topology without bypass relays in ETBN devices is utilized by Compact Ethernet Switch devices. Redundant ETB lines as well as redundant

ETBN nodes might be used to avoid single point of failure. Furthermore ETB network can be tunneled via ECN network in vehicle / consist to minimize the necessary ETB cabling.

TTDP protocol detects all changes in train composition, performs ETB inauguration and automatically configures the IP routing tables and address translation rules. ETBN also creates and maintains the Train Topology Database with complete information on actual train composition. Standardized communication services provide access to the train topology database for end devices.

Each Compact Ethernet Switch device contains a powerful CPU module which ensures high routing performance of more than 300 kfps with active R-NAT and firewall. Integrated diagnostic services provide access to detailed diagnostic information via standard SNMP protocol and TRDP application protocol. The configuration and deployment of network components and end devices are supported by HW configuration pins in the power supply connector and integrated DHCP server, with port-based address allocation.

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KEY FEATURES

- A powerful managed Ethernet routing switch and ETBN – Ethernet Train Backbone Node.
- Combination of 2.5 Gbps, 1 Gbps and 100 Mbps ports.
- PoE support to power connected devices.
- Next generation dual plane ETB topology without bypass relays.
- Supports redundant ETB configuration without single point of failure.
- Tunneling ETB traffic via ECN to optimize ETB cabling.
- A powerful communication CPU to ensure high routing performance with R-NAT and firewall.
- Support for fault-tolerant ring topology with fast recovery time.
- Support for configuration profiles controlled by HW configuration pins in the power connector.
- An integrated DHCP server with port-based address allocation to simplify end device configuration.
- Integrated diagnostic features for detailed runtime network analysis.
- Both panel and DIN rail mounting options.

OPERATING CONDITIONS

Component	Value	Note
Operating temperature range	-40 to +70° C	Class TX according to EN50155
Power supply voltage	24–110V DC, Class S2	Range according to EN 50155
PoE power rating	Max. 15 W per port Max. 40 W in total	
Galvanic isolation	1,000 V AC, 50Hz	
Shock & Vibration	Category 1, Class B	
Altitude	Up to 1,400 m	Class A1 according to EN 50125-1
Weight	ESW10 – max. 2.6 kg ESW19 – max. 3.0 kg	
Cooling	Natural	
Protection	IP20	
CPU	QorIQ LS1043A, 2GB DDR RAM, 256 MB NOR FLASH, 2MB MRAM	

VARIANTS

Compact Ethernet Switch.ESW19	8× Ethernet 100BASE-TX with PoE support 5× Ethernet 100BASE-TX 3× Ethernet 1000BASE-T 3× Ethernet 2.5GBASE-T / 1000BASE-T
Compact Ethernet Switch.ESW10	5× Ethernet 100BASE-TX with PoE support 3× Ethernet 100BASE-TX 2× Ethernet 2.5GBASE-T / 1000BASE-T

