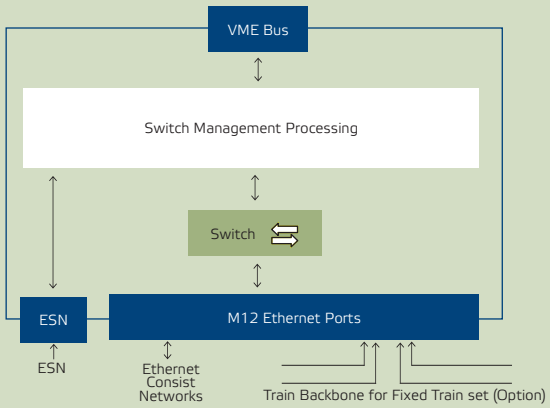

Compact Ethernet Switching Unit (3U ESU)

EN 50155
EN 45545
IEC 61375-3-4

MODULE FUNCTIONS

The Trainnet® Compact Ethernet Switching Unit (3U ESU) is a versatile Ethernet switch module suitable for building cost effective Ethernet Consist Networks (ECN). It can also be used to create an Ethernet train bus in the case of a fixed train set when there is no need for automatic inauguration.

The Trainnet® 3U ESU module implements the ECN link layer function of the IEC 61375-3-4 Train Communications Network Standards. The Ethernet technology's large bandwidth (typically 100 Mb/s) is particularly suitable for data intensive systems like video surveillance or Passenger Information Systems.

KEY FEATURES

The Trainnet® 3U ESU non-blocking (QoS Layer 2) switching architecture provides large bandwidth: it has 10 Ethernet ports which are 10/100BASE-TX Mbit/s Full Duplex Ethernet with auto MDI/MDIX M12 connectors. The Ethernet ports are located on the front panel of the module and communication to the gateway is done *via* one of the Ethernet ports. An Electronic Serial Number (ESN) port is available for device identification and configuration.

The car can be equipped with two redundant Trainnet® 3U ESU modules in order to increase system reliability. If the principal module fails, the secondary module takes over the functionality.

The Trainnet® 3U ESU provides connectivity to the consist network switches in a ring configuration (allows redundancy), or by connecting ports directly to end devices. The switch provides services such as Dynamic Host Configuration Protocol (DHCP) in order to assign IP addresses automatically to end devices. The management processor also provides VLAN configurations and Layer 3 switching. It enables diagnostic functions such as the identification of faulty cables.

The 10 ports of the 3U ESU can be partitioned to create distinct ECN subnets using a virtual router. The device also supports dynamic routing protocols. The possibility of using link aggregation provides an opportunity to increase data transfer capabilities as well to create redundancies.

Port mirroring can be used to copy packet data seen on a switch port to another port for diagnostic and monitoring purposes.

FEATURE SUMMARY

The features of the 3U ESU module also include: Firewall, Rapid Spanning Tree Protocol (RSTP), Virtual LANs, routing multicasts in ECN and ETB networks (IGMP based multicast forwarding), Train Topology Discovery Protocol (TTDP), TCN domain name service, Port based VLAN configuration, routing between Virtual LANs, Network Address Translation (NAT) between ETB and ECN, rate limiting, port monitoring, port RMON statistics counters, PHY configuration and process data export.

TECHNICAL SPECIFICATIONS

Dimensions (W x H x D)
16 TE x 3 U x 160 mm
Weight
520 g
Input Power
5 V DC ± 5 % (1.5 A typ. 3 A max.)
Temperature Range (operational)
-40 ºC...+70 ºC
MTBF (40 ºC ambient temperature)
690 000 h
Ethernet Interfaces
10 x 10/100 Mbit/s M12
Serial Interface
1 RS 232 on front
(for maintenance, configuration or ESN dongle)
Switching Buffer Memory
2 Mbits
Management CPU
PowerPC 667 MHz
Flash Memory
512 MB
RAM
256 MB