PATTON®

Enterprise Networking Products Guide

For Extending, Converting & Converging Networks

Infrastructure Extenders

Ethernet Boosters & Extenders, E1/T1, IP Camera, USB 1.1, & POTS Extenders

Low Cost WAN Routers

High Speed T1/E1 Access Routers with V.35, X.21 or RJ48C WAN Ports

Business Class WAN Routers

Managed VPN Routers & Managed Serial VPN Routers

Business Class VoIP Routers

Multi-Port FXS/FXO Analog VoIP Gateway Router, Multi-Port T1/E1 VoIP Integrated Access Device, & Analog VoIP Router

G.703/E1 Network Termination Units

G.703/G.704 with V.35, X.21, EIA-530 & 10Base-T Ethernet Interfaces

Baseband Modems

G.SHDSL & iDSL modems with T1/E1 (G.703/G.704), 10/100 BaseT Ethernet, X.21, and V.35 interfaces

Device Servers

Universal Single-Port RS-485/422/232 & Single-Port RS-232 Device Servers

E1 Baluns

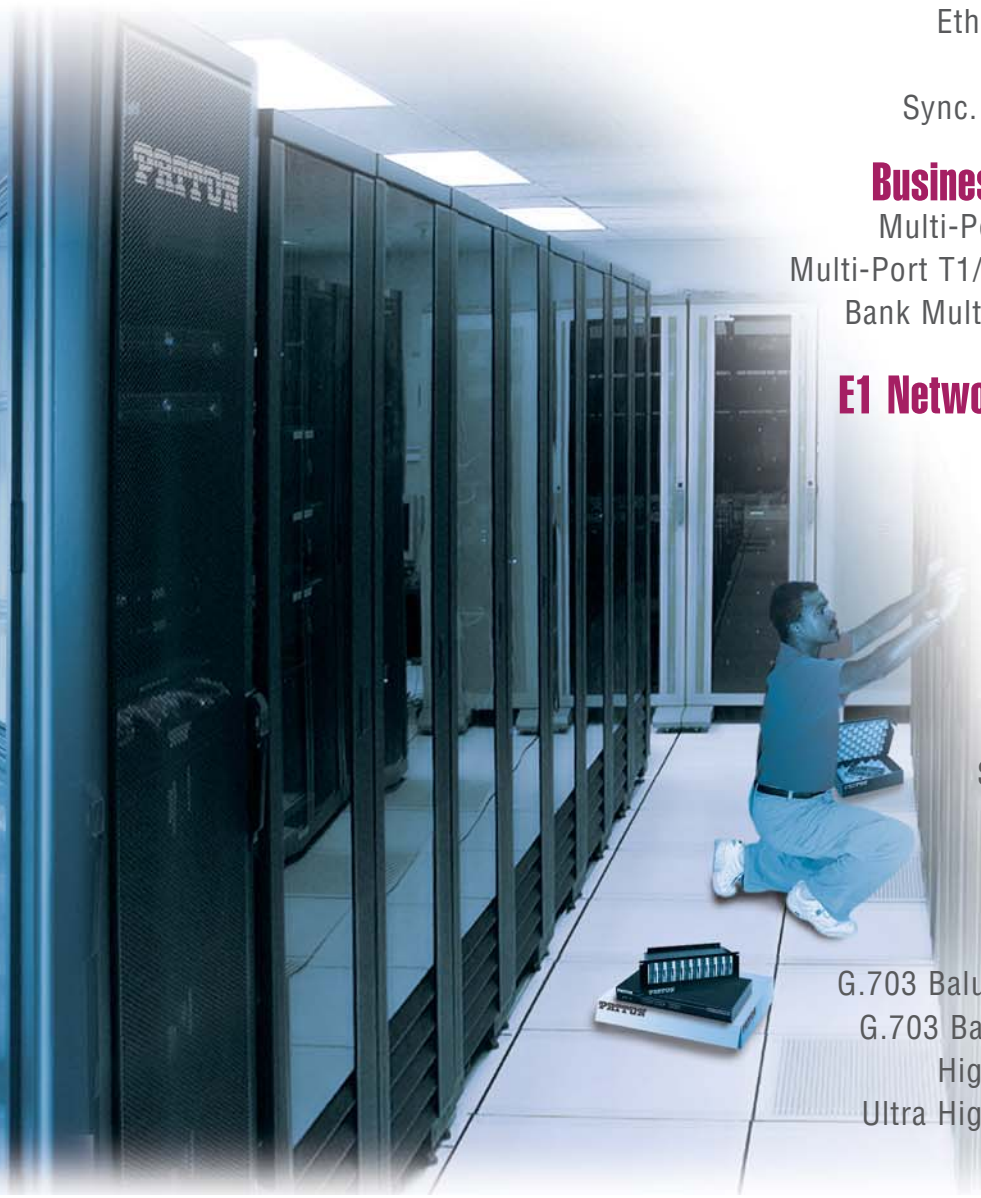
2 Mbps G.703 (E1) Baluns & G.703 (E1, E2, E3) Baluns

Patton's Products for Enterprise Networking

In today's fast-paced world, access to information is crucial. Patton provides the speed, performance, and flexibility today's enterprise networks require. With a broad portfolio including VoIP integration, WAN termination, infrastructure extension, and more, Patton has a solution that fits your requirements.

Since 1984, Patton has provided right-priced, high quality, communications equipment manufactured in the USA. Avoid costly replacements or upgrades by using Patton converters and adapters to connect legacy equipment to advanced IP networks. Avoid expensive fiber by using Patton infrastructure extension products to transport network data over existing voice-grade copper wiring.

Patton's enterprise network solutions ensure fast, reliable, and secure access to network resources, applications, and services over a single converged network—*cost effectively!*



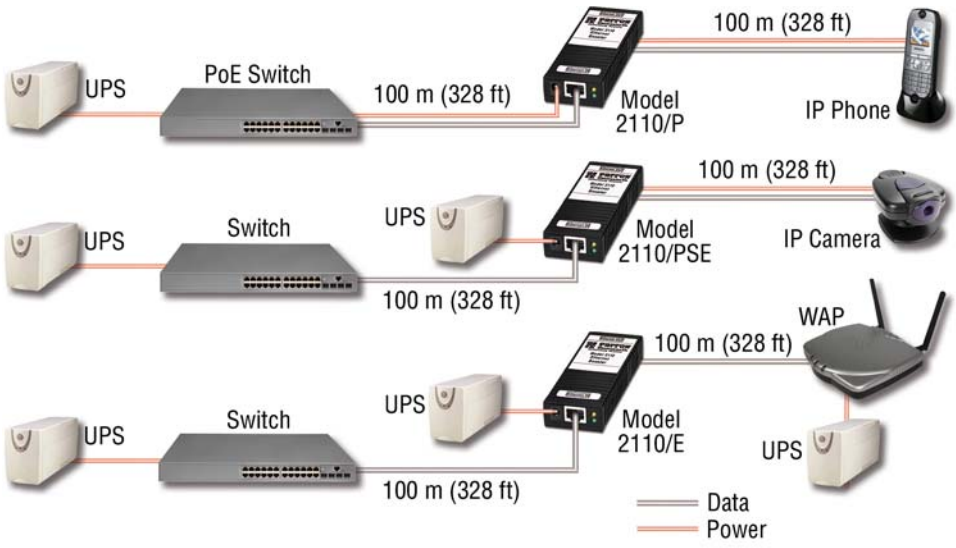
CopperLink™ Copper Ethernet Extenders

Take your network connections faster and farther over existing voice-grade wire with Patton CopperLink™ Ethernet Extenders!

No. of Ethernet Ports	No. of Wire Pairs	Max. Speed	Distance at Max. Speed (24 AWG)	Model	Page
2	CAT5 or greater	10/100Base-TX	328 feet (100 m) per Model 2110	CopperLink™ 2110	4
2	1	155 Mbps asymmetrical	5,500 feet (1.6 km)	CopperLink™ 2173	5
4	4	45.6 Mbps	4,600 feet (1.4 km)	CopperLink™ 2162	6
4	2	22.8 Mbps	4,600 feet (1.4 km)	CopperLink™ 2161	6
2	1	15 Mbps	4,250 feet (1.2 m)	CopperLink™ 2151	7
4	1	11.4 Mbps	4,600 feet (1.4 km)	CopperLink™ 2160	6
2	1	10 Mbps	5,000 feet (1.5 km)	CopperLink™ 2150	7
1	1	4.6 Mbps	10,560 feet (3.2 km)	CopperLink™ 2157	8
1	1	2.3 Mbps	16,368 feet (5.0 km)	CopperLink™ 2156	8

Ethernet Booster
Model 2110

The CopperLink™ 2110 solution more than doubles Ethernet and PoE distances over already existing network infrastructure cabling.



FEATURES & BENEFITS

- ✓ **Ethernet & PoE Extension**—Doubles 10/100Base-TX Ethernet and PoE to 200 meters (656 feet). Multiple 2110s can be used in series for even longer extensions.
- ✓ **Operates over CAT5**—Reduces the cost and hassles of adding switches, hubs, and wireless access points.
- ✓ **Plug and Play**—No configuration or cable hassles during installation with auto-sensing 10/100, full or half duplex, and automatic MDI-X.
- ✓ **Transparent LAN Operation**—Transparent operation ensures the highest rate possible for each extension distance.
- ✓ **No External Power Required**—Power over Ethernet (PoE) capability enables extenders and peripheral devices to be powered over standard twisted-pair Ethernet cable.

ORDERING INFORMATION

2110/EUI: CopperLink 10/100 Mbps Ethernet Booster; 100–240 VAC

2110/P: CopperLink 10/100 Mbps Ethernet Booster; 802.3af pass through

2110/PSE/EUI-48: CopperLink 10/100 Mbps Ethernet Booster and 802.3af PoE Injector; 48 VDC Source

802.3af Power and Distance Chart

	Power Delivered	13W	6.5W	3.84W	0W
	Class of PoE Device	Class 3/0	Class 2	Class 1	No PoE Load
Model	PoE Source	Maximum Distance (Quantity of Units)			
2110/P	3rd Party PoE switch	N/A	300 m / 984 ft (2 x 2110/P)	400 m / 1,310 ft (3 x 2110/P)	500 m / 1,640 ft (4 x 2110/P)
2110/PSE + 2110/P	PoE Injector 2110/PSE/EUI-48	300 m / 984 ft (1 x 2110/P)	400 m / 1,310 ft (2 x 2110/P)	500 m / 1,640 ft (3 x 2110/P)	600 m / 1,969 ft (4 x 2110/P)

70 Mbps Symmetrical or 100 Mbps Asymmetrical CopperLink™ Ethernet Extender

Model 2173

With achievable lines rates of 70 Mbps symmetrical, or 100 Mbps asymmetrical over a single twisted-pair, the Model 2173 is now the fastest in the large line of CopperLink™ Ethernet extenders.

The CopperLink™ Model 2173 High Speed Ethernet Extender leverages existing copper infrastructure to deliver high-speed Ethernet extension.

Multiple user-selectable settings for symmetrical and asymmetrical rates provide the flexibility required to achieve the optimal speed-distance combination for each and every connection. Multi-rate symmetrical line rates allow each connection to be tuned for the length and gauge of the copper wire, in order to achieve the maximum possible data rate for the environment.

Typical symmetrical applications include remote LAN extension, video teleconferencing, and data backhaul. Asymmetrical line rates are the ideal solution for applications that require longer extension between their Ethernet devices and for applications that primarily involve high downstream requirements. These asymmetrical applications include high resolution IP video for security ,medical imaging, livestock monitoring, underwater video, and internet gaming.

Get near-fiber performance without the expense with Patton's High Speed CopperLink Ethernet Extenders.

FEATURES & BENEFITS

- ✓ **Ethernet Extension**—Extends 10/100Base-TX Ethernet up to 5,500 feet over 2-wire 24 AWG twisted pair.
- ✓ **Operates Over Twisted Pair**—Near fiber speeds without the cost of new cable or fiber installations or the hassles of wireless line of site.
- ✓ **Plug and Play**—Modems need no configuration to operate, Ethernet ports are auto-sensing 10/100, full or half duplex.
- ✓ **Multiple Line Rates Supported**—Switch-selectable line rates ensure best possible rate vs. reach combination.
- ✓ **Transparent LAN Bridging**—No network configuration. Will pass higher layer protocols, including 802.1Q VLAN tagged and untagged packets. Fully transparent to various UP video compression schemes such as WMV, MPEG-4 and MJPEG.

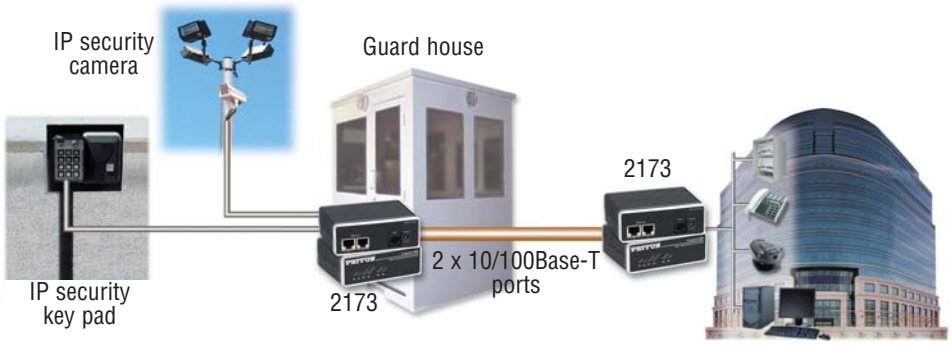
Distance Chart, Based on 24 AWG (0.5 mm)

Data Rate	Distance in feet (km)	Mode	Throughput at Max Distance (Mbps)	Data Rate	Distance in feet (km)	Mode	Throughput at Max Distance (Mbps)
4/1	5,500 ft (1.6 km)	Fast	4.00 (DS) 1.00 (US)	50/50	1,750 ft (0.5 km)	Fast	49.78 (DS) 49.78 (US)
4/1	5,500 ft (1.6 km)	Interleave	4.00 (DS) 1.00 (US)	50/50	1,750 ft (0.5 km)	Interleave	49.78 (DS) 49.78 (US)
100/70	500 ft (0.15 km)	Fast	83 (DS) 69.5 (US)	70/70	1,750 ft (0.5 km)	Fast	51 (DS) 51 (US)
100/70	250 ft (0.07 km)	Interleave	83 (DS) 69.5 (US)	70/70	1,750 ft (0.5 km)	Interleave	51 (DS) 51 (US)
25/25	2,250 ft (0.6 km)	Interleave	24.89 (DS) 24.89 (US)				

Note: The actual distance and link performance may vary depending on the environment and type/gauge of wire used.
Note: DS = downstream, US = upstream

Model 2173 dual-port CopperLink Ethernet Extenders are ideal for delivering high speed IP video and data links to remote devices that are beyond the 328 foot (100 meter) distance limit of Ethernet. The high throughput eliminates bandwidth concerns previously experiences with many other copper based transmission technologies. By utilizing existing voice grade copper pairs, the expense and hassle of installing low capacitance or fiber cabling is no longer required.

Depicted below is a typical application involving multiple network enabled devices (Ethernet) plugged in for simultaneous Ethernet data and IP video delivery.



ORDERING INFORMATION

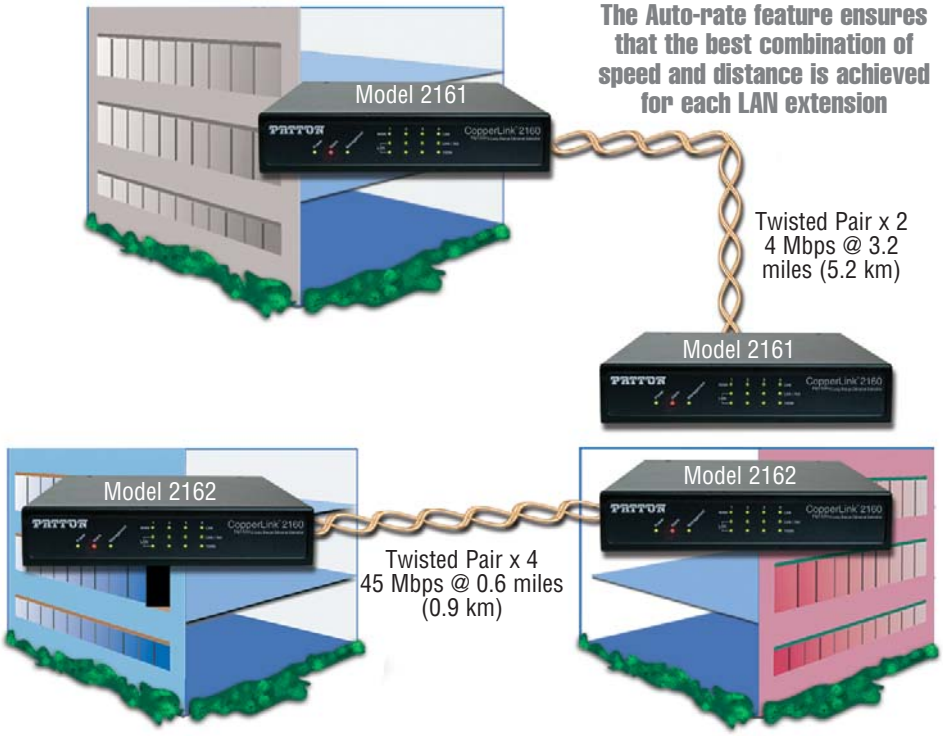
2173/EUI: CopperLink High Speed Ethernet Extender; RJ-45 Line; 100–240 VAC

2173/EUI-2PK: CopperLink High Speed Ethernet Extender Kit (1 Local and 1 Remote); RJ-45 Line; 100–240 VAC

45 Mbps CopperLink™ Long Range Ethernet Extender

Model 2160 Series

With rates up to 45 Mbps and reach up to 24,000 feet (7,315 meters), the Patton Model 2160 is the most versatile Ethernet Extender offered today.



FEATURES & BENEFITS

- ✓ **Data Rates up to 45 Mbps**—Get reliable broadband connectivity with full-duplex symmetric rates and distances exceeding 4.5 miles (7,300m)
- ✓ **4 x 10/100 Ethernet Switch**—Make up to 4 network connections easily. Built in MDI-X auto cross over switches eliminates messy and confusing cable configurations.
- ✓ **Transparent LAN Bridging**—Passes higher layer protocols and supports 802.1Q VLAN tagging
- ✓ **Automatic Learning, Aging and Filtering**—Only allows packets with addresses outside the LAN to be forwarded.
- ✓ **QoS, CoS, and VLAN Support**—Ensure mission critical network connections are of top quality with advanced traffic management features.
- ✓ **WWW/SNMP Manageable**—Built-in console port makes setup a snap, you can also use the embedded HTTP/SNMP agent to remote manage the unit from anywhere in the world.

ORDERING INFORMATION

2160/EUI-2PK: CopperLink High Speed, Long Range Ethernet Extender Kit (1 pair), 5.7 Mbps; 100–240 VAC

2161/EUI-2PK: CopperLink High Speed, Long Range Ethernet Extender Kit (2 pair), 11.4 Mbps; 100–240 VAC

2162/EUI-2PK: CopperLink High Speed, Long Range Ethernet Extender Kit (4 pair), 22.8 Mbps; 100–240 VAC

Distance Chart 2160 Series

2-Wire Standard			2-Wire High Speed		
Line rate	24 AWG (0.5 mm)		Line rate	24 AWG (0.5 mm)	
kbps	miles	km	kbps	miles	km
192	5.2	8.3	384	2.0	3.2
256	4.7	7.5	512	1.9	3.0
512	4.2	6.7	1024	1.6	2.6
768	4.0	6.4	1536	1.5	2.4
1024	3.8	6.2	2048	1.4	2.3
1280	3.6	5.8	2560	1.3	2.1
1536	3.5	5.6	3072	1.3	2.1
2048	3.2	5.2	4096	1.2	2.0
2304	3.1	5.0	4608	1.2	2.0
3840	2.4	3.8	7680	1.0	1.7
4608	2.3	3.7	9216	0.9	1.5
5696	2.0	3.3	11392	0.9	1.4

Distance Chart 2161 Series

4-Wire Standard			4-Wire High Speed		
Line rate	24 AWG (0.5 mm)		Line rate	24 AWG (0.5 mm)	
kbps	miles	km	kbps	miles	km
384	5.2	8.3	768	2.0	3.2
512	4.7	7.5	1024	1.9	3.0
1024	4.2	6.7	2048	1.6	2.6
1536	4.0	6.4	3072	1.5	2.4
2048	3.8	6.2	4096	1.4	2.3
2560	3.6	5.8	5120	1.3	2.1
3072	3.5	5.6	6144	1.3	2.1
4096	3.2	5.2	8192	1.2	2.0
4608	3.1	5.0	9216	1.2	2.0
7680	2.4	3.8	15360	1.0	1.7
9216	2.3	3.7	18432	0.9	1.5
11392	2.0	3.3	22784	0.9	1.4

Distance Chart 2162 Series

8-Wire Standard			8-Wire High Speed		
Line rate	24 AWG (0.5 mm)		Line rate	24 AWG (0.5 mm)	
kbps	miles	km	kbps	miles	km
768	5.2	8.3	1536	2.0	3.2
1024	4.7	7.5	2048	1.9	3.0
2048	4.2	6.7	4096	1.6	2.6
3072	4.0	6.4	6144	1.5	2.4
4096	3.8	6.2	8192	1.4	2.3
5120	3.6	5.8	10240	1.3	2.1
6144	3.5	5.6	12288	1.3	2.1
8192	3.2	5.2	16384	1.2	2.0
9216	3.1	5.0	18432	1.2	2.0
15360	2.4	3.8	30720	1.0	1.7
18432	2.3	3.7	36864	0.9	1.5
22784	2.0	3.3	45568	0.9	1.4

15 Mbps Multi-Rate CopperLink™ Ethernet Extender

Model 2151

Multi-rate high speed Ethernet extension over voice–grade wire.

Variable symmetric or asymmetric data rates

Line rates can be set on the standalones and rack cards to differentiate services and increase the distance of the individual links.

Distance Chart, Based on 24 AWG (0.5 mm)

Data Rate	Distance in feet (km)	Throughput at Max Distance (megabits per second)	Data Rate	Distance in feet (km)	Throughput at Max Distance (megabits per second)
4/1	5,500 ft (1.6 km)	4.00 (DS) 1.00 (US)	6/6	5,500 ft (1.6 km)	5.98 (DS) 5.98 (US)
9/1	5,750 ft (1.7 km)	8.98 (DS) 1.0 (US)	10/10	5,000 ft (1.5 km)	9.99 (DS) 9.99 (US)
16/2	4,700 ft (1.4 km)	15.92 (DS) 2.0 (US)	15/15	4,250 ft (1.2 km)	14.96 (DS) 14.96 (US)

Note: The actual distance and link performance may vary depending on the environment and type/gauge of wire used.
Note: DS = downstream, US = upstream

FEATURES & BENEFITS

- ✓ **Ethernet Extension**—Extends 10/100 Base-TX Ethernet distances 1 mile using 2-wire 24 AWG unconditioned lines
- ✓ **Seamlessly Connect and Extend the LAN**—802.3 10/100Base-TX LAN connection via built-in shielded RJ-45 port
- ✓ **CopperLink 2-Wire Connection**—Easy 2-wire connection via built-in RJ-45 port or terminal block
- ✓ **Switch Selectable**—Asymmetrical or Symmetrical line rates up to 15 Mbps!
- ✓ **Dual Auto-sensing Ethernet**—Auto 10 or 100Base-T and full or half-duplex Ethernet operation

ORDERING INFORMATION

2151/EUI: CopperLink 15 Mbps Ethernet Extender; RJ-45 Line; 100–240 VAC

2151/EUI-2PK: CopperLink 15 Mbps Ethernet Extender Extender Kit; RJ-45 Line; 100–240 VAC

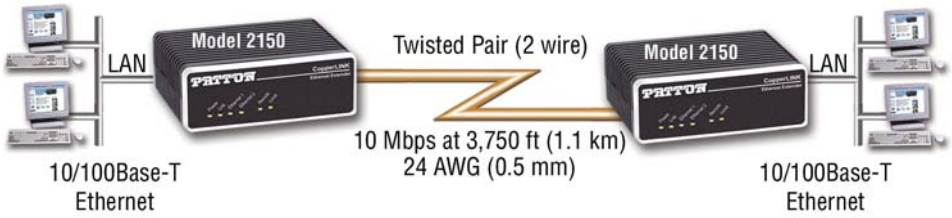
10 Mbps Multi-Rate CopperLink™ Ethernet Extender

Model 2150

Overcome the distance limitations of Ethernet with the Patton Model 2150 CopperLink™ Ethernet Extender. Using a single twisted-pair of voice-grade wire, transparently extend the reach of your network to over 3,750 ft (1.1 km) at 10 Mbps symmetric.

These multi-rate Ethernet Extenders are ideal for bridging Ethernet spans inside buildings that are beyond the 328-foot (100-meter) distance limit of Ethernet.

For example, connecting remote LANs located on different floors in a building over already existing telephone-grade twisted pair.



Distance Chart, Based on 24 AWG (0.5 mm)

Data Rate	Signal Noise Ratio (SNR)	Mode	Distance in feet (km)	Throughput at Max Distance (megabits per second)
10/10	6 dB	Fast	4,500 ft (1.3 km)	9.99 (DS)/9.99 (US)
10/10	6 dB	Interleave	4,500 ft (1.3 km)	9.99 (DS)/9.99 (US)
10/10	9 dB	Fast	4,750 ft (1.4 km)	9.99 (DS)/9.99 (US)
10/10	9 dB	Interleave	5,000 ft (1.5 km)	9.99 (DS)/9.99 (US)

Note: The actual distance and link performance may vary depending on the environment and type/gauge of wire used.
Note: DS = downstream, US = upstream

FEATURES & BENEFITS

- ✓ **Long-reach High Speed Ethernet Extension**—Overcome the 328 ft (100 m) limitation of Ethernet with a full-duplex 10 Mbps link at distances up to 3,750 ft (1.1 km)
- ✓ **Seamlessly Connect and Extend the LAN**—802.3 10/100Base-T LAN connection via built-in shielded RJ-45 port
- ✓ **Patton CopperLink 2-Wire Connection**—Easy 2-wire CopperLink connection via built-in RJ-45 port or optional terminal block
- ✓ **Dual Auto-sensing Full-Duplex Ethernet**—Auto 10 or 100Base-T and full or half-duplex Ethernet operation
- ✓ **Transparent LAN Bridging**—Passes higher layer protocols and supports 802.1Q VLAN tagging
- ✓ **Automatic Learning, Aging, and Filtering**—Only allows packets with addresses outside the LAN to be forwarded

ORDERING INFORMATION

2150/EUI: CopperLink 10 Mbps Ethernet Extender; RJ-45 Line; 100–240 VAC

2150/EUI-2PK: CopperLink 10 Mbps Ethernet Extender Kit (1 Local Unit and 1 Remote Unit); RJ-45 Line; 100–240 VAC

4.6 Mbps CopperLink™ Ethernet Extender with Auto-Rate Adaptation

Model 2157

High speed/long-distance LAN extension over copper wires.

Models 2157 Extension Distances

Line rate	No Noise									
	26g (0.4 mm)		24g (0.5 mm)		22g (0.6 mm)		20g (0.8 mm)		19g (0.9 mm)	
kbps	miles	km	miles	km	miles	km	miles	km	miles	km
200	4.4	7.2	5.7	9.4	8.0	13.1	10.3	16.8	12.1	19.7
392	4.0	6.6	5.4	8.8	7.5	12.3	8.7	15.8	10.8	17.5
520	3.8	6.2	5.1	8.3	7.1	11.6	9.2	14.9	9.7	15.8
776	3.5	5.6	4.6	7.5	6.0	9.8	7.8	12.7	8.8	14.3
1160	3.0	4.9	4.0	6.4	5.2	8.4	6.7	11.0	7.5	12.3
1544	2.8	4.6	3.7	6.1	4.9	7.9	6.4	10.3	6.7	11.0
2056	2.5	4.0	3.3	5.3	4.2	6.9	5.6	9.0	5.9	9.6
2312	2.3	3.8	3.1	5.0	4.0	6.6	5.3	8.6	5.6	9.1
2696	2.3	3.7	3.0	5.0	4.0	6.4	5.2	8.4	5.5	8.9
3080	2.2	3.6	3.0	4.8	3.9	6.3	5.0	8.2	5.4	8.7
3464	2.1	3.4	2.7	4.5	3.6	5.8	4.7	7.6	4.9	8.8
3848	1.9	3.1	2.5	4.1	3.3	5.3	4.3	7.0	4.5	7.4
4232	1.7	2.8	2.3	3.7	2.9	4.8	3.9	6.3	4.1	6.6
4616	1.5	2.5	2.0	3.3	2.6	4.2	3.4	5.5	3.6	5.9

FEATURES & BENEFITS

- ✓ Auto-rate adaptation gives the highest rate possible for the extension distance of your network
- ✓ 4.6 Mbps over a twisted pair of copper
- ✓ Extension distances up to 32,000 feet (10 km)
- ✓ Auto-sensing 10/100Base-TX port
- ✓ Integrated MDI-X switch to allow easy connection to any computer or LAN
- ✓ Support for 802.1 Q VLAN tagged packet transmission

ORDERING INFORMATION

2157/L/EUI: Auto-Rate CopperLink Ethernet Extender, Local unit); 100–240 VAC

2157/R/EUI: Auto-Rate CopperLink Ethernet Extender, (Remote unit); 100–240 VAC

2157/EUI-2PK: Auto-Rate CopperLink Ethernet Extender, (Local and Remote units); 100–240 VAC

2.3 Mbps CopperLink™ Ethernet Extender with Auto-Rate Adaptation

Model 2156

High speed/long-distance LAN extension over copper wires.

Models 2156 Extension Distances

Line rate	No Noise									
	26g (0.4 mm)		24g (0.5 mm)		22g (0.6 mm)		20g (0.8 mm)		19g (0.9 mm)	
kbps	miles	km	miles	km	miles	km	miles	km	miles	km
200	4.4	7.2	5.7	9.4	8.0	13.1	10.3	16.8	12.1	19.7
392	4.0	6.6	5.4	8.8	7.5	12.3	8.7	15.8	10.8	17.5
520	3.8	6.2	5.1	8.3	7.1	11.6	9.2	14.9	9.7	15.8
776	3.5	5.6	4.6	7.5	6.0	9.8	7.8	12.7	8.8	14.3
1160	3.0	4.9	4.0	6.4	5.2	8.4	6.7	11.0	7.5	12.3
1544	2.8	4.6	3.7	6.1	4.9	7.9	6.4	10.3	6.7	11.0
2056	2.5	4.0	3.3	5.3	4.2	6.9	5.6	9.0	5.9	9.6
2312	2.3	3.8	3.1	5.0	4.0	6.6	5.3	8.6	5.6	9.1

FEATURES & BENEFITS

- ✓ Auto-rate adaptation gives the highest rate possible for the extension distance of your network
- ✓ 2.3 Mbps over a twisted pair of copper
- ✓ Extension distances up to 32,000 feet (10 km)
- ✓ Auto-sensing 10/100Base-TX port
- ✓ Integrated MDI-X switch to allow easy connection to any computer or LAN
- ✓ Support for 802.1 Q VLAN tagged packet transmission

ORDERING INFORMATION

2156/L/EUI: Auto-Rate CopperLink Ethernet Extender, Local unit); 100–240 VAC

2156/R/EUI: Auto-Rate CopperLink Ethernet Extender, (Remote unit); 100–240 VAC

2156/EUI-2PK: Auto-Rate CopperLink Ethernet Extender, (Local and Remote units); 100–240 VAC

CopperLink™ Wall Mounted Ethernet Extenders

Max. Distance	Max. Speed	Distance at Max. Speed	Temperature Range	Model
1 mile (1.6 km)	50 Mbps	800 feet (243.9 m)	-10 to 70°C	CopperLink™ 2172R
1 mile (1.6 km)	50 Mbps	800 feet (243.9 m)	-40 to 85°C	CopperLink™ 2172R/CC
5.7 miles (9.2 km)	4.6 Mbps	2.0 miles (3.2 km)	-40 to 85°C	CopperLink™ 2157R

50 Mbps Wall Mountable CopperLink™ Ethernet Extender

Model 2172R

Patton's CopperLink 2172R extends Ethernet connections at distances up to 5,500 feet (1,676 meters) over already existing infrastructure cabling. It reduces the cost and hassles of new installations, utilizing installed voice-grade twisted pairs to eliminate the expense of fiber or Cat5e cabling.

Model 2172 Extension Distances

DS/US* Line Settings	Throughput	26 AWG (0.4 mm)	24 AWG (0.5 mm)	22 AWG (0.6 mm)	19 AWG (0.9 mm)
50/50 Mbps	48 Mbps	600 feet (184 m)	800 (245 m)	1,000 (306 m)	1,500 (460 m)
25/25 Mbps	24.5 Mbps	1,500 feet (458 m)	2,000 (610 m)	2,500 (763 m)	2,750 (1,144 m)
10/10 Mbps	10 Mbps	3,000 feet (900 m)	4,000 (1,200 m)	5,000 (1,500 m)	7,500 (2,250 m)
4/1 Mbps	3.75/1 Mbps	4,500 feet (1,373 m)	6,000 (1,830 m)	7,500 (2,288 m)	11,250 (3,430 m)
16/2 Mbps	15/2 Mbps	3,000 feet (900 m)	4,000 (1,200 m)	5,000 (1,500 m)	7,500 (2,350 m)
50/2 Mbps	48/2 Mbps	1,500 feet (458 m)	2,000 (610 m)	2,500 (763 m)	3,750 (1,144 m)

FEATURES & BENEFITS

- ✓ **Full-duplex data-line rate of 100 Mbps**—Provides near fiber performance for bandwidth intensive applications such as Triple Play services.
- ✓ **Plug and Play**—No configuration or cable hassles during installation with auto-sensing 10/100, full or half duplex, and auto MDI-X.
- ✓ **Flexible installation**—Wall mount ready and optional DIN rail kit
- ✓ **Extended temperature**—From -40 to 85°C

ORDERING INFORMATION

2172R/EUI: Ruggedized CopperLink High Speed 50 Mbps CopperLink Ethernet Extender Kit; -10 to 70°C; RJ-45 Line; External 100–240 VAC Adapter

2172R/TB/EUI: Ruggedized CopperLink High Speed 50 Mbps Ethernet Extender Kit; Terminal Block; 100–240 VAC

2172R/CC/EUI: Conformal Coated and Ruggedized CopperLink High Speed 50 Mbps Ethernet Extender Kit; -40 to 85°C; RJ-45 Line; 100–240 VAC

4.6 Mbps Wall Mountable CopperLink™ Ethernet Extender

Model 2157R

Patton's CopperLink™ 2157R extends Ethernet connections at distances up to 32,000 feet (10 km) over already existing infrastructure voice-grade twisted pairs to eliminate the expense of fiber or Cat5e cabling

Model 2157 Extension Distances

Line rate	No Noise									
	26g (0.4 mm)		24g (0.5 mm)		22g (0.6 mm)		20g (0.8 mm)		19g (0.9 mm)	
kbps	miles	km	miles	km	miles	km	miles	km	miles	km
200	4.4	7.2	5.7	9.4	8.0	13.1	10.3	16.8	12.1	19.7
392	4.0	6.6	5.4	8.8	7.5	12.3	8.7	15.8	10.8	17.5
520	3.8	6.2	5.1	8.3	7.1	11.6	9.2	14.9	9.7	15.8
776	3.5	5.6	4.6	7.5	6.0	9.8	7.8	12.7	8.8	14.3
1160	3.0	4.9	4.0	6.4	5.2	8.4	6.7	11.0	7.5	12.3
1544	2.8	4.6	3.7	6.1	4.9	7.9	6.4	10.3	6.7	11.0
2056	2.5	4.0	3.3	5.3	4.2	6.9	5.6	9.0	5.9	9.6
2312	2.3	3.8	3.1	5.0	4.0	6.6	5.3	8.6	5.6	9.1
2696	2.3	3.7	3.0	5.0	4.0	6.4	5.2	8.4	5.5	8.9
3080	2.2	3.6	3.0	4.8	3.9	6.3	5.0	8.2	5.4	8.7
3464	2.1	3.4	2.7	4.5	3.6	5.8	4.7	7.6	4.9	8.8
3848	1.9	3.1	2.5	4.1	3.3	5.3	4.3	7.0	4.5	7.4
4232	1.7	2.8	2.3	3.7	2.9	4.8	3.9	6.3	4.1	6.6
4616	1.5	2.5	2.0	3.3	2.6	4.2	3.4	5.5	3.6	5.9

FEATURES & BENEFITS

- ✓ **Long distance network extension**—Extension distances up to 32,000 feet (10 km) or 4.6 Mbps at 1.5 miles (2.5 km).
- ✓ **Plug and Play**—No configuration or cable hassles during installation with auto-sensing 10/100, full or half duplex, and auto MDI-X
- ✓ **Auto-rate adaption**—Ensures the highest rate possible for each extension distance.
- ✓ **Flexible installation**—Wall or DIN rail mountable
- ✓ **Extended temperature**—From -40 to 85°C

ORDERING INFORMATION

2157/L/EUI: Ruggedized Auto-Rate CopperLink Ethernet Extender, Local unit); -40 to 85°C; 100–240 VAC

2157/R/EUI: Ruggedized Auto-Rate CopperLink Ethernet Extender, (Remote unit); -40 to 85°C; 100–240 VAC

2157/EUI-2PK: Ruggedized Auto-Rate CopperLink Ethernet Extender, (Local and Remote units); -40 to 85°C; 100–240 VAC

CopperLink™ Environmentally Hardened (EHA) & Extended Temperature (ET) Ethernet Extenders

Temp Rating	Case Rating	Media Type	Max Line Rate	Max Distance	Std Indoor Pair	Model
-40 to 85°C	NEMA 4	2-Wire Twisted Pair	50 Mbps	2.1 km (1.3 miles)	2172/L	ET2172/R
0 to 50°C	NEMA 4	2-Wire Twisted Pair	50 Mbps	2.1 km (1.3 miles)	2172/L	EHA2172/R
-40 to 85°C	NEMA 4	2-Wire Twisted Pair	4.6 Mbps	8 km (5 miles)	2157/L	ET2157/R
0 to 50°C	NEMA 4	2-Wire Twisted Pair	4.6 Mbps	8 km (5 miles)	2157/L	EHA2157/R

50 Mbps Multi-Rate CopperLink™ Ethernet Extender

Models ET2172 and EHA2172

Available in Extended Temperature (-40 to 85ºC) and Environmentally Hardened (0 to 50ºC) configurations, these units break distance and speed barriers with up to 50-Mbps full-duplex and distances of up to 5,500 feet (1,700 meters) over already existing infrastructure voice-grade twisted pairs (eliminating the expense of fiber or Cat5e cabling) while operating in environments that do not have heating or cooling options.

FEATURES & BENEFITS

- ✓ **Ethernet Extension**—Extends 10/100Base-TX Ethernet at distances up to 8km over 2-wire 24 AWG unconditioned lines
- ✓ **NEMA 4 Cases**—Protection against elements such as dirt, rain, sleet, snow, dust, and that will be undamaged by the external formation of ice on the enclosure

Model ET2172/EH2172 Extension Distances

DS/US* Line Settings	Throughput	26 AWG (0.4 mm)	24 AWG (0.5 mm)	22 AWG (0.6 mm)	19 AWG (0.9 mm)
50/50 Mbps	48 Mbps	600 feet (184 m)	800 (245 m)	1,000 (306 m)	1,500 (460 m)
25/25 Mbps	24.5 Mbps	1,500 feet (458 m)	2,000 (610 m)	2,500 (763 m)	2,750 (1,144 m)
10/10 Mbps	10 Mbps	3,000 feet (900 m)	4,000 (1,200 m)	5,000 (1,500 m)	7,500 (2,250 m)
4/1 Mbps	3.75/1 Mbps	4,500 feet (1,373 m)	6,000 (1,830 m)	7,500 (2,288 m)	11,250 (3,430 m)
16/2 Mbps	15/2 Mbps	3,000 feet (900 m)	4,000 (1,200 m)	5,000 (1,500 m)	7,500 (2,350 m)
50/2 Mbps	48/2 Mbps	1,500 feet (458 m)	2,000 (610 m)	2,500 (763 m)	3,750 (1,144 m)

ORDERING INFORMATION

Call for details.

4.6 Mbps CopperLink™ Ethernet Extender

Models ET2157 and EH2157

Available in Extended Temperature (-40 to 85ºC) and Environmentally Hardened (0 to 50ºC) configurations, these units extend Ethernet connections at distances up to 32,000 feet (10 km) over already existing infrastructure voice-grade twisted pairs (eliminating the expense of fiber or Cat5e cabling) while operating in environments that do not have heating or cooling options.

FEATURES & BENEFITS

- ✓ **Long distance network extension**—Extension distances up to 32,000 feet (10 km) or 4.6 Mbps at 1.5 miles (2.5 km).
- ✓ **NEMA 4 Cases**—Protection against elements such as dirt, rain, sleet, snow, dust, and that will be undamaged by the external formation of ice on the enclosure
- ✓ **Auto-rate adaption**—Ensures the highest rate possible for each extension distance.
- ✓ **All the features of our popular Model 2157 desktop unit**—See page 8.

Model ET2157/EH2157 Extension Distances

Line rate	No Noise									
	26g (0.4 mm)		24g (0.5 mm)		22g (0.6 mm)		20g (0.8 mm)		19g (0.9 mm)	
kbps	miles	km	miles	km	miles	km	miles	km	miles	km
200	4.4	7.2	5.7	9.4	8.0	13.1	10.3	16.8	12.1	19.7
392	4.0	6.6	5.4	8.8	7.5	12.3	8.7	15.8	10.8	17.5
520	3.8	6.2	5.1	8.3	7.1	11.6	9.2	14.9	9.7	15.8
776	3.5	5.6	4.6	7.5	6.0	9.8	7.8	12.7	8.8	14.3
1160	3.0	4.9	4.0	6.4	5.2	8.4	6.7	11.0	7.5	12.3
1544	2.8	4.6	3.7	6.1	4.9	7.9	6.4	10.3	6.7	11.0
2056	2.5	4.0	3.3	5.3	4.2	6.9	5.6	9.0	5.9	9.6
2312	2.3	3.8	3.1	5.0	4.0	6.6	5.3	8.6	5.6	9.1
2696	2.3	3.7	3.0	5.0	4.0	6.4	5.2	8.4	5.5	8.9
3080	2.2	3.6	3.0	4.8	3.9	6.3	5.0	8.2	5.4	8.7
3464	2.1	3.4	2.7	4.5	3.6	5.8	4.7	7.6	4.9	8.8
3848	1.9	3.1	2.5	4.1	3.3	5.3	4.3	7.0	4.5	7.4
4232	1.7	2.8	2.3	3.7	2.9	4.8	3.9	6.3	4.1	6.6
4616	1.5	2.5	2.0	3.3	2.6	4.2	3.4	5.5	3.6	5.9

ORDERING INFORMATION

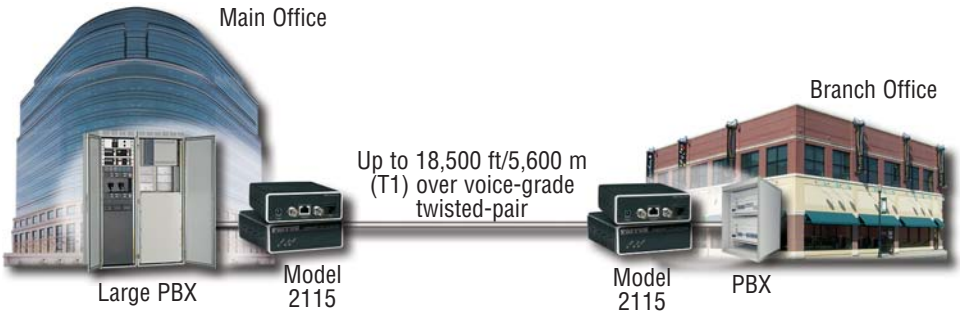
Call for details.

CopperLink™-T T1/E1 Ethernet Extenders

Distance at 24 AWG	Signaling Standard	Model
2.8 miles (4.6 km)	T1	CopperLink™-T 2115
2.5 miles (4.0 km)	E1	CopperLink™-T 2113

CopperLink™-T T1 Extender
Model 2115

The CopperLink™-T 2115 is a transparent, plug-and-play T1 Extender that solves the distance and wire limitations of TDM technology by tripling the reach to over 3 miles over a single pair of wires.

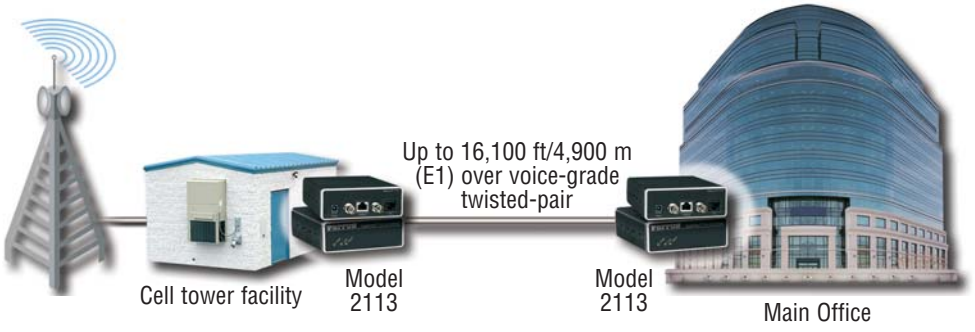


FEATURES & BENEFITS

- ✓ **Voice and Data Extension**—The T1/E1 Extenders operate in clear channel mode allowing the transparent passing of both voice and data.
- ✓ **Plug and Play**—Plug them in and the link comes up in seconds. The line interface is even polarity insensitive, making it easier to get running.
- ✓ **Line Tests**—V.52 511/511E Pattern Generator with Remote Digital Loopback (RDL); Local Analog Loopback (LAL).

CopperLink™-T E1 Extender
Model 2113

The CopperLink™-T 2113 is a transparent, plug-and-play E1 Extender that solves the distance and wire limitations of TDM technology by tripling the reach to almost 5 km over one pair of wires. Units operate in clear channel mode to easily transport voice and data (F-bit included).



FEATURES & BENEFITS

- ✓ **Plug and Play**—Units automatically link up when placed on opposite sides of a dry copper wire pair. The line interface is polarity insensitive, making it easier to get running.
- ✓ **Line Tests**—V.52 511/511E Pattern Generator with Remote Digital Loopback (RDL); Local Analog Loopback (LAL).

ORDERING INFORMATION

Model 2113 E1 Extender
2113/EUI-2PK: CopperLink-T, E1 Extender, 2 pack; 100–240 VAC
2113/L/EUI: CopperLink-T, E1 Extender, Local Unit; 100–240 VAC
2113/R/EUI: CopperLink-T, E1 Extender, Remote Unit; 100–240 VAC

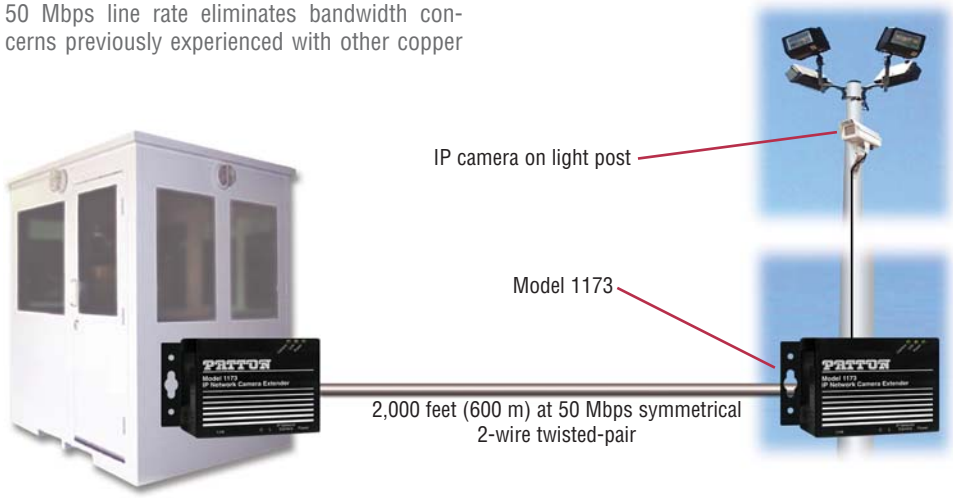
Model 2115 T1 Extender
2115/EUI-2PK: CopperLink-T, T1 Extender, 2 pack; 100–240 VAC
2115/L/EUI: CopperLink-T, T1 Extender, Local Unit; 100–240 VAC
2115/R/EUI: CopperLink-T, T1 Extender, Remote Unit; 100–240 VAC

IP Network Camera Extender

Model 1173

Patton's plug-and-play IP Network Camera Extender enables users to place IP cameras almost 20 times farther away than the standard distance of 328 ft (100 meters) over standard phone-grade twisted-pair.

The Model 1173 IP Network Camera Extender's are ideal for delivering IP Video links to remote camera installations that are beyond the 328-foot (100-meter) distance limit of Ethernet. The 50 Mbps line rate eliminates bandwidth concerns previously experienced with other copper wired transmission technologies. By using existing voice grade copper pairs, alarm circuits, etc. the expense and hassle of installing new cabling is eliminated.



FEATURES & BENEFITS

- ✓ Extend high resolution IP video up to 6,000 feet (1,829 meters) over telephone-grade twisted-pair cabling
- ✓ Fully compatible with any IP camera and its managing software
- ✓ Fully transparent to compression schemes such as WMV, MPEG-4 and MJPEG
- ✓ Fully transparent to your camera's application software
- ✓ Wall or DIN mountable
- ✓ Plug and Play
- ✓ Operating temperature of -10 to 70°C

Line Rates (AWG 24/0.5 mm)	
Mbps	Distance in feet (meters)
4	6,000 (1,830)
16	4,000 (1,200)
50	2,000 (610)

ORDERING INFORMATION

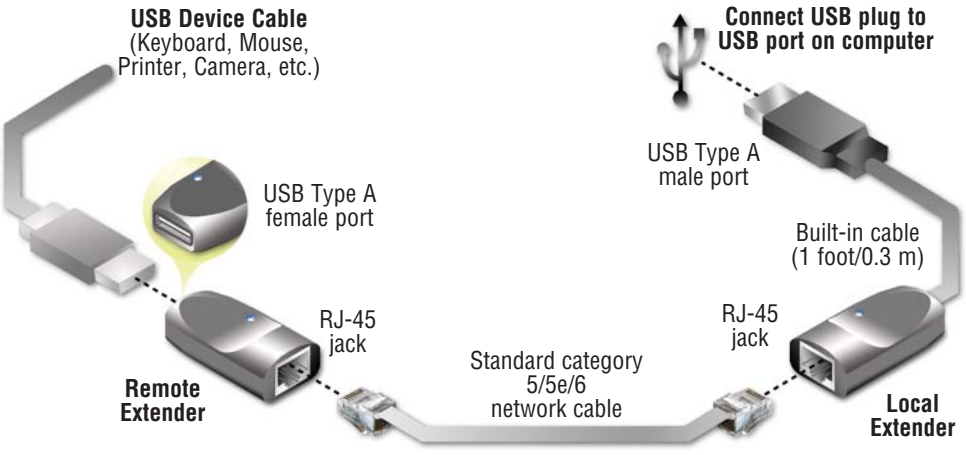
Model 1173R/EUI-2PK: IP Network Camera Extender Kit -10 to 70°C; 100–240 VAC

Model 1173R/CC/EUI: IP Network Camera Extender; -40 to 85°C; Conformal Coated (humidity 85% condensing from -10 to +35°C); 100–240 VAC

USB 1.1 Extender Kit

Model 110

Do not let the USB distance limitations of 16 feet (5 meters) limit the placement or usefulness of your USB devices. With Patton's Model 110-KIT, you can place your USB devices up to 200 feet (60 meters) away from your PC!



FEATURES & BENEFITS

- ✓ Fully compliant with USB 1.1 specifications
- ✓ Provides support for any full speed (12 Mbps) or low speed (1.5 Mbps) USB devices
- ✓ No software required
- ✓ USB LED indicator for quick glance status checks

SYSTEM REQUIREMENTS

Windows 98SE/ME/2000/XP
Mac OS 10.X/9.X
One available USB port

ORDERING INFORMATION

110-KIT: USB Extender Kit

08055DUI-110K-EU: 220 VAC to 5 VDC USB Power Supply

08055DUI-110K-US: 120 VAC to 5 VDC USB Power Supply

Compact Ethernet-over-E1 WAN Bridge (Converter)

NetLink 2701/I EtherRocket & 2701RC Rack Card

These devices, available in low-cost standalone or rack-mountable versions, terminate G.703/G.704 NTU with on-board transparent Ethernet Bridge extend branch-office LAN segments over E1/FE1 simply and affordably.

Patton Electronics introduces a new way of interconnecting remote branches to a Main Office LAN using the Model 2701/I Ethernet-over-E1 Bridge. Called "Remote Router Porting" (RRP), it offers network managers and integrators a simple and economical way for LAN-to-LAN deployments.

At the branch office, RRP replaces the traditional router and CSU/DSU solution with Patton's Ethernet-over-E1 Bridge, which includes integrated E1 and 10Base-T transparent bridging. This unit allows for high-speed PPP data connections across the Wide Area Network at scalable data rates of nx56/nx64kbps up to 2.048 Mbps, and also connects directly to the 10Base-T branch office LAN at 10Mbps. The 2701/I transparently forwards Ethernet packets to a headquarters LAN based on their destination MAC address.

At headquarters, RRP builds on the bridging capabilities of a router to extend their serial or WAN ports across town or across the country. In order for the central routed network to connect to a remote branch Ethernet network, the serial or WAN interface of the router needs to be configured as a PPP IP half-bridge. In this configuration, the Ethernet-over-E1 Bridge sends bridge packets (BPDUs) to the router's WAN interface. The router will then look at the layer-3 address information and will forward these packets based on its IP address. The router's port, connected through the E1 network and Ethernet-over-E1 Bridge, appears as a virtual interface at the branch office network.

The Model 2701/I Ethernet-over-E1 Bridge supports G.704 framing, and AMI and HDB3 line coding. Data rates, framing, and coding options are programmed by DIP switches or from a VT-100 terminal with menu-driven software. A full range of system and diagnostic features make setup simple and quick.

FEATURES & BENEFITS

- ✓ Terminates E1/Fractional E1 service
- ✓ 10Base-T Ethernet-over-E1 Bridge
- ✓ Available in low-cost standalone or rack-mountable (2701RC) versions
- ✓ PPP (Point-to-Point Protocol, RFC 1661) with BCP (Bridge Control Protocol, RFC 1638)
- ✓ 2 Mbps E1 Line Rate with n x 64 kbps timeslot selection
- ✓ Switch-selectable AMI or HDB3 line encoding options
- ✓ 75-ohm dual coax and 120-ohm twisted-pair G.703 connections
- ✓ Local and remote loopback diagnostics
- ✓ Internal and G.703 network timing
- ✓ Conforms to ONP requirements CTR 12 and CTR 13 for connection to international Telecom networks
- ✓ Rack cards fit into Model 1001 access rack system

ORDERING INFORMATION

2701/I/UI: G.703/G.704 NTU, Ethernet interface; 100–240 VAC

2701/I/48: G.703/G.704 NTU, Ethernet interface; 48 VDC power supply

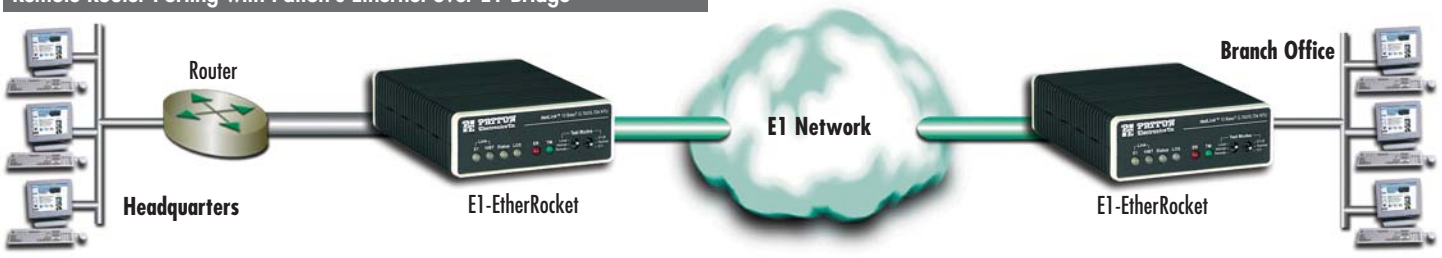
2701RC/A/I: G.703/G.704 NTU Card, V.35 interface

2701RC/C/IA: G.703/G.704 NTU, Ethernet/RJ-45 interface

2701RC/D/D: G.703/G.704 NTU Card, X.21 interface

2701RC/D/V: G.703/G.704 NTU Card, X.21 interface

Remote Router Porting with Patton's Ethernet-over-E1 Bridge



SPECIFICATIONS

2701/I
Line Rate: 2 Mbps with nx64 kbps timeslot selection
Network Connector: RJ-48C and Dual Coaxial
DTE Interface: 10Base-T Ethernet
Line Coding: AMI or HDB3
Line Framing: G.703 (unframed) or G.704/G.732 (framed)
Clocking: Internal or Receive Recover
DTE Rates: 10 Mbps (10Base-T)
Indicators: E1 Link Status, TD, RD, Loss of Sync, Error, Test Mode, Ethernet Status
Diagnostics: Local/Remote Loop, 511 pattern
Line Isolation: 1500VRMS
Compliance: CE Mark, G.703, G.704, G.723, G.832, CTR-12 and CTR-13
Environment:
Temp.: 32–122°F (0–50°C)
Humidity: 5–90% non-condensing
Dimensions: 5.84L x 4.16W x 1.51H in. (14.84L x 10.6W x 3.84H cm)
Weight: 2.225 lbs (1.02 Kg)

2701RC
Data Rate: Smooth Clock 2.048 Mbps
Network Connector: RJ-48C (all versions); Dual Coaxial (X.21 & Ethernet)
DTE Interface: EIA-530, X.21/V.11, V.35, or 10Base-T Ethernet
Line Coding: AMI or HDB3
Line Framing: G.703 (unframed) or G.704/G.732 (framed)
Clocking: Internal, External or Receive Recover
DTE Rates: nx64kbps (EIA-530, X.21/V.11, V.35); 10Mbps (10Base-T)
Indicators: E1 Link Status, TD, RD, Loss of Sync, Error, Test Mode, Ethernet Status (on 10Base-T Version)
Diagnostics: Local/Remote Loop, 511
Line Isolation: 1500VRMS
Compliance: CE Mark, G.703, G.704, G.723, G.832, CTR-12 and CTR-13
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5 to 90% non-condensing
Dimensions: 5.84L x 4.16W x 1.51H in (14.84L x 10.6W x 3.84H cm)
Weight: 2.225 lbs (1.02 Kg)

Ethernet MicroBridges (X.21, RS-232, RS-530, & V.35)

Models 2121, 2124, 2130, 2135, & 2135C

Patton's MicroBridge products are the cost-effective solution for expanding your LAN—without using a router!

The Patton Ethernet MicroBridge provides a cost-effective solution for connecting multiple local or remote network segments. The Patton MicroBridges feature a wide variety of serial interfaces to make your WAN connections easy. All models are equipped with an 802.3 10Base-T Ethernet RJ-45 jack, which allows a direct connection to your network equipment.

The Ethernet MicroBridge works on the MAC-layer addresses and operates independent of higher layer protocols. This functionality enables Patton Ethernet MicroBridges to pass higher-layer broadcast, multicast, unicast, and data frames over the WAN with minimal to no configuration by the end-user. The MicroBridges are PPP ready supporting standards based layer-2 protocol interfacing. The MicroBridges are fully compatible with each other as well as Patton's full line of bridging products. Using PPP, the MicroBridges have the flexibility to be used in conjunction with all other third-party PPP compliant equipment.

Whether you are looking to add additional LANs, increase the efficiency of your WAN connection, or extending your router's interface, Patton's Ethernet MicroBridge is the most simple and cost-effective solution around!

Remote Router Porting

Patton's Ethernet MicroBridge Series are compliant with the RFC 1661 standard for PPP half-bridging, so you can connect our bridge to a router (instead of another bridge) *which saves you money!*

SPECIFICATIONS

DTE Interface: X.21, V.35, RS-232, or RS-530

Network Interface: IEEE 802.3 10Base-T (RJ-45)

Transmission: Synchronous up to 10 Mbps

Protocol: PPP (RFC 1661) with Bridging Control Protocol (RFC 1638)

Memory: 1MB RAM, 128KB FLASH memory

MAC Address Table Size: 4096 entries

MAC Address Aging: MAC addresses deleted after eight minutes inactivity

LEDs LAN Side: (1) yellow, general status; (1) green, link integrity

LEDs DTE Side: TXD, RXD and Power, (green); DTR, DCD, CTS and CLK, (yellow)

Power Supply Input: 100–240 VAC, 50–60 Hz, 0.4A; or optional -48 VDC

Power: 500mA at 5 VDC

Temperature: 32–122°F (0–50°C)

Altitude: 0–15,000 ft (0–4,572 m)

Humidity: Up to 90% R.H., non-condensing

Dimensions: 3.5 L X 2.1 W X 0.78 H inch (9.0 L X 5.3 W X 2.0 H cm)

Weight: 0.72 lbs (0.32 kg)

Compliance: FCC Part 15A; CE Mark per EEC Directive: 89/336/EEC; Low Voltage Directive: 73/23/EEC

FEATURES & BENEFITS

- ✓ PPP Bridging Control Protocol (RFC 1638) with auto detection for compatibility with existing Patton Bridge Products and standard third-party equipment
- ✓ Transparent LAN bridging enables the MicroBridge to pass higher layer protocols and VLAN tagged frames.
- ✓ Industry standard, shielded RJ-45 Ethernet connection
- ✓ 802.3 Ethernet supported by transparent LAN bridging
- ✓ 1 Mbyte RAM; 128 kbyte FLASH
- ✓ Automatic learning and aging with support for up to 4,096 MAC addresses
- ✓ Nine LEDs monitor power, LAN link, and DTE interface signals
- ✓ Variety of WAN interfaces available (X.21, RS-232, RS-530, and V.35)
- ✓ Transparent to VLAN.Q tagged packets

ORDERING INFORMATION

2121/DM-X/UI: Ethernet MicroBridge, X.21 DTE with DB-15 Male, Serial Cable, 100–240 VAC

2121/DM-X/48: Ethernet MicroBridge, X.21 DTE with DB-15 Male, Serial Cable, -48 VDC

2124/AM-X/UI: Ethernet MicroBridge, V.24 DTE with DB-25 Male, Serial Cable, 100–240 VAC

2124/AM-X/48: Ethernet MicroBridge, V.24 DTE with DB-25 Male, Serial Cable, -48 VDC

2130/BM-X/UI: Ethernet MicroBridge, EIA-530 DTE with DB-25 Male, Serial Cable, 100–240 VAC

2130/BM-X/48: Ethernet MicroBridge, EIA-530 DTE with DB-25 Male, Serial Cable, -48 VDC

2135C/CM-X/UI: Ethernet MicroBridge, V.35 DTE with M/34 Male, Serial Cable, 100–40 VAC

2135C/CM-X/48: Ethernet MicroBridge, V.35 DTE with M/34 Male, Serial Cable, -48 VDC

2135/CM/UI: Ethernet MicroBridge, V.35 DTE with M/34 Male (No Serial Cable), 100–240 VAC

2135/CM/48: Ethernet MicroBridge, V.35 DTE with M/34 Male (No Serial Cable), -48 VDC

Note: *X* = "L" 6-foot (182.88cm) Serial Cable or "S" 6-inch (15.24cm) Serial Cable. **Example:** 2121/DM-S/UI Ethernet MicroBridge, X.21 DTE w/DB-15 Male, 6" (15.24cm) Serial Cable, UI

Channelized Gigabit Router

IPLink™ 2884

The Model 2884 multimedia routers concentrate up to 124 WAN connections or bond up to 4 T1/E1s for an 8 Mbps link to serve high density and bandwidth hungry applications.

The Model 2884 Series T1/E1 Channelized Gigabit Routers are a family of multi-media routers that terminate up to 124 PPP channels as well as perform Layer 2 bonding of T1/E1 WAN ports with multi-link PPP. Dual Gigabit Ethernet ports ensure connection to any LAN infrastructure.

The IPLink Channelized Gigabit Routers offer pre-set priorities for voice and video traffic on a per port basis up to a user configurable bandwidth. QoS configurations ease the bandwidth management of ports and applications through the creation of QoS classes and profiles. Traffic can be shaped and policed to provide full QoS control over both the egress and ingress directions. ToS/DiffServ bits can be re-striped to ensure network-wide QoS enforcement. VLAN priority bits can be used for QoS enforcement.

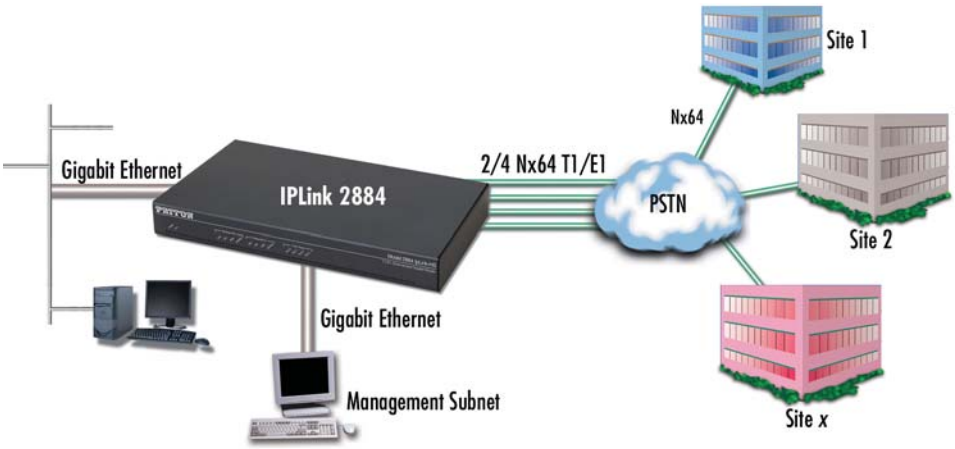
Stateful Firewall inspection of traffic is accomplished through the creation of Access Control Lists (ACLs) that enable the filtering of traffic based on numerous criteria including source and destination IP address, port and protocol.

Logical and physical ports are selectable for bridging or routing. Advanced IP features such NAT/NAPT and VLANs are likewise configurable on a per port basis. By supporting the latest version of PPP/BCP, the IPLink transparently negotiates the passing of VLAN traffic over PPP based WAN links. Bridged traffic can be tagged and prioritized according to user defined parameters.

The 2884 Model Series boasts easy installation, offering CLI configuration via Console/VT-100 or Telnet/SSH, and HTTP web based management, and SNMP. Patton's series of high-speed access routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

Application diagram

Available in two and four-port T1/E1 versions, the IPLink Channelized Gigabit Ethernet Router comes standard with Dual Gigabit Ethernet ports and maximizes the use of the up-link networks, minimizing the cost of deploying service by implementing per TDM channel bridging or routing as well as supporting Layer 2 bonding of WAN interfaces into high bandwidth logical ports. For bandwidth hungry applications, traffic from both T1/E1 ports can be bonded together using multi-link PPP. For networks with many remote locations up to 124 remote sites can be supported with PPP.



FEATURES & BENEFITS

- ✓ 2/4 port Channelized T1/E1—Support up to 124 PPP sessions with up to 4 channelized T1/E1 ports.
- ✓ ML-PPP Expands Bandwidth—Bind any number of channels or T1/E1 ports to create up to an 8Mbps WAN link.
- ✓ Two port Gigabit Ethernet—With Dual 10/100/1000, auto-MDI ports easily connect to any LAN infrastructure.
- ✓ Per Flow QoS—Traffic rates are set through ACLs that shape and police VLAN and IP traffic.
- ✓ Stateful Firewall Inspection—Stateful firewall inspection is accomplished through ACLs that filter by source and destination IP address, IP port and protocol. Connection tracking is included.
- ✓ VLAN Tagging—VLAN tagging and processing is configurable on any T1/E1 channel or Ethernet port.
- ✓ Easy Management—Easily manage the 2884 router via an HTTP/web interface, a CLI accessible via the VT100 console or through Telnet/SSH, or via SNMP.

SPECIFICATIONS

WAN ports: Two or Four software configurable channelized ports. E1—G.703/G.704 with HDB3 and AMI encoding support. T1—ANSI T1.403 & AT&T TR54016 with AMI coding/D4 framing or B8ZS coding/ESF framing.

Ethernet Ports: Two port 10/100/1000BaseT (RJ-45 connector); auto-negotiating; half or full duplex operation with built-in MDI-X

Management: HTTP/SNMP, Telne/SSHt Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via TFTP

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826). IP Router with RIP (RFC 1058) and RIPv2 (RFC 2453), integrated DHCP Server (RFC 2131) with selectable IP leases and MAC/IP pairings; IGMP v1 and v2, Ethernet Bridging. NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping; PPP/BCP, PP/IPCP; IEEE 802.1p/Q VLAN Tagging and Priority

Security: Logging of session, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN. ACL rule and profile creation; SSH for secure remote access.

Power Supplies: Internal universal 100–240 VAC input (50/60 Hz). Less 15W power consumption.

Compliance: EMC Compliance (EB55022 and EN55024) • Safety Compliance: EN 60950, FCC Part 15A, CE Mark, FCC part 68, CS-03

Environment: Operating temperature: 32–122°F (0–50°C) • Humidity: up to 90% non-condensing

Dimensions: 11 x 1.5 x 7 in. (280 x 39 x 180 mm)

ORDERING INFORMATION

2884/2/UI: Dual-Port, Dual Gigabit-Ethernet Router, internal 100–240 VAC power supply

2884/4/UI: Quad-Port, Dual Gigabit-Ethernet Router, internal 100–240 VAC power supply

Low Cost, High Speed T1/E1 WAN Access Router

IPLink™ 2603

This WAN Gateway Router is a complete all-in-one network access device which easily connects your IP/LAN to any T1/E1 network interface with routed or bridged connections

The Models 2603 Gateway Router is the ideal solution for connecting any small to medium-sized enterprise or remote office to an IP/Internet network using standard telco and WAN interfaces.

Combining ease-of-use with a full suite of LAN/WAN routing features, the IPLink routers provide selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, Firewall, and DHCP. A complete set of configurable FR/PPP/IP WAN protocols allow a wide range of choices when connecting branches via common WAN services. The IPLink Routers boast easy installation offering Console/VT-100, Telnet, and HTTP/SNMP management options.

The IPLink 2603 come with an auto-sensing full-duplex 10/100Base-T Ethernet port, cross-over switch, and internal power supply. The Model 2603 is equipped with an integrated T1/E1 CSU/DSU for connection to full and fractional T1/E1 services.

Patton's new series of high-speed routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

Why use our IPLink Router?

Patton's IPLink 2603 Gateway router delivers all the advanced features for secure, reliable, and high speed Internet data connections. It combines ease-of-use with powerful data routing to make shared Internet connectivity simple and easy.

With NAT support, the IPLink router offers convenient and economical operation by using a single IP address while the integrated DHCP server automates IP address assignment for connected LAN computers. Security is standard with built-in firewall and violation alerting features that protect the network from would-be intruders.

Patton stands behind our products-we are the only company in the industry offering free configuration support, free technical services, and a minimum one-year warranty on all our products.

FEATURES & BENEFITS

- ✓ T1/E1 WAN interface in industry-standard connectors
- ✓ PPP and Frame Relay —Versatile WAN options enable deployment into any network. Use routed IP or bridged Ethernet for transparent networking. Bridge passes VLAN tagged frames (no VLAN tagging within the 2603)
- ✓ NAT/NAPT, Firewall, DHCP —Powerful routing features make shared Internet connectivity simple and secure.
- ✓ 10/100 Ethernet with MDI-X—Easily connect to any computer or LAN—the built-in communication crossover switch eliminates messy configuration cables.
- ✓ WWW/SNMP Manageable—Built-in VT-100 console port makes setup a *snap*, and you can use the embedded HTTP/SNMP agent to manage an IPLink router from anywhere in the world.

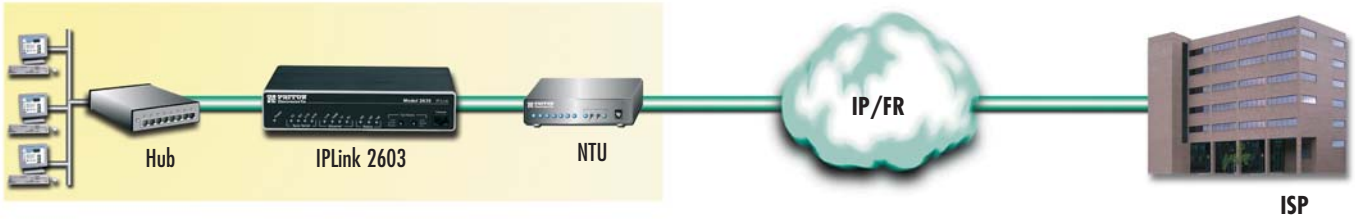
SPECIFICATIONS

WAN Interface: T1/E1 (RJ-48C)
Ethernet Connection: Single-port 10/100Base-T switch, auto-sensing, full/half-duplex operation, built-in MDI-X
Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP, Logging events: POST, POST errors, line/DSL, PPP/DHCP.
Protocol: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826), BCP (RFC 1638) • IP Router with RIP (RFC 1058), RIPv2 (RFC 2453), Integrated DHCP Server (RFC 2131 • Selectable IP leases and MAC/IP pairings • DHCP relay agent (RFC 2132/RFC 1542) with 8 address pools. DNS Relay. IGMP v1 and v2 • Ethernet Bridging • NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping
Security: DoS Detection/protection. Intrusion detection, Logging of session, blocking and intrusion events and Real-Time alerts, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN • Support for 255 rules in 32 filter sets • 16 individual connection profiles • Access list determining up to 5 hosts/networks which are allowed to access management system SNMP/HTTP/TELNET
Indicators: 12 LEDs: Power, Link, Loss, Loop, Back-Up WAN signals; Link, TX, RX LAN signals
Power Supply: Internal universal 90-260 VAC input or 48 VDC input.
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC, EN60950, EN55022 (CISPR 22) • FCC part 68.
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5-90%, non-condensing
Dimensions: 7.3 x 6.6 x 1.62 inch (185 x 168 x 41 mm)

ORDERING INFORMATION

2603/K/EUI: E1 (RJ-45/BNC) Router with external UI power supply
2603/K/48: T1/E1 (RJ-45/BNC) Router with 48-VDC power supply
2603/T/EUI: T1 (RJ-45) Router with external UI power supply
2603/T/48: T1/E1 (RJ-45) Router with 48-VDC power supply

Application diagram



Low Cost, High Speed Sync. Serial WAN Routers

IPLink™ 2621 & 2635

These WAN Gateway Routers are complete all-in-one network access devices that easily connect your IP/LAN to any X.21 or V.35 network interface with routed or bridged connections

The Models 2621 and 2635 Gateway Routers are the ideal solution for connecting any small to medium-sized enterprise or remote office to an IP/Internet network using standard telco and WAN interfaces.

Combining ease-of-use with a full suite of LAN/WAN routing features, the IPLink routers provide selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, Firewall, and DHCP. A complete set of configurable FR/PPP/IP WAN protocols allow a wide range of choices when connecting branches via common WAN services. The IPLink Routers boast easy installation offering Console/VT-100, Telnet, and HTTP/SNMP management options.

All IPLink routers come with an auto-sensing full-duplex 10/100Base-T Ethernet port, cross-over switch, and internal power supply. The Model 2621 has an X.21 interface, and the Model 2635 comes with a V.35 interface.

Patton's new series of high-speed routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

Why use our IPLink Routers?

IPLink Gateway routers deliver all the advanced features for secure, reliable, and high speed Internet data connections. They combine ease-of-use with powerful data routing to make shared Internet connectivity simple and easy.

With NAT support, the IPLink routers offer convenient and economical operation by using a single IP address while the integrated DHCP server automates IP address assignment for connected LAN computers. Security is standard with built-in firewall and violation alerting features that protect the network from would-be intruders.

Available with such standard WAN sync-serial interfaces as V.35 and X.21, the IPLink series gives you the right interface needed for your WAN service.

Patton stands behind our products-we are the only company in the industry offering free configuration support, free technical services, and a minimum one-year warranty on all our products.

FEATURES & BENEFITS

- ✓ V.35 or X.21 WAN interfaces—Get the WAN interface you need in industry-standard connectors
- ✓ PPP and Frame Relay—Versatile WAN options enable deployment into any network. Use routed IP or Bridged Ethernet for transparent networking. Bridge passes VLAN tagged frames (no VLAN tagging within the 2635/2621)
- ✓ NAT/NAPT, Firewall, DHCP—Powerful routing features make shared Internet connectivity simple and secure.
- ✓ 10/100 Ethernet with MDI-X—Easily connect to any computer or LAN—the built-in communication crossover switch eliminates messy configuration cables.
- ✓ WWW/SNMP Manageable—Built-in VT-100 console port makes setup a *snap*, and you can use the embedded HTTP/SNMP agent to manage the IPLink routers from anywhere in the world.

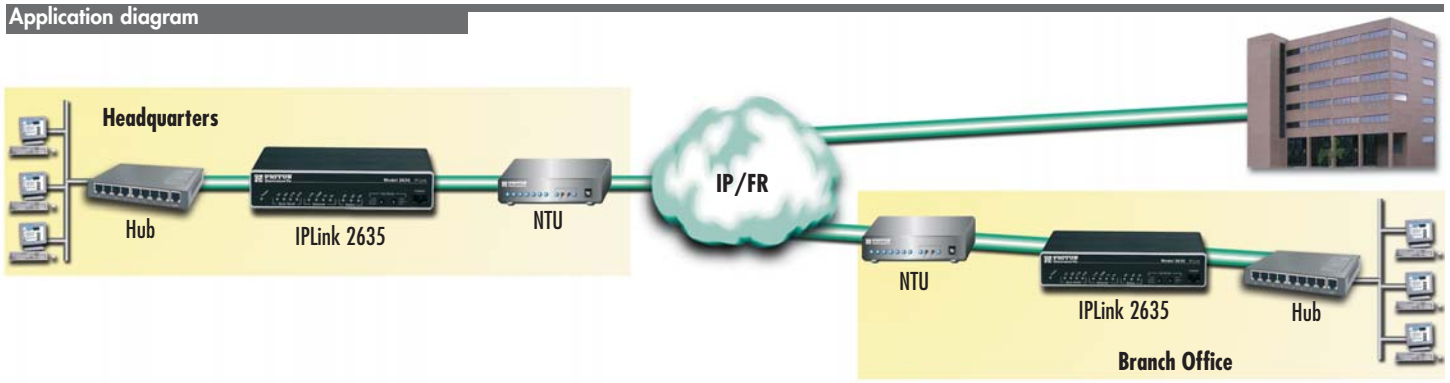
SPECIFICATIONS

WAN Interface: 2635: V.35 (M/34F) • 2621: X.21 (DB-15F)
Ethernet Connection: Single-port 10/100Base-T switch • auto-sensing • full/half-duplex operation • built-in MDI-X
Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP, Logging events: POST, POST errors, line/DSL, PPP/DHCP.
Protocol: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826), BCP (RFC 1638) • IP Router with RIP (RFC 1058), RIPv2 (RFC 2453), Integrated DHCP Server (RFC 2131) • Selectable IP leases and MAC/IP pairings • DHCP relay agent (RFC 2132/RFC 1542) with 8 address pools • DNS Relay • IGMP v1 and v2 • Ethernet Bridging • NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping
Security: DoS Detection/protection • Intrusion detection, Logging of session, blocking and intrusion events and Real-Time alerts, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN • Support for 255 rules in 32 filter sets • 16 individual connection profiles • Access list determining up to 5 hosts/networks which are allowed to access management system SNMP/HTTP/TELNET
Indicators: 12 LEDs: Power, Link, Loss, Loop, Back-Up WAN signals; Link, TX, RX LAN signals
Power: Internal universal 90–260 VAC input or 48 VDC input.
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC, EN60950, EN55022 (CISPR 22) • FCC part 68.
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5–90%, non-condensing
Dimensions: 7.3 x 6.6 x 1.62 inch (185 x 168 x 41 mm)

ORDERING INFORMATION

2621/EUI: X.21 Router; external UI power supply
2621/48: X.21 Router; external 48-VDC power supply
2635/EUI: V.35 Router; external UI power supply
2635/48: V.35 Router, 48-VDC power supply

Application diagram



Ethernet Managed VPN WAN Router

IPLink™ 2802 & 2805

IPLink Managed VPN Routers promote business/dual use of broadband access networks by applying VPN encryption AND QoS/CoS traffic management to traffic flows.

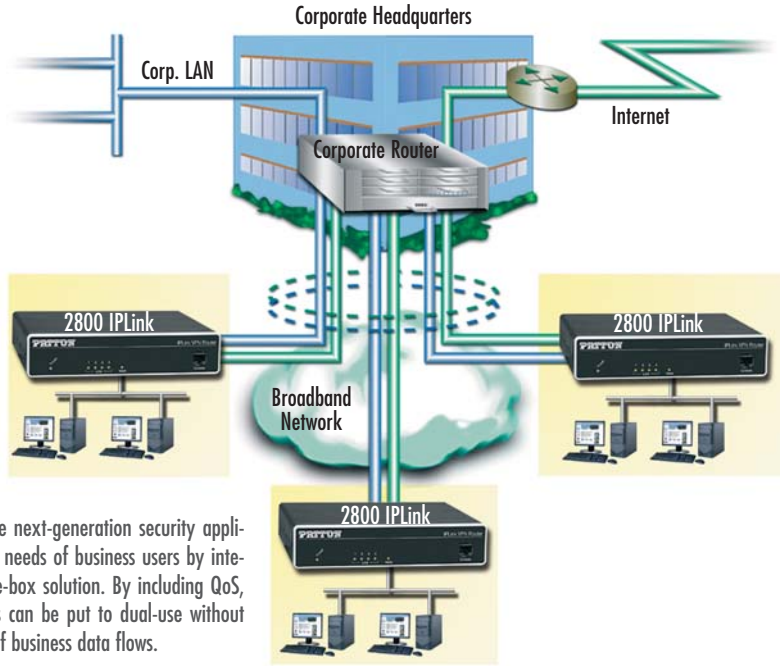
The IPLink Managed VPN Routers are a family of next generation appliances that address both the security and the traffic prioritization needs of enterprises. VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows, allowing dual use (business and leisure) of broadband connections without impacting the quality of business communications.

IPLink VPN Routers implement a comprehensive security environment. It all starts with IPSec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet), or an SNMP management platform.

Typical application



IPLink VPN Routers are next-generation security appliances that address the needs of business users by integrating QoS into a one-box solution. By including QoS, broadband connections can be put to dual-use without impacting the quality of business data flows.

FEATURES & BENEFITS

- ✓ VPN Tunnels—Standard IPSec with AH and ESP ensures maximum protection when traversing unsecured networks.
- ✓ Strong Encryption—DES, 3DES, and AES offer standards based encryption algorithms from 56 to 256 bits.
- ✓ QoS/CoS Profiles—Configurable burst tolerance, bandwidth guarantees plus reduce per flow traffic jitter as required by the application.
- ✓ Configurable Security Profiles—Built-in IP address and IP port filtering, ACLs and DoS attack detection creates a comprehensive security environment.
- ✓ Enhanced IP Services—DNS resolver and relay, NAT/NAPT, dynamic DNS, and DHCP server, eases integration.
- ✓ 10/100 Ethernet—Dual 10/100 Ethernet and 5 port Ethernet switch.
- ✓ SNMP/HTTP Management—Easily manage the IPLink VPN Routers via a simple web browser interface.

ORDERING INFORMATION

2802/EUI: VPN Router; 2 Ethernet ports; external UI power supply

2805/EUI: VPN Router; 5 Ethernet ports; external UI power supply

SPECIFICATIONS

WAN Ethernet port:
2802 & 2805—10/100Base-T (RJ-45 connector); auto-negotiating; half/full duplex operation with automatic MDI/MDI-X

LAN Ethernet Ports:
2802—10/100Base-T (RJ-45 connector); auto-negotiating; half or full duplex operation with automatic MDI/MDI-X
2805—4 port 10/100Base-T switch (RJ-45 connector); auto-negotiating; half/full duplex operation with automatic MDI/MDI-X

Management: CLI via Telnet; TFTP for software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391), IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal, IKE

Power Supplies: External universal 90–260 VAC input or 48 VDC input. (Optional internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

Environment: Temp.: 0–40°C (32–104°F); Humidity: 5–80% non-condensing

Dimensions:
7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

T1/E1 Managed VPN WAN Router

IPLink™ 2803

Multimedia-enable any Access TDM network.

The IPLink Managed T1/E1 VPN Router with integrated WAN port is a multimedia router with built-in NTU that manages, monitors and manipulates IP traffic flows to create a service quality control point for IP traffic going over TDM networks. The Model 2803 addresses both the security and the traffic prioritization needs of enterprises and service providers alike through its support for strong encryption of all traffic flows as well as key multimedia features such as prioritization of voice, video and data traffic, IP multicast and IGMP, and embedded VoIP gateway.

VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows plus include an NTU to eliminate the need for external converters. IPLink VPN Routers implement a comprehensive security environment and encrypt all flows including VoIP and video flows.

It all starts with IPsec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPP/PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP, PPP, and Frame Relay fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include IGMP and IP multicast support as well as RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. Frame Relay support is included standard. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet or Console), or an SNMP management platform. IKE is included for ease of key management.

FEATURES & BENEFITS

- ✓ Strong encryption of traffic including VoIP & video flows
- ✓ IP multicast and IGMP support
- ✓ True multimedia QoS with traffic class prioritization
- ✓ VoIP SIP proxy with built-in NAT, DHCP relay and DynDNS
- ✓ Embedded T1/E1 NTU with loopback and alarms
- ✓ VLAN per IEEE 802.1Q including priority queuing

ORDERING INFORMATION

2803/K/EUI: VPN Router, 2 Ethernet ports, 1 T1/E1 port with RJ & BNC, external UI power supply

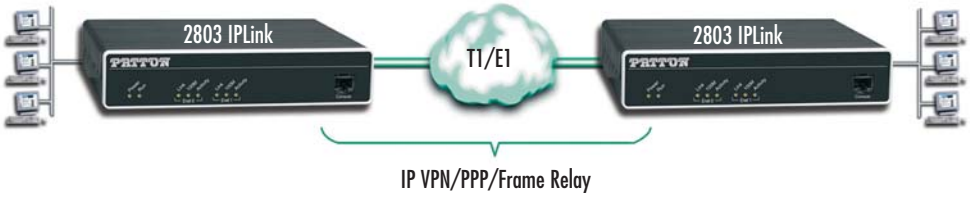
2803/K/48: VPN Router, 2 Ethernet ports, 1 T1/E1 port with RJ & BNC, 48-VDC power supply

2803/T/EUI: VPN Router, 2 Ethernet ports, 1 T1/E1 port RJ only, external UI power supply

2803/T/48: VPN Router, 2 Ethernet ports, 1 T1/E1 port RJ only, 48-VDC power supply

Application diagram

IPLink VPN Routers are next generation security appliances that address the needs of business users by integrating QoS and WAN interfaces into a one-box solution. Service Providers can take advantage of the built-in QoS to provide both VPN services as well as managed bandwidth services using IPLink VPN Routers.



SPECIFICATIONS

WAN ports: 2803: One T1/E1. (E1—G.703/G.704 with HDB3 and AMI encoding. T1—ANSI T1.403 & AT&T TR54016 with AMI coding/D4 framing or B8ZS coding/ESF framing. RJ-48C connector and/or dual BNC available. 2835: V.35 DTE on DB-25F Connector 2821: X.21 DTE or DCE on DB-15F Connector

Ethernet ports: Two 10/100Base-T ports (RJ-45 connector); auto-negotiating; half or full duplex operation with built-in MDI-X

Management: CLI via Telnet Ethernet or RS-232 Console Port (EIA-564); TFTP for Software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391); IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal; IKE

Power: External universal 90–260 VAC input or 48 VDC input. (Optional Internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

Environment: Temp.: 0–40°C (32–104°F) • Humidity: 5-80% non-condensing

Dimensions: 7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

Sync. Serial Managed VPN WAN Router

IPLink™ 2821 & 2835

IPLink Managed VPN Routers with integrated WAN ports optimize and secure information flows applying VPN encryption and QoS/CoS traffic management.

The IPLink Managed VPN Routers with integrated serial ports are a family of next generation appliances that address both the security and the traffic prioritization needs of enterprises. VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows plus include a serial port to eliminate the need for external converters.

IPLink™ VPN Routers implement a comprehensive security environment. It all starts with IPSec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPP/PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP, PPP, and Frame Relay fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. Frame Relay support is included standard. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet or Console), or an SNMP management platform.

FEATURES & BENEFITS

- ✓ V.35 and X.21 — Get the integrated serial port you need.
- ✓ VPN Tunnels — Standard IPSec with AH and ESP ensures maximum protection when traversing unsecured networks.
- ✓ Strong Encryption — DES, 3DES, and AES offer standards based encryption algorithms from 56 to 256 bits.
- ✓ QoS/CoS Profiles — Configurable burst tolerance, bandwidth guarantees plus reduce per flow traffic jitter as required by the application.
- ✓ Configurable Security Profiles — Built-in IP address and IP port filtering, ACLs and DoS attack detection creates a comprehensive security environment.
- ✓ Enhanced IP Services — DNS resolver and relay, NAT/NAPT, dynamic DNS, and DHCP server, eases integration.
- ✓ SNMP/HTTP Management — Easily manage the IPLink VPN Routers via a simple web browser interface.

ORDERING INFORMATION

2821/EUI: VPN Router, 2 Ethernet ports, 1 X.21 port with DB15 connector, external UI power supply

2821/K/48: VPN Router, 2 Ethernet ports, 1 X.21 port with DB15 connector, 48-VDC power supply

2835/EUI: VPN Router, 2 Ethernet ports, 1 V.35 port with M34 connector, external UI power supply

2835/48: VPN Router, 2 Ethernet ports, 1 V.35 port with M34 connector, 48-VDC UI power supply

SPECIFICATIONS

WAN ports: 2835—V.35 DTE on DB-25F connector • **2821**—X.21 DTE or DCE on DB-15F connector

Ethernet ports: Two 10/100Base-T ports (RJ-45 connector); auto-negotiating; half or full duplex operation with built-in MDI-X

Management: CLI via Telnet Ethernet or RS-232 Console Port (EIA-564); TFTP for Software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391); IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal; IKE

Power supplies: External universal 90–260 VAC input or 48 VDC input. (Optional internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

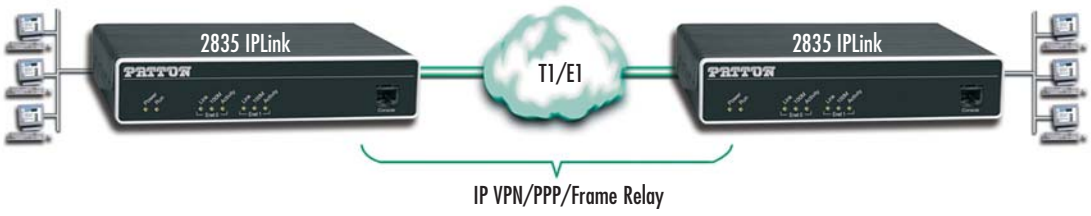
Environment: Temp.: 0–40°C (32–104°F); Humidity: 5–80% non-condensing

Dimensions: 7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

Application diagram

IPLink VPN Routers are next generation security appliances that address the needs of business users by integrating QoS and WAN interfaces into a one-box solution. Service Providers can take advantage of the built-in QoS to provide both VPN services as well as managed bandwidth services using IPLink VPN Routers.



Multi-Port FXS/FXO VoIP Gateway Router

SmartNode™ 4520 Series

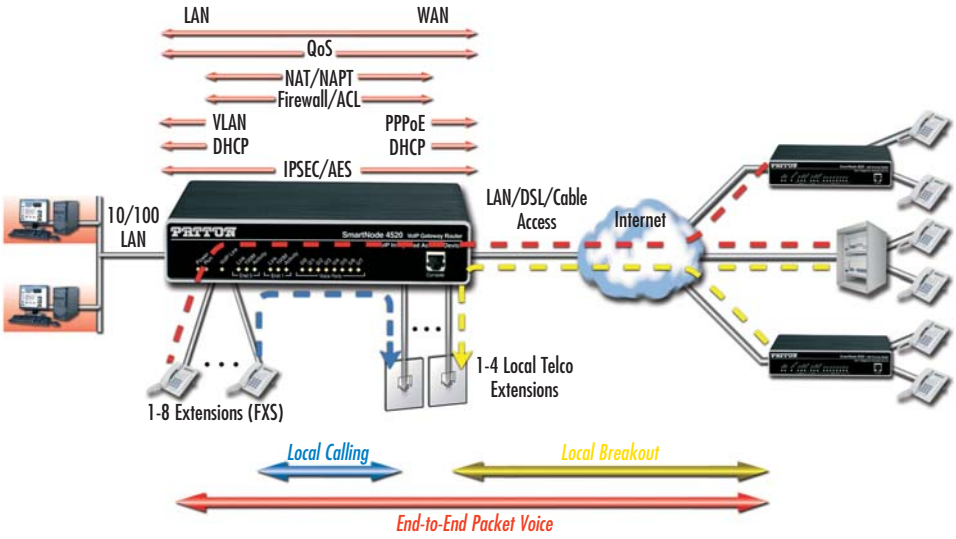
The SmartNode 4520 VoIP Gateway Router combines IP routing, VPN/Security, and Quality of Service for up to 8 transparent voice, fax, and data over any IP or PSTN network. Leverage low-cost packet-voice and IP services for complete branch office voice and data connectivity.

Connect with confidence using the SmartNode 4520 Series Router. Integrating a complete enterprise router with local PSTN and remote packet-voice, the SN4520 supports eight simultaneous calls for a new standard in toll-bypass, remote/branch office connectivity, and enhanced carrier services.

Perfect for the remote office, branch office, or PBX/switch extension, the SmartNode 4520 integrates all your voice, fax, and LAN traffic for seamless and secure networking. With its FXS analog ports the SN4520 connects to any legacy telephone or PBX and provides dial-tone, ringing, and caller-ID. When equipped with FXO ports, the local PSTN can be accessed enabling local calling and enhanced toll-bypass service.

With dual 10/100 Ethernet ports, the SN4520 provides guaranteed Quality of Service while passing LAN traffic at wire-speed. Voice traffic is prioritized while LAN/IP traffic shaping permits efficient access to the Internet and corporate networks. As a complete enterprise router, the SN4520 supports DHCP, NAT, Firewall/ACL, and PPPoE clients. While optional IPSEC VPN and VLAN features tunnel data and AES/3DES ensures secure voice over the public network.

Remote Office/Branch Office Voice Extension and Access



FEATURES & BENEFITS

- ✓ Up to 8 analog ports—Compact, reliable stand-alone VoIP gateway with different port options. Supports simultaneous voice or fax calls on all ports.
- ✓ Toll-Quality VoIP—Advanced traffic management and shaping, combined with Patton's patent-pending DownStream QoS™ enforce uninterrupted toll-quality voice over best-effort networks.
- ✓ Advanced Local Call Switching—Virtual interfaces and routing tables provide industry leading flexibility in call handling programming. Local call switching, soft fallback to alternative routes. Simultaneously connects to multiple SIP services/IP PBXs.
- ✓ Complete SIP and T.38 support—Supports the complete range of industry standard VoIP: SIP, H.323, T.38 fax, fax and modem handling, DTMF relay. Codecs G.729, G.723, and so on.
- ✓ Easy Management & Provisioning—Web-based management, SNMP, command line interface. Automated mass provisioning for efficient large-scale deployments.
- ✓ Outstanding Interoperability—Proven integration for voice and T.38 fax with Asterisk™, PingTel™ and other leading IP PBX systems and soft switch vendors.

ORDERING INFORMATION

SN4522/JS/EUI: 2 port FXS VoIP Gateway Router, 100–240 VAC external power supply (PS)

SN4522/JO/EUI: 2 port FXO Gateway Router

SN4524/JS/EUI: 4 port FXS VoIP Gateway Router

SN4524/2JS2JO/EUI: 2 port FXS, 2 Port FXO Gateway Router

SN4526/4JS2JO: 4 port FXS 2 port FXO Gateway Router

SN4526/JS/EUI: 6 port FXS VoIP Gateway Router

SN4528/JS/EUI: 8 port FXS VoIP Gateway Router

SN4528/4JS4JO/EUI: 4 port FXS, 4 Port FXO Gateway Router

Options & Accessories

SNSW-VPN1: License Key for IPSec VPN support (DES, 3DES, AES)

SPECIFICATIONS

Capacity: Up to 8 simultaneous VoIP or T.38 fax calls (depending on the model)

Voice Signaling: H.323v4, SIPv2 (B2BUA capable, multi-instance, simultaneous support of multiple registrars and direct IP dialing) • SIP call transfer, redirect • DTMF in-band & out-of-band • All tones programmable (dial, ringing, busy)

Voice Processing: CODEC G.711 a-law/mu-law, G.723, G.729ab, • G.726, G.727. T.38 fax relay (9.6 k, 14.4 k) • G.711 transparent fax and bypass

Call Switching and Services: Virtual interfaces • Regular expression based call routing and number manipulation • Number blocking • Short-dialing • Digit collection, distribution and hunt groups • Transparent line extension • Fallback Routing: Soft fallback to alternative route(s)

FXS Connectivity: 2-wire Loopstart on RJ-11/12 •short haul loop 1.1km @3REN • EuroPOTS (ETSI EG201188) • programmable AC impedance, feeding, ring and on-hook voltage • Caller-ID FSK and ITU V.23/Bell 202 generation

FXO Connectivity: 2-wire Loopstart on RJ-11/12 • Programmable impedance, ring detection, tone detection, disconnect supervision • Caller ID detection

Data Services: Two 10/100 Ethernet ports • Complete IP access router • DHCP Client & server • Packet fragmentation • Static firewall, NAT, NAPT RFC 1631 access control lists • DMZ port • IPSEC, IKE, AES/DES/3DES Encryption (optional, hardware accelerated)

Quality of Service: Voice priority • DownStreamQoS™ • Traffic management, shaping and policing • IEEE 802.1p, TOS, DiffServ labeling • IEEE 802.1Q, VLAN tag insertion/deletion (simultaneous support of multiple VLANs)

Management: Web/HTTP, CLI with local console and remote Telnet access • TFTP configuration & firmware loading • SNMP MIB II and product MIB • Secure Mass provisioning for both firmware and unit/subscriber configuration • Built-in diagnostic tools (trace, debug, call generator)

System: CPU Motorola MPC875 @ 66MHz • Memory 32MB SDRAM/8MB Flash • Power 100–240 VAC (50/60 Hz) • Power dissipation 4-12W, model dependent

Temperature: 32–104°F (0–40°C)

Humidity: 5–80%, non-condensing

Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 60950 • CE compliance • FCC Part 15 Class A • TBR21 (FXS) • RoHS

Multi-Port T1/E1 VoIP Integrated Access Device

SmartNode™ 4960

The award-winning SmartNode 4960 integrates with legacy telephony gear to deliver VoIP and data services with QoS and encrypted-voice VPNs. The SmartNode 4960 comes with four T1/E1/PRI ports, two GigE ports, and supports up to 120 simultaneous VoIP calls, making it the ideal choice for low-cost, secure, prioritized communications.

Providing a high-density seamless link between the circuit-switched telephone network and voice-over-IP, the SN4960 is ideal for PBX business trunking or corporate VoIP access. Offering up to four software configurable T1/E1/PRI interfaces the SN4960 connects to any switch, PBX and data network with up to 120 simultaneous calls using SIP, T1, E1 or PRI signaling. The dual gigabit Ethernet ports connect to the network for the highest throughput with its integrated QoS router. With its built-in CSU/DSU, any T1/E1 port can be selected as a WAN port for a truly integrated voice and data access

Like every SmartNode, the SN4960 delivers toll-quality voice with all industry standard CODECs including low-bandwidth G.723/G.729. Business class services are supported with T.38 fax, fax bypass and modem bypass features.

With the ClearConnect™ dial-backup option, adaptive network monitoring recognizes WAN uplink failures and initiates an ISDN dial-up connection to guarantee interrupt-free voice and data access at all times. If the VoIP link goes down or becomes congested, the SN4960 will switch over to the PSTN and guarantee your call each time.

The SmartNode 4960 is ready for SIP TLS and SRTP through software upgrades. Exclusive DownStreamQoS™ and Voice-over-VPN features give the clear advantage of uninterrupted and secure voice communication for any call today.

SPECIFICATIONS

Voice Connectivity: Up to four software selectable T1/E1/PRI ports • Signalling support (ISDN DSS-1, NI-2, Q.SIG; CAS Robbed bit loop and ground start, E&M, immediate, wink, double wink) • SIPv2 & MGCP/IUA, H.323v4 • ISDN AOC/ECT • ISDN speech, audio & data (Fax Gr 4, UDI 64, • RDI 64); ISDN supplementary services

Voice processing: Codec G.711 a-law/mu-law, G.723, G.729ab, • G.726, G.727. T.38 fax relay (9.6 k, 14.4 k) • G.711 transparent fax and bypass

Call routing and services: Regular expression matching and manipulation; number blocking; short-dialing; digit collection, distribution and hunt groups.

Data interfaces: Dual 10/100/1000 TX Ethernet Ports • Autosensing • Auto-MDI • Full-duplex

IP Routing: Complete IP access router • DHCP Client & server • Packet fragmentation • Static firewall, NAT, NAPT RFC 1631 access control lists

IP Quality of Service: Voice priority, DownStreamQoS • traffic management, shaping policing • IEEE 802.1p, TOS, DiffServ labeling • IEEE 802.1Q, VLAN tag insertion/deletion 4,096

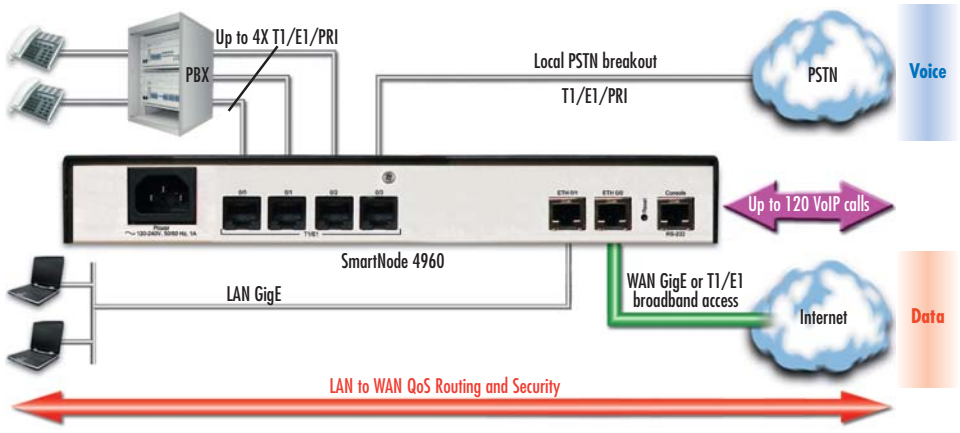
Management: Web/HTTP, CLI with local console & remote Telnet access • TFTP configuration & firmware loading • SNMP MIB II and product MIB • Secure autoprovisioning for firmware & unit/subscriber configuration • Built-in diagnostic tools (trace, debug, call generator)

Environment: Temp: 32–104°F (0–40°C); Humidity: Up to 90% (non condensing)

Power: 100–240 VAC (50/60 Hz) Power consumption: 15W

Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 60950 • CE compliance • FCC Part 15 Class A; Part 68; CS-03

Remote Office/Branch Office Voice Extension and Access diagram



FEATURES & BENEFITS

- ✓ Up to 120 simultaneous voice or T.38 fax calls with one to four T1/E1/PRI ports and dual Gigabit Ethernet ports. Use any CODEC or fax on any port, any time.
- ✓ Universal SIP and T.38 support—Softswitch certified signaling support between all T1 RBS CAS, ISDN PRI, Q.SIG, SIP, H.323 and MGCP/IUA protocols.
- ✓ Secure Toll-Quality VoIP—DownStreamQoS and Voice-over-VPN with adaptive traffic management/shaping for maximum voice quality and secure voice communication.
- ✓ Transparent Telephony Features—Handles complex number manipulation and mapping scenarios for most seamless integration with existing infrastructure, CLIP, CLIR, hold, transfer and much more.
- ✓ Management & Provisioning—Web-based management, SNMP, command line interface. Automated provisioning for easy large-scale deployments.
- ✓ ClearConnect™ dial-backup option for survivable voice and data connectivity.

ORDERING INFORMATION

SN4960/1E15V/UI: SmartNode Hi-Cap 1 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 15 VoIP Channels, upgradeable to 30 calls.

SN4960/1E24V/UI: SmartNode Hi-Cap 1 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 24 VoIP Channels, upgradeable to 30 calls.

SN4960/1E30V/UI: SmartNode Hi-Cap 1 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 30 VoIP Channels, non-upgradeable.

SN4960/4E15V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 15 VoIP channels, field upgradeable to a max of 60 channels.

SN4960/4E24V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 24 VoIP channels, field upgradeable to a max of 60 channels.

SN4960/4E30V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 30 VoIP channels, field upgradeable to a max of 60 channels.

SN4960/4E48V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 48 VoIP channels, field upgradeable to a max of 60 channels.

SN4960/4E60V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 60 VoIP channels, non-upgradeable

SN4960/4E96V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 96 VoIP channels, field upgradeable to a max of 120 channels.

SN4960/4E120V/UI: SmartNode Hi-Cap 4 T1/E1/PRI VoIP IAD, 2x GigEthernet, UI power, 120 VoIP channels.

Options & Accessories

SNSW-49V6: 6 channel Voice Upgrade Key for SN4960 VoIP IADs. Software expansion for additional voice channels.

SNSW-VPN2: Software option for IPsec VPN, including DES/3DES and AES encryption, IKE and Voice-Over-VPN.

SNSW-QSIG2: Support for ISDN Q.SIG.

SNSW-DB2: Dial-Backup Feature License

IpChannel Bank Multi-Port FXS & FXO Gateway Router

SmartNode™ 4900 Series

The IpChannel Bank is the perfect VoIP gateway for applications requiring 12 to 32 concurrent analog voice/fax calls within a single redundant solution.

The SmartNode 4900 is the ideal solution for service providers and enterprises requiring high-density analog connections for converged Internet-Telephony. Call centers, multi-tenant-units and PBX/switch extensions can now access the low-cost benefits of packet voice while WAN, data and VPN features permit direct access the IP network with full upstream and DownStream QoS™.

The SN4900 supports 12 to 32 simultaneous VoIP calls over standard two-wire FXS connections. The analog ports are presented on a single Amphenol telco connector for convenient wiring closet connection. Local LAN connectivity is presented via dual 10/100 Ethernet ports. Traffic can be routed out either port for load-balancing and redundancy. Dual-redundant power supplies protect against equipment down-time.

Seamless and secure network integration with fixed IP, DHCP or PPPoE. Complete access routing features include NAT/NAPT, Firewall, DynDNS and the optional IPSec VPN feature license offer secure data.

Optional WAN uplink modules, available in V.35/X.21, T1/E1, and xDSL options, eliminate the need for extra network termination devices and extra cost.

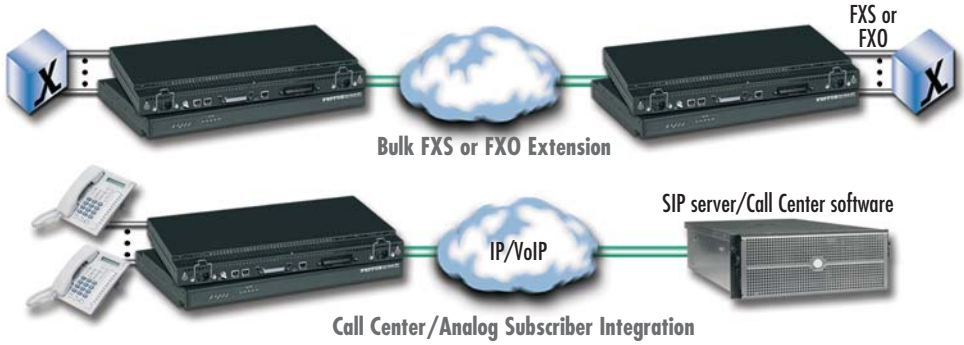
Quality of Service (QoS) features included advanced voice prioritization and traffic management. DownStreamQoS™ ensures voice without interruptions even over best-effort internet connections. Packet labeling according to 802.1p, TOS and DiffServ enable integration into managed QoS networks.

Integrated GUI and Command Line, front panel status and call load indicators and a full suite of management interfaces ensure efficient setup, continuous trouble-free operation and cost-effective deployment.

FEATURES & BENEFITS

- ✓ 12, 16, 24 or 32 FXS or FXO ports—Simultaneous voice or fax calls on all ports. Advanced local call switching.
- ✓ Full SIP and T.38 support—Supports the complete range of industry standard VoIP: SIP, H.323, T.38 fax, fax and modem bypass, DTMF relay. Codecs G.729, G.723 etc.
- ✓ Secure Toll-Quality VoIP—DownStreamQoS and Voice-over-VPN with adaptive traffic management and shaping for maximum voice quality and secure voice communication.
- ✓ Complete Access Routing—Two 10/100 Ethernet ports with auto MDI-X. Access router with NAT, Firewall, PPPoE, DHCP, DynDNS, multiple VLANs & VPN with IPSec*.
- ✓ Optional Integrated WAN uplink—Choose from V.35, X.21, T1/E1, ADSL and G.SHDSL data interfaces in addition to the two Ethernet ports.
- ✓ Outstanding Interoperability—Interoperable for voice and T.38 fax with leading SIP service providers, soft-switch vendors and Asterisk™ IP-PBX.
- ✓ Use FXS models for call center applications and FXO for PSTN analog trunking.

Typical applications



ORDERING INFORMATION

SN4912/JS/RUI: IpChannel Bank 12 Port FXS
SN4916/JS/RUI: IpChannel Bank 16 Port FXS
SN4924/JS/RUI: IpChannel Bank 24 Port FXS
SN4932/JS/RUI: IpChannel Bank 32 Port FXS
SN4912/JSX*/RUI: IpChannel Bank 12 Port FXS WAN Uplink
SN4916/JSX*/RUI: IpChannel Bank 16 Port FXS WAN Uplink
SN4924/JSX*/RUI: IpChannel Bank 24 Port FXS WAN Uplink
SN4932/JSX*/RUI: IpChannel Bank 32 Port FXS WAN Uplink

SN4912/JO/RUI: IpChannel Bank 12 Port FXO
SN4916/JO/RUI: IpChannel Bank 16 Port FXO
SN4924/JO/RUI: IpChannel Bank 24 Port FXO
SN4932/JO/RUI: IpChannel Bank 32 Port FXO
SN4912/JOX*/RUI: IpChannel Bank 12 Port FXO, WAN uplink
SN4916/JOX*/RUI: IpChannel Bank 16 Port FXO, WAN uplink
SN4924/JOX*/RUI: IpChannel Bank 24 Port FXO, WAN uplink
SN4932/JOX*/RUI: IpChannel Bank 32 Port FXO, WAN uplink

Note: 48VDC or split 48VDC/UI power options available.

*X = Interface options: C=V.35, D=X.21, K=E1, T=T1, Fi=Fiber, AYx=ADSL, G=G.SHDSL

Options & Accessories
SNSW-VPN1: License Key for IPsec VPN support (DES, 3DES, AES)

SPECIFICATIONS

Capacity: 12, 16, 24, 32 simultaneous VoIP calls
Voice Signaling: SIPv2 H.323v4 (simultaneously with B2BUA capability) • SIP call transfer, redirect • DTMF in-band & out-of-band • All tones programmable (dial, ringing, busy)
Voice Processing: CODEC G.711 a-law/mu-law, G.723, G.729ab, • G.726, G.727. T.38 fax relay (9.6 k, 14.4 k) • G.711 transparent fax and bypass
Call Switching and Services: Regular expression based call routing and number manipulation • Number blocking • Short-dialing • Digit collection, distribution and hunt groups • Transparent line extension
FXS Connectivity: 2-wire Loopstart on 50pin (12 to 24 channels) or 64pin (32 channels) Telco connector •short haul loop 1.1km @3REN • EuroPOTS (ETSI EG201188) • programmable AC impedance, feeding, ring and on-hook voltage • Caller-ID FSK and ITU V.23/Bell 202 generation
FXO Connectivity: 2-wire Loopstart on 50pin (12 to 24 channels) or 64pin (32 channels) Telco connector • Programmable impedance, ring detection, tone detection, disconnect supervision • Caller ID detection
Data Services: Two 10/100 Ethernet ports • Complete IP access router • DHCP Client & server • Packet fragmentation • Static firewall, NAT, NAPT RFC 1631 access control lists • DMZ port
Quality of Service: Voice priority • DownStreamQoS™ • Traffic management, shaping and policing • IEEE 802.1p, TOS, DiffServ labeling • IEEE 802.1Q, VLAN tag insertion/deletion 4,096
Optional WAN interfaces: X.21/V.35 Frame Relay (8 PVCs); RFC1490, FRF.12 fragmentation; LMI, Q.933D, ANSI 617D, Gang of Four; PPP, PAP, CHAP, LCP, IPCP) • T1/E1 (ITU-T G.703, ANSI T1.403; & AMI, B8ZS, HDB3) • ADSL2+ (Annex A, B, I, J, I, M, U-R2) • G.SHDSL (G.991.2, Annex A, B, F, G, Up to 5.7Mbps, 8 PVCs, QoS)
Management: Web/HTTP, CLI with local console and remote Telnet access • TFTP configuration & firmware loading • SNMP MIB II and product MIB • Secure auto-provisioning for both firmware and unit/subscriber configuration • Built-in diagnostic tools (trace, debug, call generator)
System: CPU Motorola MPC875 @ 133 MHz • Memory 32MB SDRAM/8MB Flash
Power: 100–240 VAC (50/60 Hz) • Power dissipation: > 22W (60W max, model SN4932/JS/RUI)
Environment: Temp.: 0–40°C • Humidity: 5–80% (non condensing)
Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 50950 • CE compliance • FCC Part 15 Class A

Lowest Cost G.703 Network Termination Unit (NTU)
Model 2707

This device terminates G.703 lines and provides serial and 10Base-T interface conversion.

Today's customers require low-cost network solutions that deliver high speed connections to the Internet and Corporate Intranets while supporting videoconferencing and many other wide-area services. The NetLink Model 2707 E1 NTUs satisfies those needs.

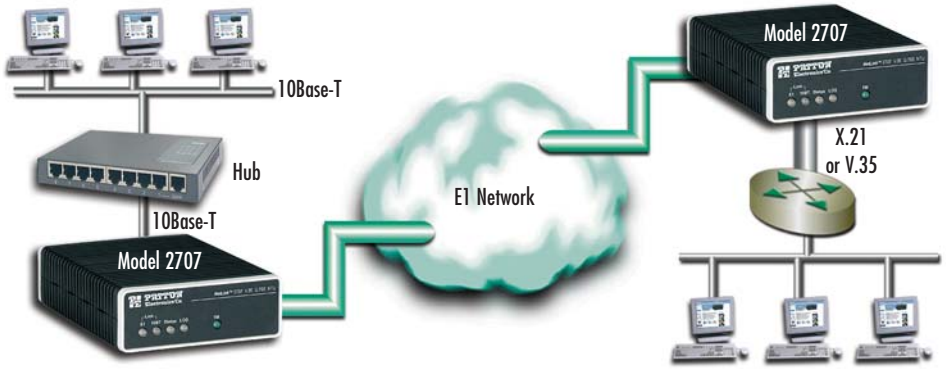
The NTUs terminate G.703 and connect to the customer's router, FRAD, CODEC, and switches with a V.35, X.21, or 10Base-T Ethernet interface.

E1 network on X.21 or V.35 for data

The Model 2707/D (X.21 version) provides DTE/DCE functionality in the same standalone or rack-mount package. This added versatility supports operation in X.21 DTE applications (see diagram above) where an NTU is needed to terminate G.703 and provide X.21/V.11 data to a multiplexer.

Our Ethernet version, the Model 2707/I offers 10Base-T bridging with PPP support. This enables customers to extend a router's serial interface and connect to a remote 10Base-T Ethernet LAN (see below). The 2707/I uses MAC learning and forwarding to provide seamless LAN-to-LAN connectivity.

E1 network on X.21 or V.35 for data



FEATURES & BENEFITS

- ✓ Terminates E1 services
- ✓ Available in low-cost standalone or rack-mountable (2707RC) versions
- ✓ 2 Mbps data and line rate
- ✓ X.21, V.35, and Ethernet bridge options
- ✓ Switch-selectable AMI or HDB3 line encoding options
- ✓ Switch-selectable DTE/DCE modes for X.21 version
- ✓ 75-ohm dual coax and 120-ohm twisted-pair G.703 connections
- ✓ Local loopback diagnostics
- ✓ Internal, external and G.703 network timing
- ✓ CE approved
- ✓ UI (100–240 VAC) 120/230 VAC & 48 VDC power options
- ✓ Conforms to ONP requirements CTR 12 for connection to international telecom networks
- ✓ 1 mile (1.6 km) distance

SPECIFICATIONS

Data Rate: Smooth Clock 2.048 Mbps
Network Connector: RJ-48C (all versions); Dual Coaxial (X.21 and Ethernet)
Line Coding: AMI or HDB3
DTE Interface: X.21/V.11, V.35, or 10Base-T Ethernet
Line Framing: G.703 (unframed)
Clocking: Internal, External or Receive Recover
Diagnostics: Local Loop
Line Isolation: 1500VRMS
Compliance: CE Mark, G.703, and CTR-12
Op. Temp.: 32–122°F (0–50°C)
Humidity: 5–90% non-condensing
Dimensions: 5.84L x 4.16W x 1.51H in. (14.84L x 10.6W x 3.84H cm)
Weight: 2.225 lbs (1.02 kg)

ORDERING INFORMATION

G.703 Interface Converter

2707/C/UI: G.703 to V.35, 100–240 VAC
2707/D/UI: G.703 to X.21, 100–240 VAC
2707/I/UI: G.703 with 10Base-T interface 100–240 VAC
2707/C/48: G.703 to V.35, 48 VDC
2707/D/UI: G.703 to X.21, 48 VDC
2707/I/UI: G.703 with 10Base-T interface 48 VDC
2707RC/A/I: Access Rack Card G.703 to V.35
2707RC/D/D: Access Rack Card G.703 to X.21
2707RC/C/IA: Access Rack Card G.703 with 10Base-T interface

G.703/G.704 Network Termination Unit (NTU)

Models 2701 & 2701RC

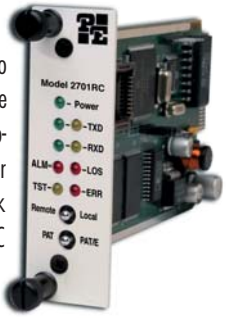
These devices, available in low-cost standalone or rack-mountable versions, terminate G.703/G.704 lines and provide E1/Fractional-E1.

One of the smallest and most economical NTUs available, the Model 2701 is designed with features usually found in more expensive units: flexible clocking modes, AMI/HDB3 coding, V.52/V.54 diagnostics, and user-selectable nx64 kbps data rates.

The NTUs terminate G.703/G.704 services for all nx64 kbps rates and connect to the customer's router, FRAD, CODEC, and switches with a V.35, X.21, EIA-530, or 10Base-T Ethernet interface.

The Model 2701 series terminates E1/FE1 services for all nx64 kbps to 2.048 Mbps rates and connects to a router, FRAD, CODEC, or LAN with V.35, X.21, EIA-530, or 10Base-T interfaces. Front panel LEDs and switches allow for instant diagnostics and service monitoring. Convenient DIP switches support quick and concise configuration of your E1 termination. AC or DC power options make installing the Model 2701 into your network infrastructure a snap.

Today's customers require low-cost network solutions that deliver high speed connections to the Internet and corporate intranets while supporting video-conferencing and many other wide-area services. The NetLink Models 2701 and 2701RC E1/Fractional E1 NTUs satisfy those needs.

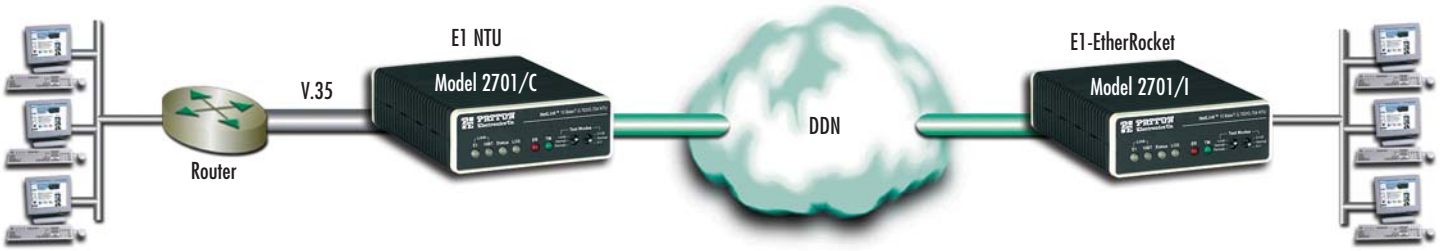


FEATURES & BENEFITS

- ✓ Terminates E1/Fractional-E1 service
- ✓ nx64 kbps data rates to 2 Mbps
- ✓ X.21, V.35, EIA-530, and Ethernet bridge options
- ✓ Switch-selectable AMI or HDB3 line encoding options
- ✓ Switch-selectable DTE/DCE modes for X.21 version
- ✓ 75-ohm dual coax and 120-ohm twisted-pair G.703 connections
- ✓ Local and remote loopback diagnostics
- ✓ Internal, external and G.703 network timing
- ✓ Conforms to ONP requirements CTR 12 and CTR 13 for connection to international Telecom networks

Model 2701R version is also available in a rugged metal case for easy closet mounting

Models 2701 & 2701RC application: Connecting branch office to headquarters with 2701/I EtherRocket and remote router porting



SPECIFICATIONS

Data Rate: Smooth clock 2.048 Mbps
Network Connector: RJ-48C (all versions); Dual coaxial (X.21 & Ethernet)
DTE Interface: EIA-530, X.21/V.11, V.35, or 10Base-T Ethernet
Line Coding: AMI or HDB3
Line Framing: G.703 (unframed) or G.704/G.732 (framed)
Clocking: Internal, external or receive recover
DTE Rates: nx64kbps (EIA-530, X.21/V.11, V.35); 10Mbps (10Base-T)
Indicators: E1 Link Status, TD, RD, Loss of Sync, Error, Test Mode, Ethernet Status (on 10Base-T Version)
Diagnostics: Local/remote loop, 511
Line Isolation: 1500 VRMS
Compliance: CE Mark, G.703, G.704, G.723, G.832, CTR-12 & CTR-13
Temperature: 32–122°F (0–50°C)
Rel. Humidity: 5–90% non-condensing
Dimensions:
Standalone unit
5.84L x 4.16W x 1.51H in.
(14.84L x 10.6W x 3.84H cm)
Rack card
3.0H x 0.83W x 7.84D in.
(7.6H x 2.1W x 19.0D cm)
Weight:
Standalone unit: 2.225 lbs (1.02 kg)
Rack card: 0.31 lbs (0.14 kg)

ORDERING INFORMATION

Standalone NTU, 100–240 VAC Supply
2701/B/UI: EIA-530 (DB-25F) interface
2701/C/UI: V.35 (M/34F) interface
2701/D/UI: X.21 (DB-15F) interface
2701/I/UI: 10Base-T (RJ-45F) interface

Standalone NTU, -48 VDC Supply
2701/C/48: V.35 (M/34F) interface
2701/D/48: X.21 (DB-15F) interface
2701/I/48: 10Base-T (RJ-45F) interface

Rack card NTU
2701RC/A/I: RJ-45 line and V.35 (M/34F) DTE interfaces
2701RC/B/B: RJ-45 line and RS530 (DB-25F) DTE interfaces
2701RC/D/D: Dual BNC line and X.21 (DB-15F) DTE interfaces
2701RC/D/V: RJ-45 line and X.21 (DB-15F) DTE interfaces
2701RC/C/IA: RJ-45 line and Ethernet/10Base-T (RJ-45F) interfaces

IDSL Modems with V.35, X.21, or 10Base-T (Ethernet) Interfaces

Model 1082

The 1082 Series are high speed, AC powered short-range modems that are able to operate synchronously or asynchronously—full duplex—over a single twisted-pair.

The Model 1082 supports data rates to 128 kbps (synchronous) or 38.4 kbps (asynchronous). It is capable of point-to-point distances up to 5 miles (8 km) using 24 AWG wire.

The Model 1082 Series supports internal, external, or receive loopback clocking in synchronous mode. Data rates and asynchronous data format may be configured locally using DIP switches.

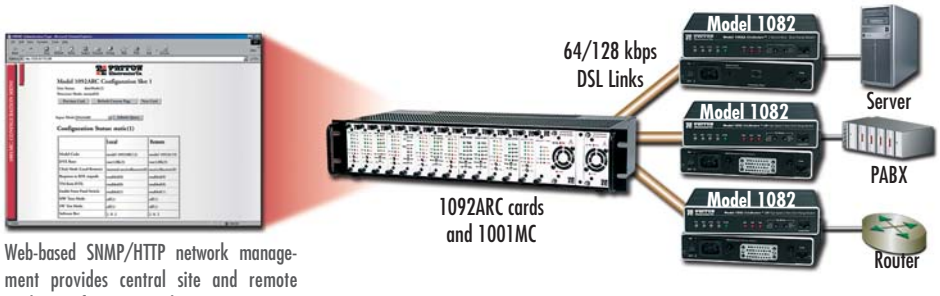
Model 1082/C provides a V.35 interface on an M/34 female connector. Model 1082/D is configured with an X.21 interface on a DB-15 female connector.

Line connection is made by an RJ-45 jack. Standard versions of the Model 1082 Series are powered by a 100–240 VAC (universal) supply. The DC power supply option supports any DC input between 36–72 VDC.

FEATURES & BENEFITS

- ✓ Synchronous data rates: 19.2, 32, 56, 64,128 & 144 kbps (1082/144 models); Asynchronous data rates: 0–38.4 kbps
- ✓ Full-duplex operation over a single twisted pair (2-wires)
- ✓ Point-to-point distances up to 5 miles (8 km) (all data rates) on 24 AWG twisted pair
- ✓ Internal, external, or receive recovered clocking options (Model 1082/I only)
- ✓ LED indicators for TM, ER, NS, DSL (Models 1082 C & D), 10Base-T (Model 1082/I), and Status (Model 1082/I)
- ✓ V.35 and X.21 interfaces (Models 1082 C & D); Ethernet Interface (Model 1082/I)
- ✓ Multi-rate symmetric DSL
- ✓ Interoperable with popular Patton Models 3092 and 1092A
- ✓ SNMP manageable with 3092 or a 1092ARC in a 1001 Rack equipped with a 1001MC SNMP agent rack card

Typical applications



Web-based SNMP/HTTP network management provides central site and remote modem configuration and management

ORDERING INFORMATION

1082/C/48: IDSL modem; V.35 interface & -48 VDC power
1082/C/UI: IDSL modem; V.35 interface & 100–253 VAC power
1082/D/48: IDSL modem; X.21 interface & -48 VDC power
1082/D/UI: IDSL modem; X.21 interface & 100–253 VAC power
1082/F/48: IDSL modem; 64/128k G.703 interface & -48 VDC power
1082/F/UI: IDSL modem; 64/128k G.703 & 100–253 VAC power
1082/I/48: IDSL modem; Ethernet interface & -48 VDC power
1082/I/UI: IDSL modem; Ethernet interface & 100–253 VAC power

SPECIFICATIONS

Transmission Format: Synchronous or asynchronous
Transmission Line: Single unconditioned twisted pair
Clocking: Internal, external or receive loopback

Distance: Distance, max, all data rates-10.1 miles (16.4km) on 19 AWG (0.9mm) wire; 7.2 miles (11.5 km) on 22 AWG (0.64mm) wire; 5.0 (8 km) on 24 AWG (0.5mm) wire; 3.4 (5.5 km) on 26 AWG (0.4mm) wire

Data Rates: Synchronous 19.2, 32, 56, 64 & 128 kbps; Asynchronous 0–38.4 kbps
Connectors: RJ-45 on line side; RJ-45, M/34 female or DB-15 female on serial interface side.

Diagnostics: V.52 compliant bit error rate pattern (511/511E pattern) generator and detector with error injection mode; Local Line Loopback and Remote Digital Loopback, activated by front panel switch or via serial interface

Power: 100–253 VAC, 50–60 Hz (universal input option); 48 VDC (option). 5 watts.
Temperature Range: 32–122°F (0–50°C)
Humidity: 5–95% non-condensing

Dimensions: 4.7 x 1.52 x 5.0 in. (18.5 x 16.8 x 4.1 cm)
Weight: 0.58 lbs.
Line Interface: Transformer coupled 1500 VAC isolation

Low-Cost, High-Speed G.SHDSL Modem

Model 3088 RocketLink™ G.SHDSL NTU

Use Patton's RocketLink G.SHDSL Modem for fast, dedicated, always-on access.

The Model 3088 RocketLink Modem drives profitability back into leased-line data services with standards-based G.SHDSL technology. The Model 3088 provides low cost, full-duplex network termination or extension at nx64 rates to 4.6 Mbps. The Model 3088 connects routers, switches, and other access devices, and is available in G.703/G.704, co-directional G.703, T1/FT1, X.21, and V.35 interfaces. Plus, it is available in a rack card for the Model 1001 universal access rack.

The Model 3088 excels in manageability with built-in loop-back and pattern generators that allow quick verification of DSL lines. Additionally, with software upgradeability via the console port, the unit is ready for the next feature upgrade. Lastly, with remote console support, a centrally located unit can be used to take control of a remote unit via the console port, using an out-of-band management channel.

For true flexibility, the Model 3088 is also compatible with any of Patton's G.SHDSL modems, including the Model 3201 router and ForeFront DSL solutions.

FEATURES & BENEFITS

- ✓ Speeds to 4.6 Mbps over just a single twisted pair of wires
- ✓ Distances up to 32,800 feet (10 km)
- ✓ Software upgradeable
- ✓ G.SHDSL ITU/ETSI interoperability with third-party TDM DSLAMs
- ✓ G.703/G.704, X.21, V.35, and co-directional interfaces available
- ✓ Built-in testing and diagnostics for quick network turn-up and troubleshooting
- ✓ ForeFront plug-and-play operation

CPE for ForeFront

Using ForeFront with the Model 3088 allows deployment of hundreds of DSL circuits from a single low profile chassis. The Model 3088 can be used on the customer premise to deliver T1/E1 co-directional G.703, X.21, or V.35 interfaces.

T1/E1 extension over copper wires

Use the Model 3088 units back-to-back to extend T1 or E1 channels across copper wires. These units are ideal for local loop, Campus, and multi-dwelling/multi-tenant applications.

SPECIFICATIONS

DSL: G.991.2 ITU G.SHDSL Annex A and Annex B, G.994.1 G.hs. nx64 data rates over 2-wire full-duplex to 2.3/4.6 Mbps, symmetrical, TC-PAM encoding. Distance of 32,800 ft (10 km) at 192 kbps to 18,800 ft (5.75 km) at 2.312 Mbps.
DSL Connection: Shielded RJ-45F isolation per IEC 950

DTE Interface: G.703/G.704, V.35, X.21/V.11, T1/FT1, G.703 Co-Directional
DTE Rates: From 64 kbs to 2.3/4.6 mps in user definable increments
Diagnostics: V.54 Loops (LLB, RDL); V.52 compliant BER pattern generator and detector (511/511E)

Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP
Power Supply: External 230 VAC, Universal 90–260 VAC, or -48 VDC input
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC

Op. Temp.: 32–122°F (0–50°C)
Humidity: 5–90%, non-condensing
Dimensions: 4.17W x 1.52Hx5.0L in. (10.6W x3.9H x12.7L cm)

ORDERING INFORMATION

3088/C/EUI: G.SHDSL RocketLink V.35 with DB-25 interface & M/34F adapter; 100–240 VAC power

3088/D/EUI: G.SHDSL RocketLink X.21 with DB-15F interface; 100–240 VAC power

3088/K/EUI: G.SHDSL RocketLink G.703/G.704 with dual BNC and/or RJ-48 Interface; 100–240 VAC power

3088/T/EUI: G.SHDSL RocketLink T1 with dual BNC and/or RJ-48 interface; 100–240 VAC power

EtherBITS™ Device Server

Model 2232 Single Port RS-232 Device Server

Low-cost single-port device server lets you monitor, control, and collect data from any async RS-232 device over any IP network.

The Patton EtherBITS Model 2232 lets you leverage the power and flexibility of Ethernet for low-cost, hassle-free device networking.

Ethernet has far outgrown the confines of the office network. From factories and farms to railways and retail shops, credit bureaus, banks—even medical and dental offices—anywhere serial devices are found—the EtherBITS Model 2232 offers network managers the lowest-cost solution for making the transition from legacy serial infrastructure to the age of IP.

The EtherBITS Model 2232 provides both a serial RS-232 port (male or female/DB-9 or DB25) and a 10Base-T Ethernet port to link any RS-232 serial device to the Ethernet LAN at user-selectable data rates from 1200 bps to 115.2 kbps.

The Model 2232 encapsulates asynchronous serial data into IP packets for transport through the network via TCP or TELNET. The Model 2232 delivers a transparent end-to-end connection to your PC or network management host using any user-defined IP address and TCP port number. For greater flexibility, a built-in DHCP client can dynamically obtain an IP address from a master server anywhere on the network. With the included COM Port Redirector software you can use the existing COM/TTY on your PC, thus avoiding the hassle and expense obtaining an additional software license.

Connect serial devices and terminals to Ethernet quickly and easily with Patton's low-cost EtherBITS Model 2232 Single-Port Terminal Server. The Patton EtherBITS Model 2232 lets you leverage the power and flexibility of Ethernet for low-cost, hassle-free device networking.

FEATURES & BENEFITS

- ✓ Control and Monitor Serial Device—Link asynchronous serial devices and terminals to your IP network
- ✓ Supports a Wide Range of Data Rates—User-selectable async data rates up to 115.2 kbps
- ✓ Connects Directly to the LAN—10Base-T LAN connection via shielded RJ-45 connector
- ✓ Standard TCP/IP Protocols Supported—ARP, ICMP, TCP, DHCP client, Telnet
- ✓ COM Port Redirector Software Included—Windows-Tactical COM Port Redirector Linux-vtty drivers

ORDERING INFORMATION

RS-232 to 10Base-T Device Server

2232-25F/E: 10Base-T; DB25F RS-232
2232-25M/E: 10Base-T; DB25M RS-232
2232-9F/E: 10Base-T; DB9F RS-232
2232-9M/E: 10Base-T; DB9M RS-232

Accessories

08057R5DC-700M-EU: EU Desktop Power Supply
08057R5DC-700M-NA: NA Desktop Power Supply
INS/A-DIN-35: Set of DIN rail clips

SPECIFICATIONS

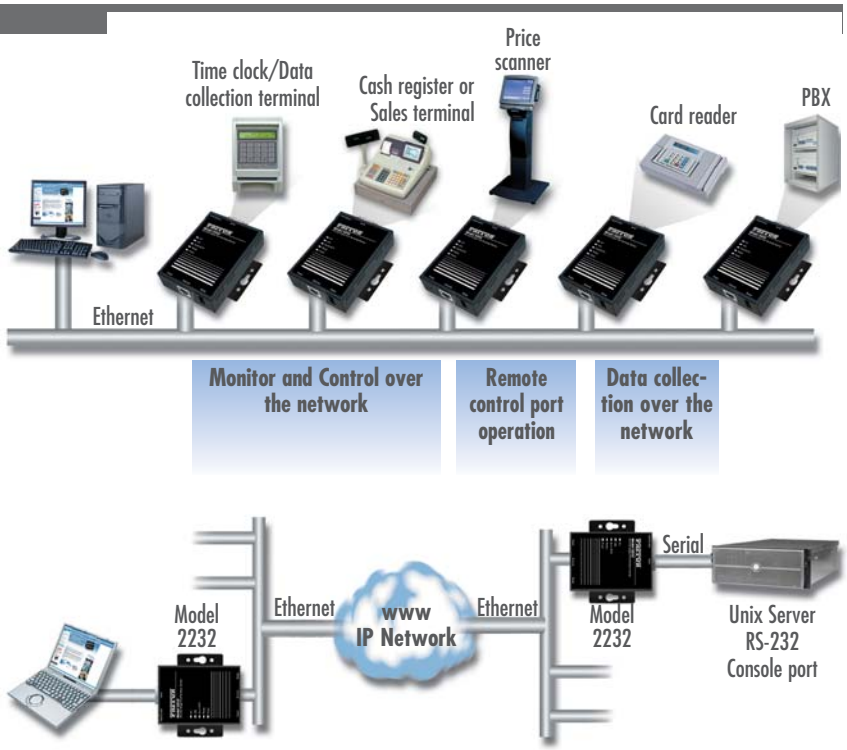
Physical Interface:
Serial: Serial: DB-9M/F; DB-25M/F
Ethernet: Shielded RJ-45
Serial Transmission: RS-232 rates from 1200 bps to 115.2 kbps
Ethernet Transmission: 10Base-T
Management: Monitoring, control, and diagnostics via serial port, TELNET session, or HTTP
LED Indicators: Power, Ethernet Link and Activity, Serial Receive and Transmit
Power: External AC: 9~30 VDC, 300 mA at 9 VDC
Compliance: EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC; CE Mark
Environment:
Temperature: 40–122°F (5–50°C)
Humidity: Up to 90% non-condensing
Dimensions: 4.5L x 3.2W x 1.0H in. (9.0L x 5.3W x 1.9H cm)
Weight:
Packaged: 0.66 lbs (300 g)
Unit only: 0.55 lbs (250 g)

Application diagrams

The Model 2232 Single-Port Device Server is used to connect various RS-232 serial devices to the local area network through their serial control ports. The 2232 enables monitoring, control, and data collection from this equipment by remote computers located anywhere on the local or wide area network.

COM Port redirector is provided for users who choose to use their existing serial communication application programs. Using the redirector software provided on the Patton Model 2232 allows existing COM/TTY-based software to be preserved, thus no additional investment is required on additional software.

The Patton Model 2232 can be used for serial data tunneling when used in pairs. When operating in pairs, the 2232s will simulate a direct serial link between two serial devices over an Ethernet connection. Using IP allows the user to extend serial connections from across the building to across the world using the World Wide Web.



EtherBITS™ Universal Device Server

Model 2285 RS-485/422/232 Device Server

Control, monitor, and collect data from all your serial devices over the local network or Internet. Patton's Model 2285 universal single-port device server is cost-effective and feature-rich, linking virtually any serial RS-485/422/232 device to any IP network over a secure connection.

Use Patton's Model 2285 universal single-port device server to control, access, inter-connect, and manage RS-485/422/232 devices from any remote location as if you were there. Patton's device servers provide a new level of efficiency and affordability to a variety of application environments including industrial automation, health care, security, transportation, retail, and many others.

With built-in DHCP the Model 2285 automatically obtains an IP address and a subnet mask from the master server. With the IP address identified and the serial port attached, the Model 2285 can tranparently pass data end-to-end using Telnet over TCP. Users can access management features over telnet, serial console, or the web. Security features include static key based RC4 data encryption, SSL to provide a secure connection between client and server, HTTPS for secure data transfer over the network, and IP filter, which limits and controls access to the serial device. COM Port Redirector is included with Patton's 2285 enabling users to use their existing COM/TTY-based software, preventing the hassle and expense of investing in additional software.

The Patton Model 2285 provides physical-layer connectivity by a user selectable RS-485/422/232 serial port and 10/100Base-TX Ethernet port. Configure the serial port's data rate, ranging from 75 bps to 230 kbps, and choose from a variety of connector types including DB9 or DB25 male or female.

Easily and cost effectively bring serial devices onto one global or local area network!

FEATURES & BENEFITS

- ✓ User Selectable RS-485/422/232—Control, access, and monitor your asynchronous serial terminals and devices over the LAN
- ✓ Secure Communication—Security features include static key based RC4 data encryption, SSL, HTTPS, and IP filtering
- ✓ COM Port Redirector Software Included—Windows®—Tactical COM Port Redirector Linux-vtty drivers
- ✓ Standard TCP/IP Protocols Supported—ARP, ICMP, TCP, Raw TCP, UDP, DHCP, Telnet/SSH, HTTPS, DNS, Dynamic DNS, SNMP v1, & v2, SSL
- ✓ Connects Directly to the LAN—10/100Base-TX LAN connection via RJ-45 connects to any hub/switch

ORDERING INFORMATION

RS-232/422/485 to 10/100BaseT Device Server

2285-9F/E: 10/100; DB9F RS-232/422/485

2285-9M/E: 10/100; DB9M RS-232/422/485

Call for DB25 versions

Accessories

08059DC-700M-EU: EU Desktop Power Supply

08059DC-700M-NA: NA Desktop Power Supply

INS/A-DIN-35: Set of DIN rail clips

SPECIFICATIONS

Physical Interface:
Serial: DB-9M/FEthernet: Shielded RJ-45
Serial Transmission: RS-485, 422, and 232 rates from 75 bps to 230 kbps (user selectable)
Ethernet Transmission: 10/100Base-TX
Management: Monitoring, control, and diagnostics via serial port, TELNET session, or HTTP
LED Indicators: Power, Ethernet Status, and Activity
Power: External AC: 9~30 VDC, 300 mA at 9 VDC
Compliance: EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC; CE Mark
Environment:
Temperature: 40–122°F (5–50°C)
Humidity: Up to 90% non-condensing
Dimensions: 4.5L x 3.2W x 1.0H in. (9.0L x 5.3W x 1.9H cm)
Weight:
Packaged: 1.05 lbs (0.46 kg)
Unit only: 0.15 lbs (0.06 kg)

Application diagram

The Patton Model 2285 connects various RS-485/422/232 serial devices to a central location over an Ethernet Local Area Network. The device server enables monitoring, controlling, management, and data collection.

The Model 2285 enhances COM Port Redirection with the addition of encryption. Secure connections between the 2285 and the controller's COM port are implemented with the Serial/IP COM port redirector or OpenSSL Toolkit with an SSL security option.

The Model 2285 performs Serial Data Tunneling when used in pairs. The 2285's will simulate a direct serial link between two serial devices over an Ethernet connection. Using IP allows the user to extend serial connections across the building or acros the world.

Single Port E1/E2 Toolless IDC Baluns

Patton Model 430 Series G.703/G.704 Baluns

The Patton 430 Single Port E1/E2 Balun Series provides 75/120-ohm conversion in an ultra-miniature enclosure

The new G.703/G.704 insulating displacement connecting Toolless (IDC) module baluns are ideal for carriers seeking a cost-effective, space-efficient, and proven method of impedance matching 75-ohm coax to 120-ohm single-conductor connections. The baluns provide transparent bi-directional signal conversion with no AC or battery power required.

Various industry standard types of coaxial connectors (75 ohm) are available including male and female combinations of BNC, 1.6/5.6, 1.0/2.3, and Type 43. The 3-pole Toolless IDC connector used for wrapping single-conductor connections (120 ohm) utilizes a slit in the cable anchor to allow the cable to be inserted after termination. The Toolless IDC connector is also offset so that a cable can be positioned between baluns on the DDF/patch panel as required. The IDC Krone connector is clearly labeled A, B, and G (Ground) to make installation more convenient.

The Patton Model 430R houses up to 32 individual Toolless IDC baluns for 16 E1/E2 circuits. The 430R fits into standard 19-inch racks and includes a dry-erase tab for easy and clear marking.

FEATURES & BENEFITS

- ✓ Convert 75 ohm Coax to 120 ohm Twisted Pair—Resolves impedance mis-match between twisted pair equipment and coax cabling
- ✓ Ultra-miniature size—Provides maximum density when installed into a 19-inch (48.3cm) panel
- ✓ Industry Standard Coax Connectors—A host of coax connectors including BNC, 1.6/5.6, 1.0/2.3 and Type 43 are available
- ✓ Low Insertion Loss—Fully meets ITU-T (CTR-12) G.703 standards
- ✓ No Power Required—Operation is transparent to data, no AC/DC power is required

Model 431F
Single Port BNC Female Panel Mount to Toolless IDC Balun

Model 431M
Single Port BNC Male Panel Mount to Toolless IDC Balun

Model 432F
Single Port 1.6/5.6 Female Panel Mount to Toolless IDC Balun

Model 432M
Single Port 1.6/5.6 Male Panel Mount to Toolless IDC Balun

Model 433F
Single Port 1.0/2.3 Female Panel Mount to Toolless IDC Balun

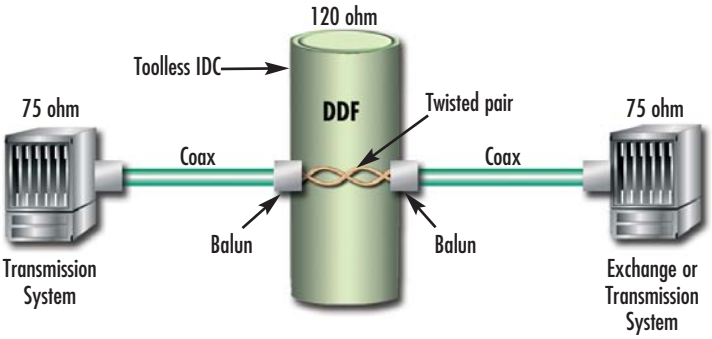
Model 433M
Single Port 1.0/2.3 Male Panel Mount to Toolless IDC Balun

Model 434F
Single Port Type 43 Female Panel Mount to Toolless IDC Balun

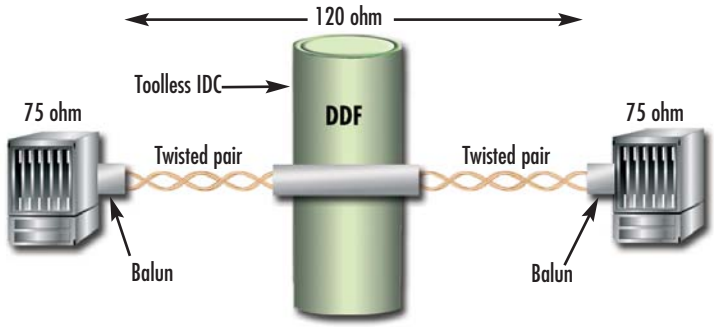
Model 434M
Single Port Type 43 Male Panel Mount to Toolless IDC Balun

Balun applications

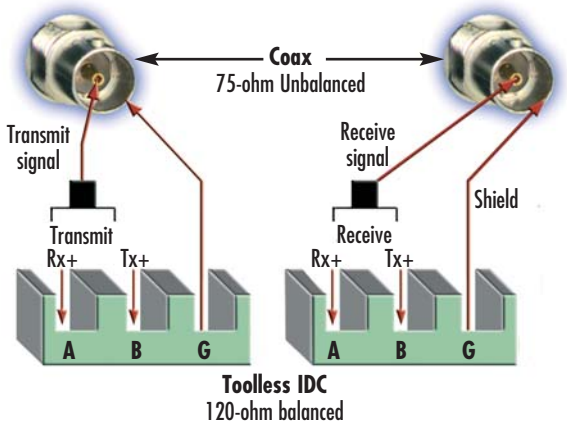
DDF jumper reconfiguration with 120 ohm



Typical DDF application



Patton's Ultra-miniature G.703 Toolless IDC baluns are fully shielded and are ideal in telecom applications where space is a premium. The Model 430 Series can be panel mounted or cable mounted and feature IDC terminations which allow installation without the need of special tools. Converting your G.703 signal from coax to twisted-pair enables the use of high density IDC modules in the Digital Distribution Frames (DDF), which significantly increases the available density.



FEATURES

Patton's Toolless IDC Connector

1. Specially designed tool-less IDC connector for easy connection of unterminated cable.
2. Toolless IDC connector clearly marked *A*, *B* and *G* for easier installation
3. Slit in cable anchor allows cable to be inserted after termination.
4. Offset IDC allows cable to be positioned between baluns on DDF as required

With tool-free terminations, clearly marked connectors and well laid out spaces, the Patton Toolless IDC connector makes installations a breeze.

ORDERING INFORMATION

- 431F: Single Port BNC Female Panel Mount to Toolless IDC Balun
- 431M: Single Port BNC Male Panel Mount to Toolless IDC Balun
- 432F: Single Port 1.6/5.6 Female Panel Mount to Toolless IDC Balun
- 432M: Single Port 1.6/5.6 Male Panel Mount to Toolless IDC Balun
- 433F: Single Port 1.0/2.3 Female Panel Mount to Toolless IDC Balun
- 433M: Single Port 1.0/2.3 Male Panel Mount to Toolless IDC Balun
- 434F: Single Port Type 43 Female Panel Mount to Toolless IDC Balun
- 434M: Single Port Type 43 Male Panel Mount to Toolless IDC Balun
- 430R: Toolless IDC Mounting Panel

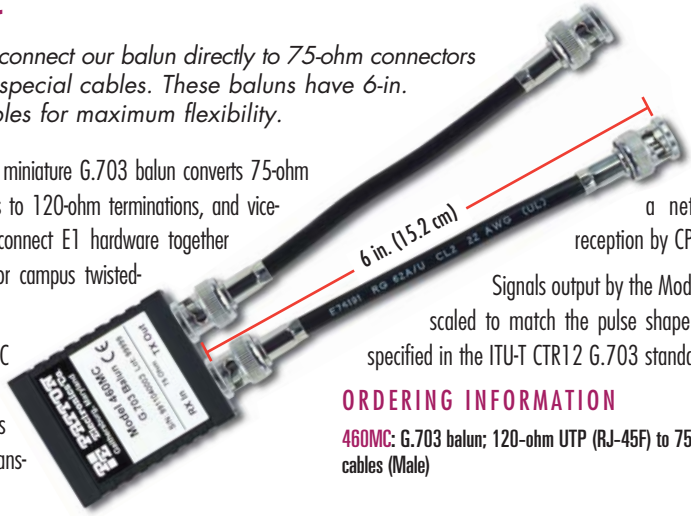
SPECIFICATIONS

Transmission Line: ITU-T G.703/G.704 2-8 Mbps
75-ohm Connection: BNC; 1.6/5.6, 1.0/2.3, or Type 43
120-ohm Connection: 3 pole Toolless IDC
Insertion Loss: Max 0.2 dB at 2 Mbps; Max 0.3 dB at 8 Mbps
Cross Talk: Better than -80dV from 0.1 to 12 MHz between any two baluns on a DDF strip with 15 mm centers
Return Loss: -29 dB at 2 Mbps; -21 dB at 8 Mbps
Dimensions: 19L x 1.5W x 3.8H in. (48.3L x 48.3W x 8.9H cm)
Weight: 0.4 lbs (0.18 kg)

G.703 Balun (E1), 2 Mbps, With Built-in Cables (75-ohm to 120-ohm)

Model 460MC

Now you can connect our balun directly to 75-ohm connectors without using special cables. These baluns have 6-in. (15.2 cm) cables for maximum flexibility.



The Model 460MC miniature G.703 balun converts 75-ohm coaxial terminations to 120-ohm terminations, and vice-versa. It can also connect E1 hardware together over inter-building or campus twisted-pair wiring.

The Model 460MC receives 75-ohm signals and converts to 120-ohm for transmission over a network or for reception by CPE equipment.

Signals output by the Model 460MC are scaled to match the pulse shape requirements specified in the ITU-T CTR12 G.703 standard.

ORDERING INFORMATION

460MC: G.703 balun; 120-ohm UTP (RJ-45F) to 75-ohm dual-BNC cables (Male)

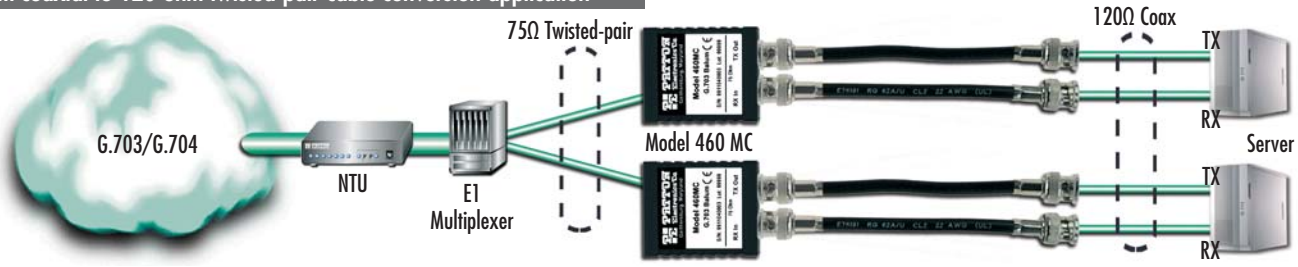
FEATURES & BENEFITS

- ✓ Solves G.703 termination mis-matches
- ✓ Includes short cables that connect directly to equipment
- ✓ Enables G.703 equipment to use RJ-11 wall plates and operate over standard building wiring
- ✓ Low insertion loss, meets ITU-T (CTR12) G.703 standards
- ✓ Customized versions available upon request
- ✓ Enclosed in flame retardant housings.
- ✓ Baluns are 100% tested for reliability and durability

SPECIFICATIONS

Transmission line: ITU-T CTR12 G.703
Data rate: 2.048 Mbps (models available for rates up to 155 Mbps, call for details)
Link-to-data isolation: 500 volts AC/DC
Op. Temp.: 32–122°F (0– 50°C)
Dimensions: 0.8H x 1.7W x 2.7D in. (2.0H x 4.3W x 6.9D cm)

75-ohm coaxial to 120-ohm twisted-pair cable conversion application



G.703 (E1, E2, E3) Baluns (75-ohm to 120-ohm)

Models 460, 462, & 463

Now you can solve mismatches between coax and twisted pair G.703 terminations!

These devices are miniature G.703 baluns that enable 75-ohm coax hardware to communicate with 120-ohm twisted-pair equipment.

The baluns address ONP requirement that European PTTs offer 120-ohm twisted-pair terminations to their customers. Some PTTs and private carriers are standardized on 75-ohm coax, or have customers whose CPE has only 75-ohm coax connections. Our baluns presents a ready solution to this termination mismatch. A balun receives 75-ohm signals and converts them to 120-ohm for transmission over a network or reception by a CPE.

The output signals from the baluns are scaled to match the pulse shape requirements specified by the CCITT G.703 standard. These baluns can perform 120-ohm to 75-ohm signal conversion as well, thereby fulfilling a dual role.

ORDERING INFORMATION

460F: 2 Mbps, 75-ohm dual-coax (BNC female): to 120-ohm UTP (RJ-45)

460M: Male BNC version of 460

460F-TBP: 2 Mbps, 75-ohm dual-coax (BNC female): to 120-ohm UTP (Terminal Block)

460M-TBP: Male BNC version of 460-TBP

462F: 8 Mbps, 75-ohm dual-coax (BNC female): to 100-ohm UTP (RJ-45)

462M: Male BNC version of 462

463F: 34 Mbps, 75-ohm dual-coax (BNC female): to 120-ohm UTP (RJ-45)

463M: Male BNC version of 463

FEATURES & BENEFITS

- ✓ Data rates to 34 Mbps
- ✓ Available in E1, E2, and E3 varieties
- ✓ 75-ohm dual-coax to 120-ohm twisted-pair
- ✓ Bi-directional signal conversion
- ✓ No AC power or batteries required
- ✓ Male or female coax BNC connectors available
- ✓ Ultra-miniature enclosure

SPECIFICATIONS

Transmission Line: CCITT G.703 (unstructured)
Data Rate: Model 460 to 2 Mbps; Model 462 to 8 Mbps; Model 463 to 34 Mbps
Power Supply: none required
75-ohm Connection: Dual coax BNC connectors, male or female (RG 59 or 2002 coax)
120-ohm Connection: Shielded mRJ-45 jack (internal terminal block included)
Link-to-Data Isolation: 500 volts AC/DC
Op. Temp.: 0–50°C (32–122°F)
Dimensions: 2.7L x 1.7W x 0.8D in. (6.86L x 4.32W x 2.03D cm)

G.703 (E1) Balun, 2 Mbps (1.6/5.6 Connectors)

Models 465 & 465MC

These new G.703 baluns feature 1.6/5.6 coaxial connectors and provide connection for TX and RX connections on a single twisted-pair wire.

Baluns are adapters for connecting mixed cable types or devices with mis-matched interfaces. They enable carrier and large-enterprise customers to standardize on twisted-pair wiring, even though some equipment may have unique E1 terminations.

The Model 465 has the 1.6/5.6 coax connectors used extensively in telephone exchange sites. The balun has two interfaces, so that both the TX and RX coax signals can be carried over a single length of twisted-pair cabling (which is far less costly than any kind of coaxial cable).

ORDERING INFORMATION

465F: G.703 balun; 120-ohm UTP (RJ-45F) to 75-ohm dual-coax female 1.6/5.6 plugs

465M: G.703 balun; 120-ohm UTP (RJ-45F) to 75-ohm dual-coax male 1.6/5.6 plugs

465MC: G.703 Balun with 120-ohm UTP (RJ-45F) to 75-ohm 1.6/5.6 plugs 6-in. (15.2 cm) cables

FEATURES & BENEFITS

- ✓ Use 120-ohm twisted-pair wiring with unbalanced coaxial equipment
- ✓ No more buying expensive and space-hungry hardware for patching and distributing G.703 connections
- ✓ Low cost model supports rates of 2 Mbps
- ✓ Low insertion loss, fully meets ITU-T (CTR12) G.703 standards
- ✓ Standard twisted-pair terminations
- ✓ Enclosed in flame retardant housings
- ✓ Baluns are 100% tested for reliability and durability
- ✓ Customized versions available upon request

SPECIFICATIONS

Transmission line: ITU-T CTR12 (G.703
Data rate: 2.048 Mbps
Link-to-data isolation: 500 volts AC/DC
Op. Temp.: 32° to 122°F (0° to 50°C)
Dimensions: 0.8H x 1.7W x 2.7D in. (2.0H x 4.3W x 6.9D cm)

High Density, E1/G.703 Balun Panels

Models 464RC & 466RC

Matches 16 sets of dual 75-ohm coax connections to 120-ohm twisted pair connections

The Patton 464RC & 466RC G.703 balun panels match 16 sets of dual 75-ohm coax connections to 120-ohm twisted-pair connections. This function allows carriers to provide 120-ohm G.703 service to customers retaining 75-ohm CPE hardware. It also allows carriers who have standardized on 75-ohm coax to provide 120-ohm terminations to their customers (in keeping with European ONP requirements).

Supporting E1 data rates to 2.048 Mbps, the Patton 464RC and 466RC panels bi-directionally match signal impedance and pulse shapes according to the CCITT G.703 standard. The Patton 464RC and 466RC balun panels mount in a standard 19-in. (48.3 cm) rack. Includes a reversible top cover for front-facing BNC or front-facing RJ-45/AMP Champ connectors.

ORDERING INFORMATION

464RC: High density 16-port, 19-inch, 1U (4.44 cm) balun chassis. BNC coax connector for 75-ohm connections. G.703 rack-mount

466RC: High density 16-port, 19-inch, 1U (4.44cm) balun chassis. 1.6/5.6 coax connector for 75-ohm connections. G.703 rack-mount

FEATURES & BENEFITS

- ✓ Connects 16 75-ohm dual coax to 120-ohm twisted pair channels
- ✓ Bi-Directional signal conversion according to CCITT G.703
- ✓ Data Rates up to 2.048 Mbps
- ✓ 1U-high enclosed chassis
- ✓ Reversible cover with integrated mounting ears
- ✓ Mounts in standard 19 in. (48.3 cm) rack
- ✓ No AC power or batteries required
- ✓ Female BNC coax (Model 464RC)
- ✓ Female 1.6/5.6 connectors (Model 466RC)
- ✓ RJ-45 and 64 pin AMP Champ 120-ohm interface

SPECIFICATIONS

Transmission Line: CCITT G.703 (unstructured)
Data Rate: 2.048 Mbps
75 ohm Connection: Dual coax female BNC (464) 1.6/5.6 series (466) connectors
120 ohm Connection: RJ-45 jack or 64 pin AMP Champ
Power Supply: none required
Link-to-Data Isolation: 500 volts AC/DC
Op. Temp.: 32-122°F (0-50°C)
Dimensions (without handles): 19.0 W x 1.75 H x 1.9 D in. (48.3 W x 4.45 H x 4.8 D cm)

Ultra High Density G.703 (E1) Balun Panel

Model 450RC24

The Patton Model 450RC24 Ultra High-Density 24 Port Balun Provides Flexible 75/120-ohm Telco Interfacing Solutions for E1 Networks

The Patton 450RC24 G.703 balun panel matches 24 sets of dual 75-ohm coax connections to 120-ohm 50-pin telco connections. This feature allows network & datacom equipment manufacturers who are selling equipment for use in COs with only 120-ohm telco interfaces to offer their equipment to G.703 countries using 75-ohm connections. This eliminates the mismatch with coax legacy equipment in many COs.

Supporting E1 data rates to 2.048 Mbps, the Patton 450RC24 panel bi-directionally matches signal impedance and pulse shapes according to the CCITT G.703 standard. The Patton 450RC24 balun panel mounts in a standard 19-inch (48.3-cm) rack, occupies only 1U of rack space, and includes a reversible top cover for front-facing BNCs or 50-pin telco connectors.

FEATURES & BENEFITS

- ✓ Connects 24 75-ohm dual BNC to 120-ohm dual 50-pin telco connectors
- ✓ Bi-directional signal conversion according to CCITT G.703
- ✓ Data rates up to 2.048 Mbps
- ✓ 1U high chassis, mounts in standard 19-in. rack
- ✓ Reversible cover with integrated mounting ears
- ✓ No AC power or batteries required
- ✓ 24 female BNC coax pairs
- ✓ Dual 50-pin telco 120-ohm connectors
- ✓ 6-inch BNC removal tool

Typical application

SPECIFICATIONS

Electrical Characteristics
Averaged between 1 MHz and 3 MHz
Avg. Cross Talk: Better than 54.4 dB (Between adjacent channels (TX and RX)
Avg. Insertion Loss: Less than .30dB

Avg. Return Loss: Better than 31.5dB

Physical Specifications
Transmission Line: CCITT G.703 (unstructured)
Data Rate: 2.048 Mbps
75 ohm Connection: Dual coax female BNC connectors

120 ohm Connection: Dual 50-pin Telco connectors
Power Supply: none required
Link-to-Data Isolation: 500 volts AC/DC
Op. Temp.: 32–122°F (0–50°C)
Relative Humidity: 5–95% RH, non-condensing

Altitude: 0–15,000 feet (3,048 meters)
Dimensions (without handles): 19W x 3.5H x 1.9D in. (48.3W x 8.9H x 4.8D cm)
Weight: 4.46 lbs (2.02 kg)

ORDERING INFORMATION

450RC/24: E1/G.703 Ultra High Density 24-port, Dual 50-pin Telco Balun Chassis (BNC Coax)

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