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Data Sheet

ETX-102

Basic Ethernet Demarcation Device

Smart demarcation point between the service provider and customer networks

- SLA monitoring to assure delivery of contracted Ethernet services
- VLAN bridging and stacking with P-bit, DSCP, Per Port, or ToS traffic prioritization
- Complete Ethernet OAM and Layer-2 loopback functionality for reduced Opex
- Network link protection based on 802.3ad or dual homing for increased service resiliency
- Up to two Fast Ethernet network ports and up to four Fast Ethernet user ports

ETX-102 is a carrier Ethernet demarcation device owned and operated by the service provider and installed at the customer premises.

Providing monitoring and diagnostic as well as QoS capabilities, ETX-102 focuses on the service and allows the service provider to achieve end-to-end rather than edge-to-edge service control.

IP address, IP mask, and default gateway can be automatically obtained using DHCP.

ETHERNET CAPABILITIES

ETX-102 features an internal bridge, operating in VLAN-aware or VLAN-unaware mode.

VLAN stacking can be used for traffic separation between different users or services, by defining a Service VLAN ID per customer or service. When VLAN stacking is used, a Service VLAN tag is added to user traffic and removed from network traffic. Both Service VLAN ID and Service VLAN priority can be defined.

CARRIER ETHERNET MEF Certified Compliant

RAD

ETX-102

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QOS

Different service types require different levels of QoS to be provided end-to-end. QoS can be defined per subscriber as well as per service. QoS has two aspects: rate limitation and traffic prioritization.

Hierarchical rate limitation defines peak traffic rate per user, port service, or per traffic aggregate. This maximizes bandwidth utilization.

For prioritizing user traffic ETX-102 features up to four separate queues, which handle traffic with different service demands, such as real-time traffic, premium data, or best-effort data. In case of congestion, the relevant service receives higher priority at the customer premises.

Traffic can be classified dynamically and mapped to different priority queues according to VLAN priority, DSCP, Per Port, or ToS. Appropriate QoS can be achieved without customer marking, by mapping different services and different user ports (port-based priority).

MEF-9, MEF-14 CERTIFICATION

The device is certified by Metro Ethernet Forum for EPL services (MEF-9, MEF-14).

ENVIRONMENT

ETX-102/H is a temperature-hardened version with matching SFPs intended for industrial installations.

TYPICAL APPLICATIONS

ETX-102 provides access to packet switched networks (Ethernet, IP/MPLS), as well as next-generation SDH/SONET backbones over Ethernet, using standard fiber optic interface. Access to legacy networks is possible when the edge devices include tributary Ethernet ports.

The termination unit can be used for site-to-site connectivity (E-line), and for multiple site connectivity (E-LAN), depending on network topology.

ETHERNET OAM

ETX-102 provides comprehensive Ethernet OAM capabilities:

End-to-end (path) based on IEEE 802.1ag and Y.1731 for continuity check, non-intrusive loopback, and performance management, including Frame Delay, Frame Delay Variation, Frame Loss, Availability etc.

Single segment (link) OAM according to IEEE 802.3ah for remote management and fault indication, including remote loopback, dying gasp, and MIB parameters retrieval.

Performance monitoring includes Frame Delay, Frame Delay Variation, Frame Loss and Availability.

NETWORK INTERFACE REDUNDANCY

The unit supports two redundancy modes:

Link aggregation (1+1) based on IEEE 802.3ad

Dual homing (1:1), allowing ETX-102 to be connected to two different upstream devices.

PORT COMBINATIONS

ETX-102 offers flexible network and user port combinations:

Ports 1 and 2 – Any standard Fast Ethernet SFP or built-in 10/100BaseT

Ports 3–6 – Built-in 10/100BaseT.

LAYER-2 LOOPBACK WITH MAC SWAPPING

Layer-2 link integrity can be tested by a non-disruptive loopback with MAC address swapping. When the loopback is activated, ETX-102 exchanges source and destination MAC addresses of the incoming packets. This loopback can be performed per VLAN (or EVC), it passes through Ethernet bridges and does not disrupt traffic flows that are not being tested.

FAULT PROPAGATION

The unit provides a user-configurable fault propagation mechanism. When a link failure is detected at the network port, ETX-102 optionally shuts down a user port until the network link is restored.

MANAGEMENT

The unit can be managed using the following ports and applications:

Local management via an ASCII terminal connected to the RS-232 port

Remote inband management via user or the network ports. Remote management via Telnet or Web browser.

Management traffic can be separated from user data by creating a dedicated management VLAN.

Up to ten different stations can manage ETX-102 simultaneously, enabling monitoring the network status from different locations.

The following security protocols are provided by ETX-102 to ensure client-server communication privacy and correct user authentication:

RADIUS (client authentication only)

SSL for Web-based management

SSH for Secure Shell Telnet session

SNMPv3 for secure SNMP sessions.

REMOTE MONITORING

ETX-102 uses the Syslog protocol to generate and forward event notifications over IP networks.

The device supports DDM (Digital Data Management) SFPs according to SFF-8472 Version 9.3.

Specifications

NETWORK INTERFACE

Number of Ports
Up to 2 (redundant)

Type
Fiber optic(SFP-based):
Fast Ethernet (100BaseFx, 100BaseLX10, 100BaseBx10),
Copper: 10/100 BaseT

Connector
SFP slot or RJ-45

SFP Transceivers
For full details, see the SFP Transceivers data sheet at www.rad.com

USER INTERFACE

Number of Ports
Copper: Up to 4 (ports 3–6)

Type
Copper: 10/100BaseT

Connector
RJ-45

SFP Transceivers
For full details, see the SFP Transceivers data sheet at www.rad.com

Note: *It is strongly recommended to order this device with* ***original*** *RAD SFPs* ***installed****. This will ensure that prior to shipping, RAD has performed comprehensive fu\nctional quality tests on the entire assembled unit, including the SFP devices. RAD cannot guarantee full compliance to product specifications for units using non-RAD SFPs.*

GENERAL

Certifications
MEF-9 EPL, MEF-14 EPL

Compliance
IEEE 802.3, 802.3u, 802.1D, 802.1Q, 802.1p, 802.1ag, 802.3ad, 802.3ah

Maximum Frame Size
1,632 bytes

MAC Address Table Size
8,192 entries

Management
Out-of-band: via dedicated terminal port; V.24/RS-232 DCE; 9.6, 19.2, 115.2 kbps; DB-9 female connector
Inband: via network or user ports

Power
AC/DC: 100–240 VAC or 48/60 VDC nominal (40–72 VDC)
WRDC: 24/48/60 VDC nominal (18–72 VDC)

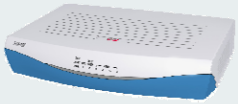
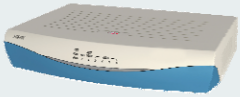
Power Consumption
6.1W max

Physical
ETX-102: Height: 43.7 mm (1.7 in)
Width: 220 mm (8.6 in)
Depth: 170 mm (6.7 in)
Weight: 0.5 kg (1.1 lb)

ETX-102/H: Height: 47 mm (1.8 in)
Width: 215 mm (8.4 in)
Depth: 147 mm (5.8 in)
Weight: 0.7 kg (1.5 lb)

Environment
Temperature:
ETX-102: 0 to 50°C (32 to 122°F)
ETX-102/H: -40 to 65°C (-40 to 149°F)
Humidity: Up to 90%, non-condensing

Table 1. ETX Family Comparison Table

Feature	ETX-102 (Ver. 3.8)	ETX-201 (Ver. 3.8)	ETX-202 (Ver. 3.8)	ETX-201A (Ver. 1.67)	ETX-202A (Ver. 1.67)
					
Network interface	Up to 2 × FE	Up to 2 × GbE or FE (auto-detect).	2 × GbE	Up to 2 × GbE or FE	Up to 2 × GbE or FE
Network/user interface	Not applicable	GbE or FE (auto-detect)	GbE or FE (auto-detect)	GbE or FE	GbE or FE
User interface	Up to 4 × FE	1× GbE or FE and up to 4 × FE	Up to 4 × GbE	Optional 1 GbE and up to 4 × FE	Up to 5 × GbE
Forwarding mode	VLAN-aware/unaware bridge, 8K MAC addresses (EPL)	VLAN-aware/unaware bridge, 8K MAC addresses (EPL)	VLAN-aware/unaware bridge, 8K MAC addresses (EPL)	Flow-based forwarding (EPL and EVPL)	Flow-based forwarding (EPL and EVPL)
QoS	Rate limitation Traffic classification (802.1p bits, ToS, DSCP, port-based)	Rate limitation Traffic classification (802.1p bits, ToS, DSCP, port-based)	Rate limitation Traffic classification (802.1p bits, ToS, DSCP, port-based)	Rate limitation per flow Traffic classification (Port-based, VLAN, 802.1p bits, ToS, DSCP) Shaping	Rate limitation per flow Traffic classification (Port-based, VLAN, 802.1p bits, ToS, DSCP) Shaping
Bandwidth profile	CIR/CBS per port	CIR/CBS per port	CIR/CBS per port	CIR/CBS, EIR/EBS per EVC.COS	CIR/CBS, EIR/EBS per EVC.COS
Management interface	Menu-driven	Menu-driven	Menu-driven	Command line	Command line

ETX-102

Basic Ethernet Demarcation Device

Ordering

STANDARD CONFIGURATIONS

ETX-102/NULL/NULL/1UTP

ETX-102/UTP/NULL/4UTP

ETX-102/NULL/NULL/4UTP

ETX-102/UTP/UTP/4UTP

SPECIAL CONFIGURATIONS

ETX-102/?/!/+1/+2/+3

Legend

? Power supply (Default= Wide-range AC/DC power supply):

WRDC Wide-range DC power supply

Note: *The wide-range DC power supply is available only for units with temperature-hardened enclosure.*

! Temperature range (Default=Regular enclosure):

H Temperature-hardened enclosure

Note: *The ETX-102/H version requires temperature-hardened SFP transceivers.*

+1 Port 1 (network) interface:

NULL Empty SFP slot

UTP Built-in 10/100BaseT

+2 Port 2 (network/user) interface: Refer to the network port 1 options

+3 Ports 3–6 (user) interface and combination:

1UTP Port 3: 1 built-in 10/100BaseT port (RJ-45 connector)

4UTP 4 built-in 10/100BaseT ports (RJ-45 connector)

Note: *When you order an option containing NULL, you can use/order a RAD SFP in the corresponding slot.*

SUPPLIED ACCESSORIES

AC power cord
DC connection kit

OPTIONAL ACCESSORIES

RM-33-2
Hardware kit for mounting one or two ETX-102 units with plastic enclosures in a 19-inch rack

RM-35/@
Hardware kit for mounting one or two ETX-102/H units with metal enclosures in a 19-inch rack

@ Rack mount kit (Default=Both kits):

P1 Kit for mounting one unit

P2 Kit for mounting two units

WM-35-TYPE4
Hardware kit for mounting one ETX-102/H unit with metal enclosure on a wall

CBL-DB9F-DB9M-STR
Control port cable

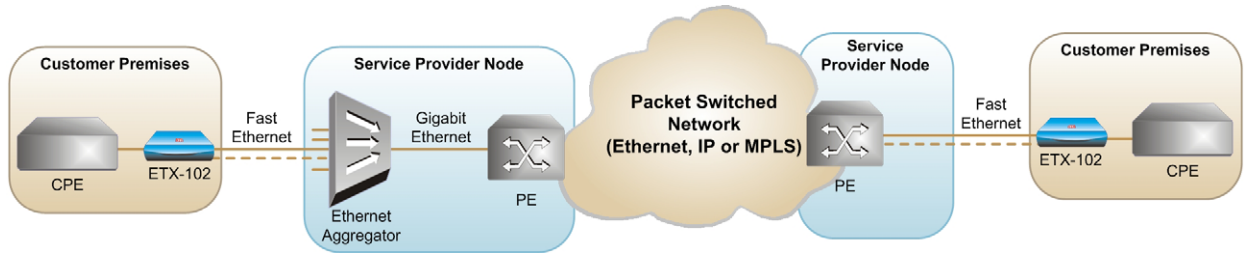


Figure 1. Providing Managed Ethernet Services over a PSN using ETX-102

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