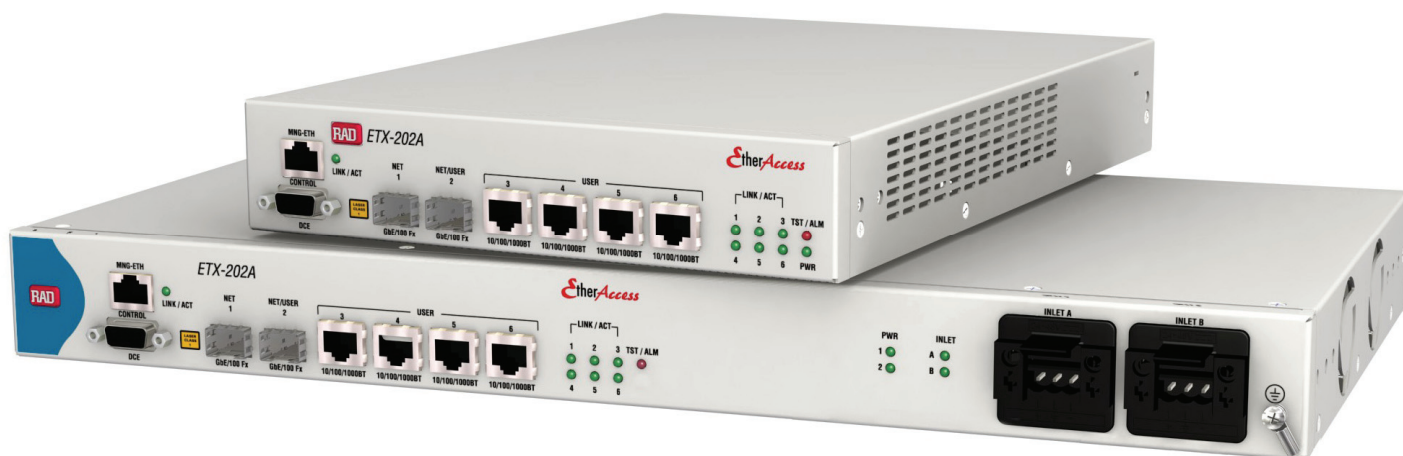


# ETX-202A

## Carrier Ethernet Demarcation Device



Smart demarcation  
point between the  
service provider and  
customer networks

**EtherAccess**

- EPL, EVPL, and flow- or port-based services with flexible mapping of the user traffic into Ethernet flows
- Robust bandwidth control mechanism and SLA monitoring per Ethernet flow assure delivery of contracted Ethernet services
- 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
- Two UTP- or SFP-based network ports and up to four UTP- or SFP-based subscriber ports, SFP ports FE/GbE autodetecting

ETX-202A is a carrier-class demarcation device owned and operated by the service provider and installed at the customer premises.

Two Ethernet network ports as well as up to four Ethernet subscriber ports use copper or SFP-based interfaces.

The SFP-based Ethernet ports accommodate a wide range of Fast Ethernet and Gigabit Ethernet SFP transceivers, allowing service providers to seamlessly connect customers located at different distances from the device.

### FLEXIBLE TRAFFIC MAPPING

The incoming customer traffic is mapped to the Ethernet flows (EVCs) using the following per-port criteria:

- Port-based (All-to-one bundling)
- User port + CE-VID
- User port + CE-VLAN priority
- User port + DSCP
- User port + ToS
- Network port + SP-VLAN
- Network port + SP-VLAN + SP-VLAN priority.



**data communications**  
The Access Company

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### FLOW SERVICES

Each flow (EVC) can have either a single service assigned to it or up to eight services that are differentiated by the SP-VLAN P-bits (flow.CoS).

### 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 three aspects: rate limitation, traffic shaping, and traffic prioritization.

Two policers (upstream and downstream) are applied per service. The policers operate according to the dual token bucket mechanism (CIR+CBS, EIR + EBS).

For prioritizing user traffic ETX-202A features up to eight separate queues, configured as strict priority queues or weighted fair queues (WFQ).

The queues handle traffic with different service demands, such as real-time traffic, premium data, or best-effort data.

ETX-202A uses the WRED (Weighted Random Early Detection) policy to ensure that queues are not congested and high priority traffic is not dropped.

### ETHERNET OAM

ETX-202A provides two types of Ethernet OAM:

- End-to-end OAM based on IEEE 802.1ag and ITU T Y.1731 enable Ethernet service providers to monitor their services proactively, measure end-to-end performance, and guarantee that the customers receive the contracted SLA. Fault monitoring and performance measurement include Frame Delay, Frame Delay Variation, Frame Loss and Availability.
- Single segment (link) OAM according to IEEE 802.3ah for remote management and fault indication, including remote loopback, dying gasp, and MIB parameter retrieval.

### NETWORK INTERFACE REDUNDANCY

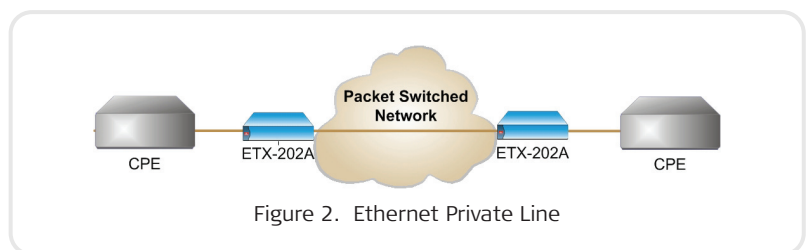
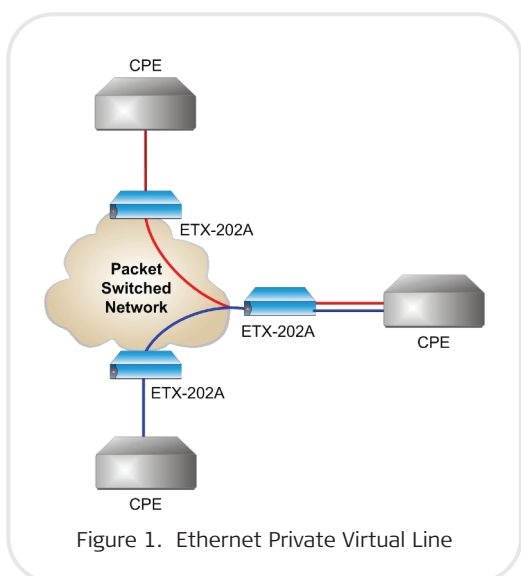
The unit supports two redundancy modes:

- Link aggregation (1+1) based on 802.3ad
- Dual homing (1:1), allowing ETX-202A to be connected to two different upstream devices.

### TYPICAL APPLICATIONS

ETX-202A is used in the following MEF-defined applications:

- Ethernet Virtual Private Line – site-to-site connectivity over shared bandwidth with service multiplexing (see *Figure 1*)
- Ethernet Private Line (EPL) – site-to-site connectivity over dedicated bandwidth without service multiplexing (see *Figure 2*).



## 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-202A exchanges source and destination MAC addresses of the incoming packets. This loopback can be performed per VLAN, per port, or per flow. It passes through Ethernet bridges and does not disrupt traffic flows that are not being tested.

## 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 the user or network ports. Remote management is performed using Telnet, Web browser, or RADview, RAD's SNMP-based management system.

## FAULT PROPAGATION

The unit provides a user-configurable fault propagation mechanism. When a link failure is detected at the network port, ETX-202A optionally shuts down a user port until the network link is restored.

## SECURITY

The following security protocols are provided by ETX-202A to ensure client server communication privacy and correct user authentication:

- RADIUS (client authentication only)
- SSL for Web-based management application
- SSH for Secure Shell communication session
- SNMPv3.

## DYING GASP

Units equipped with a single AC power supply report power failures to defined network management stations by sending traps, thus enabling the unit to properly disconnect from the network.

## ENVIRONMENT

ETX-202A/H is a temperature-hardened version with matching SFPs intended for industrial installations.

# Specifications

## NETWORK INTERFACE – FIBER OPTIC

### Number of Ports

2 (redundancy)

### Type

Fast Ethernet (100BaseFx, 100BaseLX10, 100BaseBx10), SFP-based

Gigabit Ethernet (1000BaseSx, 1000BaseLX10, 1000BaseBx10), SFP-based

### Connector

LC

### Gigabit Ethernet SFPs

- SFP-5: 1310 nm, 0.55 km (0.3 miles)
- SFP-5D: 1310 nm, 0.55 km (0.3 miles), DDM, internal calibration
- SFP-5H: 1310 nm, 0.55 km (0.3 miles), temperature-hardened,
- SFP-5DH: 1310 nm, 0.55 km (0.3 miles), DDM, internal calibration, temperature-hardened
- SFP-6: 1310 nm, 10 km (6.2 miles)
- SFP-6D: 1310 nm, 10 km (6.2 miles), DDM, internal calibration
- SFP-6H: 1310 nm, 10 km (6.2 miles), temperature-hardened
- SFP-6DH: 1310 nm, 10 km (6.2 miles), DDM, internal calibration, temperature-hardened
- SFP-7: 1550 nm, 80 km (49.7 miles)
- SFP-7D: 1550 nm, 80 km (49.7 miles), DDM, internal calibration
- SFP-8: 1310 nm, 40 km (24.8 miles)
- SFP-8D: 1310 nm, 40 km (24.8 miles), DDM, internal calibration
- SFP-8H: 1310 nm, 40 km (24.8 miles), temperature-hardened
- SFP-8DH: 1310 nm, 40 km (24.8 miles), DDM, internal calibration, temperature-hardened

- SFP-17a: Tx – 1310 nm, Rx – 1490 nm, single fiber, 10 km (6.2 miles)
- SFP-17b: Tx – 1490 nm, Rx – 1310 nm, single fiber, 10 km (6.2 miles)
- SFP-20: 1550 nm, 120 km (74.5 miles)
- SFP-22a: Tx – 1490 nm Rx – 1570 nm, single fiber, 80 km (49.7 miles)
- SFP-22b: Tx – 1570 nm, Rx – 1490 nm, single fiber, 80 km (49.7 miles).

#### Fast Ethernet SFPs

- SFP-1: 1310 nm, 2 km (1.2 miles)
- SFP-1D: 1310 nm, 2 km (1.2 miles), DDM, internal calibration
- SFP-2: 1310 nm, 15 km (9.3 miles)
- SFP-2D: 1310 nm, 15 km (9.3 miles), DDM, internal calibration
- SFP-2H: 1310 nm, 15 km (9.3 miles), temperature-hardened
- SFP-3: 1310 nm, 40 km (24.8 miles)
- SFP-3D: 1310 nm, 40 km (24.8 miles), DDM, internal calibration
- SFP-3H: 1310 nm, 40 km (24.8 miles), temperature-hardened
- SFP-4: 1550 nm, 80 km (49.7 miles)
- SFP-4D: 1550 nm, 80 km (49.7 miles), DDM, internal calibration
- SFP-10a: Tx – 1310 nm, Rx – 1550 nm, single fiber, 20 km (12.4 miles)
- SFP-10b: Tx – 1550 nm, Rx – 1310 nm, single fiber, 20 km (12.4 miles)
- SFP-18a: Tx – 1310 nm, Rx – 1550 nm, single fiber, 40 km (24.8 miles)
- SFP-18b: Tx – 1550 nm, Rx – 1310 nm, single fiber, 40 km (24.8 miles)
- SFP-19a: Tx – 1490 nm Rx – 1570 nm, single fiber, 80 km (49.7 miles)
- SFP-19b: Tx – 1570 nm, Rx – 1490 nm, single fiber, 80 km (49.7 miles).

**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 functional 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. For detailed specifications of the SFP transceivers, see the SFP Transceivers data sheet.

#### NETWORK INTERFACE – COPPER

##### Number of Ports

2 (redundancy)

##### Type

10/100/1000BaseT

##### Connector

RJ 45

#### USER INTERFACE – FIBER OPTIC

##### Number of Ports

4

##### Type

See the network interface specifications

##### SFPs

See the network interface specifications

##### Connector

LC

#### USER INTERFACE – COPPER

##### Number of Ports

4

##### Type

10/100/1000BaseT

##### Connector

RJ-45

#### GENERAL

##### Certifications

MEF-9 EPL & EVPL, MEF-14 EPL & EVPL

##### Compliance

IEEE 802.3, 802.3u, 802.1d, 802.1q, 802.1p, 802.3ad, 802.3ah, 802.1ag, ITU-T Y.1731

##### Max. Frame Size

1,800 bytes

##### 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 Ethernet network or user ports

#### Indicators

PWR (green):

On – ETX-202A is powered up

TST/ALM (red):

On – One of the Ethernet links is down  
Blinking – Diagnostic loopback is active

LINK/ACT (green):

On – Ethernet link is OK  
Blinking – Data is being transmitted and received on the Ethernet link

#### Power

AC power supply:

100–240 VAC, 50/60 Hz

Wide-range DC power supply:

24/48V (20–72VDC)

#### Power Consumption

18.5W max

#### Physical

Unit with single power supply:

Height: 43.7 mm (1.7 in)

Width: 215 mm (8.4 in)

Depth: 300 mm (11.8 in)

Weight: 2.4 kg (5.2 lb)

Unit with dual power supply:

Height: 43.7 mm (1.7 in)

Width: 440 mm (17.4 in)

Depth: 240 mm (9.5 in)

Weight: 3.1 kg (6.8 lb)

#### Environment

Temperature:

ETX-202A:

0–50°C (32–122°F)

ETX-202A/H:

-40– 65°C (-40–149°F)

Humidity: Up to 90%, non-condensing

# ETX-202A

## Carrier Ethernet Demarcation Device

Table 1. ETX Family Comparison Table

Feature	ETX-102 (Ver. 3.8B)	ETX-201 (Ver. 3.8B)	ETX-202 (Ver. 3.8B)	ETX-202A (Ver. 1.2)
Network interface	2 × Fast Ethernet	Up to 2 × Gigabit or Fast Ethernet (auto-detect)	2 × Gigabit Ethernet	2 × Gigabit Ethernet
User interface	Up to 4 × Fast Ethernet	1× Gigabit or Fast Ethernet and up to 4 × Fast Ethernet	Up to 4 × Gigabit Ethernet	Up to 4 × Gigabit Ethernet
Service type	EPL (port-based)	EPL (port-based)	EPL (port-based)	EPL and EVPL (flow-based)
Forwarding mode	VLAN-aware/unaware bridging, 8K MAC addresses	VLAN-aware/unaware bridging, 8K MAC addresses	VLAN-aware/unaware bridging, 8K MAC addresses	Flow-based forwarding
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
Bandwidth profile	CIR/CBS per port	CIR/CBS per port	CIR/CBS per port	CIR/CBS, EIR/EBS per EVC.COS
Remote management	Telnet, Web, RADview	Telnet, Web, RADview	Telnet, Web, RADview	Telnet, Web, RADview

## ETX-202A

## Carrier Ethernet Demarcation Device

## Ordering

ETX-202A/?/!/\*/%/&amp;

## Legend

? Temperature range (Default=Regular enclosure):

H Temperature-hardened enclosure

**Note:** The ETX-202A/H version requires temperature-hardened SFP transceivers.

! Power supply (Default=Single AC power supply in 1U 8.4" enclosure):

**WRDC** Single wide-range DC power supply in 1U 8.4" enclosure

**ACR** Dual AC power supply in 1U 17.4" enclosure

**DCR** Dual wide-range DC power supply in 1U 17.4" enclosure

**Note:** Temperature-hardened units are available only with dual wide-range DC power supply in 1U 17.4" enclosure (DCR).

\* Port 1 (network) interface type:

**SFP-1** SFP-1 transceiver

**SFP-1D** SFP-1D transceiver

**SFP-2** SFP-2 transceiver

**SFP-2D** SFP-2D transceiver

**SFP-2H** SFP-2H transceiver

**SFP-3** SFP-3 transceiver

**SFP-3D** SFP-3D transceiver

**SFP-3H** SFP-3H transceiver

**SFP-4** SFP-4 transceiver

**SFP-4D** SFP-4D transceiver

**SFP-10A** SFP-10a transceiver

**SFP-10B** SFP-10b transceiver

**SFP-18A** SFP-18a transceiver

**SFP-18B** SFP-18b transceiver

**SFP-19A** SFP-19a transceiver

**SFP-19B** SFP-19b transceiver

**SFP-5** SFP-5 transceiver

**SFP-5D** SFP-5D transceiver

**SFP-5H** SFP-5H transceiver

**SFP-5DH** SFP-5DH transceiver

**SFP-6** SFP-6 transceiver

**SFP-6D** SFP-6D transceiver

**SFP-6H** SFP-6H transceiver

**SFP-7** SFP-7 transceiver

**SFP-7D** SFP-7D transceiver

**SFP-8** SFP-8 transceiver

**SFP-8D** SFP-8D transceiver

**SFP-8H** SFP-8H transceiver

**SFP-8DH** SFP-8DH transceiver

**SFP-17A** SFP-17a transceiver

**SFP-17B** SFP-17b transceiver

**SFP-20** SFP-20 transceiver

**SFP-22A** SFP-22a transceiver

**SFP-22B** SFP-22b transceiver

**UTP** UTP port

**NULL** Empty SFP slot

% Port 2 (network/user) interface type: Refer to the network port 1 options above

& Ports 3–6 (user) interface type and combination:

**1UTP** 1 UTP (port 3)

**1NULL** 1 empty slot (port 3)

**1NULL3UTP** Port 3 with empty SFP slot, ports 4–6 with UTP

**2NULL2UTP** Ports 3–4 with empty SFP slots, ports 5–6 with UTP

**4UTP** 4 UTP ports

**4NULL** 4 empty slots

## SUPPLIED ACCESSORIES

AC power cord  
DC connection kit

**RM-34**

Hardware kit for mounting one ETX-202A unit with 17.4" enclosure in a 19" rack

**Note:** The RM-34 rack-mounting kit is supplied only with units in 17.4" enclosures.

## OPTIONAL ACCESSORIES

**RM-35/+**

Hardware kit for mounting one or two ETX-202A units with 8.4" enclosure in a 19" rack

+ Rack mounting kit type:

**P1** Kit for mounting one unit

**P2** Kit for mounting two units

**WM-35**

Hardware kit for mounting one ETX-202A unit with 8.4" enclosure on a wall

**WM-34**

Hardware kit for mounting one ETX-202A unit with 17.4" enclosure on a wall

**CBL-DB9F-DB9M-STR**

Control port cable

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