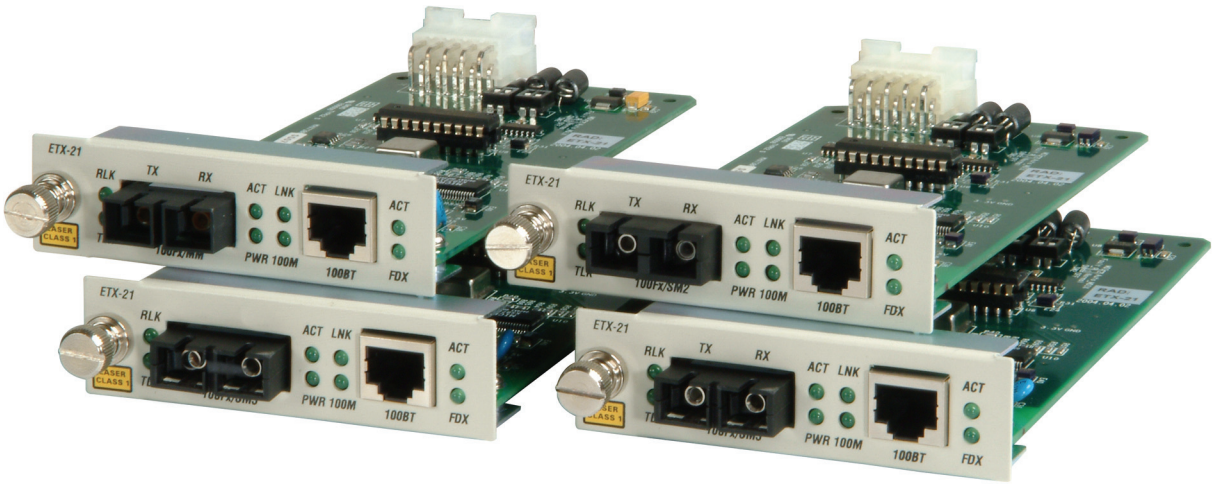
ETX-21

Fast Ethernet Layer 1 Media Converter



FEATURES

- Provides cost-effective UTP-to-fiber media conversion for Fast Ethernet services
- Can be installed in the following enclosures:
  - 16-slot modular rack for central site installation (LRS-20)
  - Single-slot standalone unit for remote site installation, or if a single converter is needed (LRS-1)
- Operates over multimode and single mode fiber optic cables
- Uses 1310 and 1550 nm lasers
- Transparent operation without signal degradation
- User-configurable MDI/MDIX crossover function
- User-configurable fault propagation
- Autonegotiation
- LED indicators for the connection status

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DESCRIPTION

- ETX-21 is a media converter that provides transparent conversion of optical and electrical signals for the Fast Ethernet service.
- The media converter is used to extend the operation distance between two copper Fast Ethernet devices via fiber optic infrastructure transparently and with no performance degradation.
- The ETX-21 card can be installed in the following enclosures:
  - LRS-20, 16-slot 3U-high modular rack, accommodating up to 16 hot-swappable converter cards. The LRS-20 rack is intended for central site installation.
  - LRS-1, 1U high standalone unit, accommodating one converter card. LRS-1 is intended for installation at remote sites, or if only a single converter is required.
- The following ETX-21 cards are available (see *Table 1* for full details):
  - ETX-21/UTP/FE-M, converting between UTP and multimode fiber optic cables, 1310 nm
  - ETX-21/UTP/FE-1, converting between UTP and single mode fiber optic cables, 1310 nm
  - ETX-21/UTP/FE-2, converting between UTP and single mode fiber optic cables, short haul, 1310 nm
  - ETX-21/UTP/FE-3, converting between UTP and single mode fiber optic cables, long haul, 1550 nm.
- The UTP port of the ETX-21 cards supports user-configurable MDI/MDIX function, correcting connection polarity errors. This allows using straight or crossed cables for the LAN connection.
- The user-configurable fault propagation mechanism automatically shuts down the UTP port if a failure is detected on the fiber optic port. The UTP link is re-established when the fiber optic connection is restored.
- The autonegotiation function automatically matches the UTP port duplex mode and data rate to the user equipment requirements.
- LEDs indicate the fiber optic link status, data transmission and duplex modes statuses of the UTP port.

APPLICATIONS

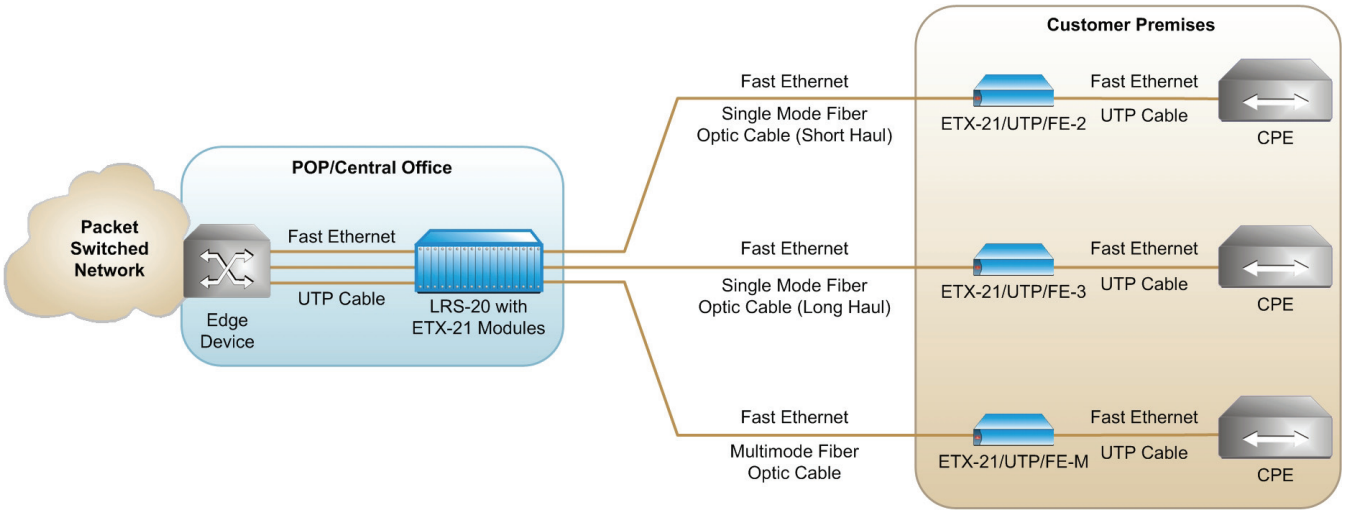

Figure 1. ETX-21 Modules Extend Ethernet Service over Fiber Optic Infrastructure, Operating opposite each other

SPECIFICATIONS

ETX-21

UTP INTERFACE

- **Type**
  Fast Ethernet, autonegotiation, MDI/MDIX
- **Cable Type**
  Category 5 UTP
- **Cable Length**
  Up to 100m (328 ft)
- **Connector**
  RJ-45

FIBER OPTIC INTERFACE

- **Type**
  Fast Ethernet
- **Characteristics**
  See *Table 1*

GENERAL

- **Compliance**
  IEEE 802.3u
- **Indicators**
  PWR (green) – Power status
  RLK (green) – Receive fiber optic link status
  TLK (green) – Transmit fiber optic link status
  ACT (green) – Data Tx/Rx status (fiber optic link)
  LNK (green) – UTP link connection status
  100M (green) – Current data rate
  ACT (green) – Data Tx/Rx status (UTP link)
  FDX (green) – Current duplex mode
- **Environment**
  Operating temperature: 0–45°C (32–113°F)
  Humidity: Up to 90%, non-condensing

LRS-1 UNIT

- **Number of Slots**
  1
- **Power**
  AC: 115–230 VAC, 50/60 Hz
  DC: -48 VDC
- **Power Consumption**
  15W max
- **Physical**
  Height: 40 mm (1.5 in)
  Width: 158 mm (6.2 in)
  Depth: 200 mm (7.8 in)
  Weight: 1.2 kg (2.6 lb)
- **Environment**
  Operating temperature: -20–60°C (-4–140°F)
  Storage temperature: -40–80°C (-40–176°F)
  Humidity: 5–90%, non-condensing

Table 1. Fiber Optic Interface Characteristics

Module	Fiber Type [µm]	Wavelength [nm]	Transmitter Type	Attenuation [dB/km]	Power [dBm]		Receiver Sensitivity [dBm]	Typical Range [km]	[miles]	Connector Type
					Min	Max				
ETX-21/UTP/FE-M	50/125 or 62.5/125 multimode	1310	Laser	3	-18	-14	-31	0–2	0–1.2	SC
ETX-21/UTP/FE-1	9/125 single mode	1310	Laser	0.5	-15	-8	-31	0–25	0–15.5	SC
ETX-21/UTP/FE-2	9/125 single mode	1310	Laser	0.5	-5	0	-35	10–60	6.2–37.2	SC
ETX-21/UTP/FE-3	9/125 single mode	1550	Laser	0.25	-5	0	-35	15–120	9.3–74.5	SC

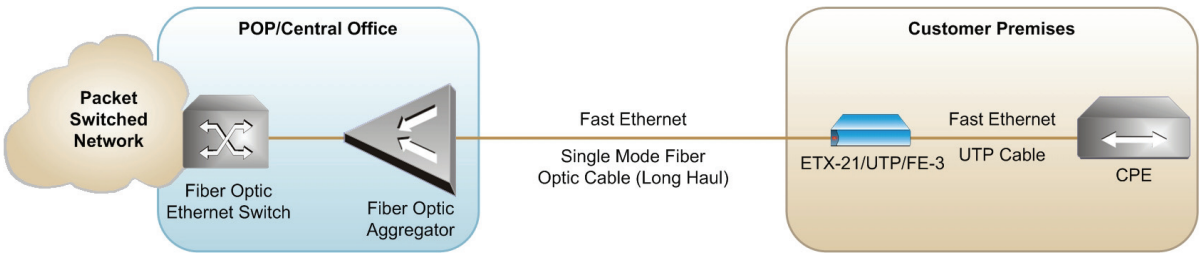

Figure 2. ETX-21 Module Extends Ethernet Service over Fiber Optic Infrastructure, Operating opposite Ethernet Switch at the POP/Central Office

ETX-21

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ORDERING

ETX-21/UTP/FE-M/*
UTP to multimode fiber optic converter card, 1310 nm, 0–2 km (0–1.2 miles) typical range

ETX-21/UTP/FE-1/*
UTP to single mode fiber optic converter card, 1310 nm, 0–25 km (0–15.5 miles) typical range

ETX-21/UTP/FE-2/*
UTP to single mode fiber optic converter card, 1310 nm, 10–60 km (6.2–37.2 miles) typical range

ETX-21/UTP/FE-3/*
UTP to single mode fiber optic converter card, 1550 nm, 15–120 km (9.3–74.5 miles) typical range

Note: *If a power supply type is specified for an ETX-21 card, the card is supplied with corresponding LRS-1 unit (AC or DC). If no power supply is specified, only an ETX-21 card is supplied.*
The LRS-1 enclosure can be ordered separately, see ordering information below.

LRS-1/*
Standalone single-slot chassis

* Specify power supply type:
AC for 115–230 VAC
DC for -48 VDC

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