Train Ethernet Switch

MTES6407 series is a family of Train Ethernet switches designed to be installed on rolling stock. The devices are useful for implementing on-board Consist & Train Backbone networks that fully comply with IEC 61375 series & EN 50155/IEC 60571 Railway standards.

The compact design combined with the availability of a different combination of ports and characteristics allows the implementation of both ECN and ETBN functions enabling the user to select the most suitable combination of Ethernet switches and Train Communication Networks technologies required by the project.

The software features have been developed by means of a standard Linux-based solution that runs over hardware designed by MIOS Elettronica exclusively for railway applications.

The train inauguration process fully complies with the IEC 61375 standard as well as the interface with the TRDP equipment. MTES6407 switches support the most common redundant protocols such as STP and RSTP.

An embedded Web-based user interface completes the product allowing full management and configuration of network and switches.

EN 50155
IEC 61375
EN 45545-2

International Standards
Railway Standards: EN 50155/IEC 60571, EN 50121-3-2, IEC 61000-6-2, IEC 61000-6-4, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-30, IEC 61737, EN 50124-1, EN 45545-2, IEC 61375-2-5, IEC 61375-2-3, IEC 61375-3-4. Networking Standards: IEEE 802.3-2012 IEEE 802.1ab, IEEE 802.1ax:2008, IEEE 802.3ad, IEEE 802.3x, IEEE 802.3u, IEEE 802.3ab, IEEE 802.1d, IEEE 802.1w, IEEE 802.2, IEEE 802.1q

Software Features	
Link Layer 2 Functionality	IGMP Snooping v1/v2/v3, Spanning Tree STP, Port isolation
Link Layer 3 Functionality	Static Routing, DHCP Server/Relay, VRRP
VLAN	Supports up to 4K VLANs simultaneously (out of 4K VLAN IDs), VLAN Management
Security	SSH v1/v2, SSL v2/v3/TLSv1, Port Security
Networking Applications	Ping, Traceroute, Telnet, SNMP, SSH, SSL, Http/Https, FTP, TFTP, NTP, NAT, TTDP & TRDP according to IEC 61375
Web-based GUI management	SNMP v1/v2c, compatible with public MIBs, DHCP/BOOTP server, DHCP Option82, CPU Monitoring, Port Mirroring, Dual Image, Time Setting: SNTP Firmware Upgrade: Web, SYSLOG.
IEC 61375-2-3 TCN Services	ECSP, TTDB manager, DNS Server, ETBN control
QoS (Quality of Service)	802.1p CoS/DSCP priority, 4 priority queues
Performance	Routing capability up to 120 Mbps. Packets dimension: 2Mb. ARP Table: 2K. Jumbo frame: 10K

Train Ethernet Switch

Technical Data	
Dimensions (W x H x D)	290,0 x 132,6 x 48,5 mm.
Weight	1,5 Kg. approx.
Protection Level of Enclosure	IP40 according to IEC 60529
Input Nominal Voltage	24 to 110 Vdc
Operating Voltage	16,8 to 143 Vdc (14,4 to 154 Vdc for 100 msec.)
Power interruption	Class S2 according to EN 50155/IEC 60571
Power Consumption	20W max. (80 W max. with PoE option depending by the model)
Operating Temperature	-40° C to +70° C (+85° C for 10 min.) according to EN 50155 class OT4 + class ST1 or according to IEC 60571 class TX
Storage Temperature	-40° C to +85° C
Humidity (operating non condensing):	<75% yearly average <95% for 30 consecutive days in one year
Shock and Vibration	According to IEC 61373 category 1, class B
EMC	According to EN 50121-3-2 and relevant referenced standards
Ethernet ports	Up to 12 ports depending by the configuration: • Up to 4x 10/100/1000 Mbps with by-pass relay (optional) • Up to 8x 10/100/1000 Mbps with PoE/PoE+ capability (optional) Ports with Auto Negotiation/Auto MDI/MDIX capabilities M12 D-code or X-code depending by the port configuration according IEC IEC 61076-2-101 or IEC 61076-2-109 also push-pull capability according to IEC 61076-2-010.
Service ports	• 1x USB Type B serial console port • 1x USB Type A slot for key storage
LED indication	LEDs on front panel for diagnostics information

Dimensional Drawing