



T-MARC® 250 SERIES

ETHERNET AND CIRCUIT EMULATION SERVICE DEMARCATION DEVICES

Telco Systems' T-Marc® 250 is a family of cost-effective, fully-managed Carrier Ethernet demarcation devices that provide service termination and demarcation over service providers' packet-based networks. As a multi-port customer-located intelligent demarcation device, the T-Marc delivers managed converged services (voice, video and data) over virtual Ethernet in a metro Ethernet network.

Advanced Layer 2 Networking using Telco Systems' AccessEthernet® allows total flexibility in deployment and delivery of Ethernet services. Physical and logical channel networking capabilities provide bandwidth profiles, advanced traffic classes, and complete control over how subscriber traffic is transported and managed across a service provider's network.

Circuit Emulation Services over Packet

The T-Marc 254 utilizes AccessTDM™ to deliver legacy TDM over Ethernet enabling service providers to extend their reach and addressable customer base to include both voice and data without sacrificing revenues from existing TDM services. The T-Marc 254H has been optimized for wireless backhaul applications with standards-based synchronization and is temperature-hardened for outdoor installations.

Based on Circuit Emulation Services over Packet (CESoP) standards for T-Line (T1/E1) services, the T-Marc protects users legacy equipment investments — PBX's, routers with T1/E1 interfaces — while cost effectively enabling Ethernet service providers the ability to offer revenue generating services over dedicated, managed next generation packet networks.

Advanced Networking Features

The T-Marc offers a rich management toolset for multi-vendor interoperability in element, network and service management to reduce operational expenses (OPEX) and scale management to large access networks.

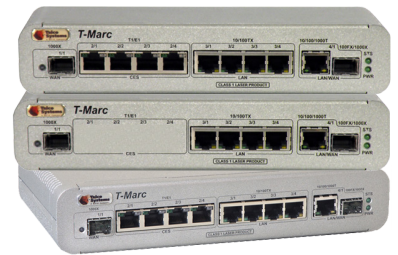
By augmenting existing IP/SNMP-based management frameworks with IEEE/ITU-T OAM protocols and MEF frameworks, the T-Marc family provides proactive health and status updates on network topology and application behavior.

The T-Marc supports standards-based management to enable service providers to use any off-the-shelf management system to manage a T-Marc device as an independent network element with its own IP address.

Telco Systems' BiNOSCenter management system provides both standards-based and extended standards-based management.

To reduce operational expenses and scale management to large access networks, existing standards-based SNMP management is coupled with a secure IP-based proxy management solution to provide proactive health and status information on individual links and connections.

Enhanced troubleshooting tools include optical power monitoring, quality of equipment monitoring, and quality of line monitoring to enable fast fault identification that minimizes the need for expensive truck rolls.

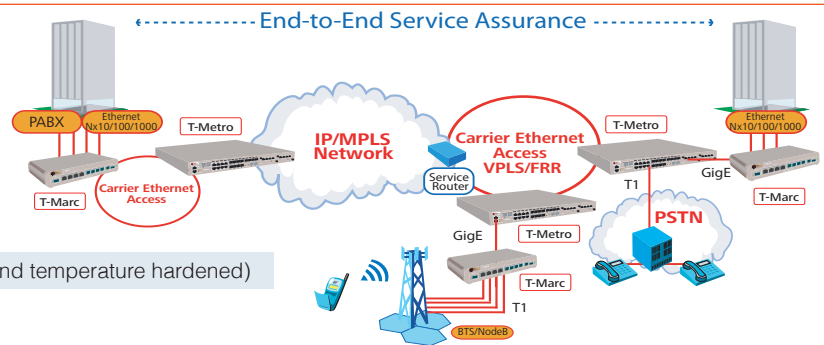


PRODUCT HIGHLIGHTS

- Managed multi-service demarcation integration for converged services
- Service synchronization over Layer 2 Ethernet, IEEE-1588v2 - T-Marc-254H only
- Label Distribution Protocol (LDP) (T-Marc 254H only)
- Flexible architecture supporting
- Extensive Layer 2 functionality with non-blocking wire-speed switching capabilities
- Comprehensive OAM and management options
- Standards-based proxy management
- Control, monitoring, line testing and loopback capabilities
- T1/E1 CES support for 2G/3G cellular backhaul and leased-line replacement
- Redundant uplinks for protected services and link aggregation
- Enhanced security and protection mechanisms
- Granular rate limiting for ingress and egress
- MEF and IEEE standards compliance for multi-vendor interoperability
- Compact 1RU design with desktop, rack, and wall-mounting options
- Temperature-hardened - (T-Marc 254H only)

T-MARC® 250 SERIES

ETHERNET AND CIRCUIT EMULATION SERVICE DEMARICATION DEVICES



T-Marc 250 • T-Marc 254 (with CES) • T-Marc 254H (CES and temperature hardened)

PRODUCT SPECIFICATIONS

Hardware Characteristics	4 x 10/100BaseT ports 1 combo (10/100/1000BaseT or 100BaseFX/1000BaseX port) 1 x 1000BaseX uplink port 4 x T1/E1 CES ports (T-Marc 254 and T-Marc 254P) Hardened temperature (T-Marc 254H) Non-blocking 2.5Gbps FD platform 19" rack and wall-mounting options
Services	All MEF services, IEEE 802.1Q bridging, IEEE 802.1ad QinQ (TLS) CES (CESoPSN, SAToP, CESoMPLS)
Timing	T-Marc 254 - ACR (Adaptive Clock Recovery) & IEEE 1588v2 for CES sync, ITU-T G.823/G.824 synchronization
Resiliency	xSTP, MSTP Fast Ring, resilient link, LAG (Static/IEEE 802.3ad LACP)
Quality of Service	Per port rate limiting and shaping SP, WRR and hybrid frames scheduling, CoS marking and mapping
OAM	EFM IEEE 802.3ah, CFM IEEE 802.1ag
Testing & Monitoring	ITU-T Y.1731 service monitoring
Management	Console, Telnet, SSHv2, Radius, TACACS+, SNMP v1/2/3, xFTP, NTP, DNS resolver, DHCP client and Zero-Touch provisioning
Security	RADIUS, SSHv2, IEEE 802.1x, SNMPv3, SFTP, port security, broadcast storm prevention
General Specifications	Dimensions: 1.73"H x 8.7"W x 5.51"D 44mm x 221mm x 140.5mm Weight: 2.42 lbs (1.1 kg) Power: 5VDC @3A (max) with external power adaptor (AC to DC, DC to DC) Relative humidity: 0% to 95% non-condensing Storage temperature: -25°C to 80°C (-13°F to 176°F) Operating temperature: 0°C to 40°C (32°F to 104°F) Short term extended temperature: -20°C to 60°C (-4°F to 140°F) T-Marc 254H only: Storage temperature: -40°C to 80°C (-40°F to 176°F) Operating temperature: -40°C to 65°C (-40°F to 149°F)
Regulatory Compliance	North America and Canada EMI - FCC Part 15 Class B Safety - UL1950, cUL 60950 CSA 22.2 No. 950 International EMI - EN55022 Class B Immunity - EN50082-1 Safety - EN 60950



KEY APPLICATIONS

- Wire-speed copper and fiber Ethernet-based demarcation between service provider and enterprise networks
- High-performance Private LAN, Private Line, Ethernet VPN and TLS
- FTTx
- T1/E1 CES for TDM leased-line replacement
- PBX-to-PSTN backhaul and PBX-to-PBX (tie-line) connectivity
- GSM/CDMA BTS and UMTS cellular backhaul

ORDERING INFORMATION

Part Number	Description
TMC-250P-z*	Managed Ethernet demarcation gateway : (4) 10/100BaseT ports; (1) unpopulated SFP-based 1000BaseSX port; (1) universal 100/1000BaseX unpopulated SFP-based or 10/100/1000BaseT port; (1) external power supply
TMC-254P-z*	Managed Ethernet demarcation gateway: (4) 10/100BaseT ports; (1) unpopulated SFP-based 1000BaseSX port; (1) universal 100/1000BaseX unpopulated SFP-based or 10/100/1000BaseT port; (4) integrated T1/E1CES (RJ-45 balanced*, distance 200m); (1) external power supply
TMC-254P-HPCR-z*	TMC-254P with high performance clock recovery (OCXO)
TMC-254H-z*	Same as TMC-254P with high performance clock recovery (OCXO) plus temperature hardened; LDP; IEEE-1588v2 – Synchronization over Ethernet
TMC-2XX-EXTPS-2DC	Optional external industrial DC (24v/48v) power supply

*Unpopulated SFP ports. For full list of optical and PDH modules, please visit us at www.telco.com, contact our sales department, any of our branches or authorized distributors



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