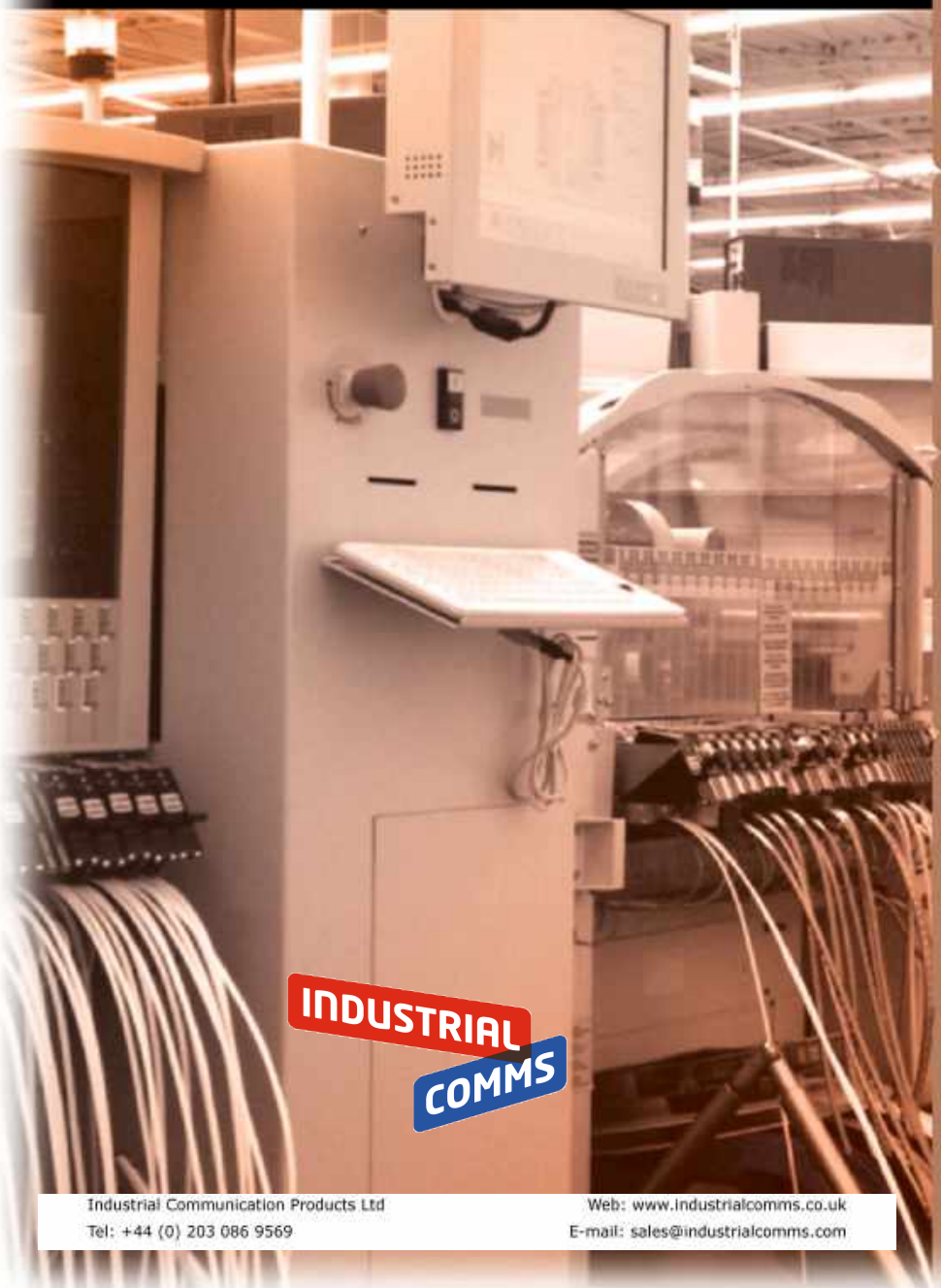
PATTON®

Industrial Solutions

For Extending, Converting & Converging Networks



CopperLink™
Ethernet Extenders
Going the Distance

EtherBITS™
Device Servers
Industrial Device Networking

EnviroNET™
Hardened Networking
Ruggedized Data & Tele Comms

QuikConnect™
Line Drivers
Line Drivers & Short Range Modems

MicroPak™
Interface Converters
Interface and Media Converters

SafeGuard™
Surge Protectors
Dataline Protectors & Isolators

TeleMatch™
Baluns
Audio, Video and Data Baluns

INDUSTRIAL COMMS

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E-mail: sales@industrialcomms.com

Ethernet & Audio/Video Extenders

- Enables Ethernet to operate over existing standard phone-grade twisted-pair
- Extends Ethernet up to 5 miles (8 km)
- Line rates up to full-duplex 50 Mbps

Line Drivers

- Extend RS-232 over twisted pair, coax or fiber
- Multi-Point and point-to-point
- Optical isolation and surge protection available

Device Servers

- Control, collect, and monitor information from any RS-232, RS-422, or RS-485 device
- Provide secure encrypted connection between your serial devices and IP network
- 1, 4, and 8-port options available

Interface Converters

- Converters for RS-232, RS-422/RS-485, TTL, current loop, serial/parallel and Ethernet
- No power required
- Surge protection available on some models

Hardened Networking

- Environmentally sealed and thermally controlled network equipment
- NEMA 4 rated enclosures with -40 to 85°C operating and starting temperatures
- Serial, T1/E1, and Ethernet models available

Adapters & Testers

- Data taps, line monitors, and gender changers
- Prewired or customized RJ-45, RJ-11, DB-25, DB-9, and more adapter kits available

Optical Isolators & Surge Protectors

- Surge protection for RS-232, 422/485, Ethernet, parallel, dial up, and leased line
- Optical isolation for RS-232,422/485

CCTV/CATV Baluns

- Eliminates the use of expensive coax and extends signal over twisted pair
- No power required
- Completely passive

Multiplexers & Sharing Devices

- Allows multiple low speed serial devices to share one communication link
- Configure and control multiple devices with web based management, SNMP or CLI

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Ethernet & A/V Extension

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CopperLink™...Going the Distance!

Model	Max. Distance	Max. Speed	Distance at Max. Speed	Rack Card	Photo	Pg
2172	1 mile (1.6 km)	50 Mbps	800 feet (244 m)	No		6
2168	1.1 miles (1.8 km)	16.6 Mbps	3,125 feet (953 m)			7
2158	0.75 miles (1.2 km)	12 Mbps	4,000 feet (1,219 m)			8
2157	5.7 miles (1.8 km)	4.6 Mbps	2 miles (3.2 km)	No		9
2156	5.7 miles (1.8 km)	2.3 Mbps	3.1 miles (5 km)	No		9
2155	5 miles (1.8 km)	144 kbps	5 miles (8 km)	No		10

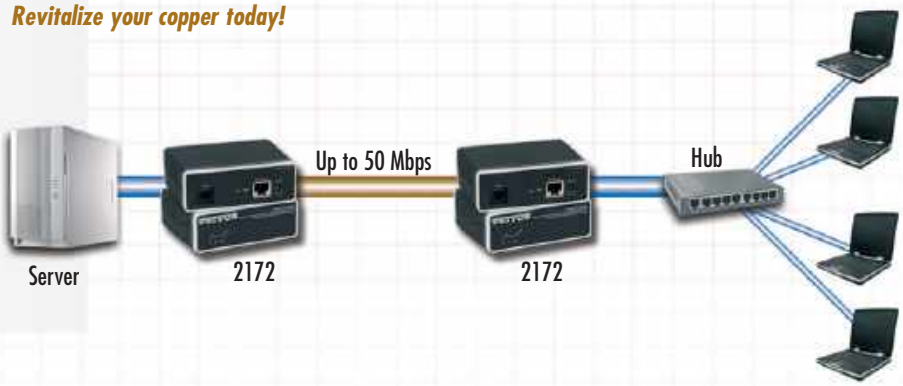
Other Ethernet Extension Applications

- ✔ Campus LAN Connectivity
- ✔ Secure IP Networks (Dark Fiber)
- ✔ Metropolitan IP Networks
- ✔ Mission-Critical IP Links
- ✔ City LANs
- ✔ Multi-Dwelling, Multi-Tenant IP Services

Our Full Range of CopperLink Ethernet Extenders

Extend your Ethernet connectivity over existing copper infrastructures with Patton's CopperLink Ethernet Extenders. Whether your requirement is sending Ethernet data over long distances or at high speeds, there is a Patton CopperLink Ethernet Extender for you. Use the table above to select the best model for you.

Revitalize your copper today!



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HARDENED ENCLOSURES
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50 Mbps Multi-Rate CopperLink™ Ethernet Extender

Model 2172

The CopperLink 2172 breaks both distance and speed barriers with up to 50-Mbps full-duplex and distances of up to 5,500 feet (1,700 meters). Now a single twisted-pair can go the distance without sacrificing speed or cost.

The CopperLink™ Model 2172 Ultra-High-Speed Ethernet Extender leverages existing copper infrastructure to deliver high-speed Ethernet extension. Providing data rates up to 50 Mbps in each direction for an aggregated full-duplex speed of 100 Mbps, the Model 2172 is the perfect solution for delivering triple-play communications services and other bandwidth-intensive applications. CopperLink™ Ethernet Extenders easily inter-connect remote devices or remote networks to a central LAN for such applications as medical imaging, video-conferencing, Ethernet bridging, Triple Play, and VoIP.

Six 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. Multi-rate asymmetrical line rates make the Model 2172 the ideal solution for service providers who want to differentiate their services or extend the reach of their customer base.

Get near-fiber performance without the expense with Patton's Ultra High-Speed CopperLink™ Ethernet Extender!

SPECIFICATIONS

CopperLink line interface: RJ-45 (pin 4 = ring; pin 5 = tip)
Ethernet interface: 8-position shielded RJ-45. Auto-sensing 10/100Base-T with half or full-duplex operation. DIP switch capable of disabling 100-Mbps full-duplex for equipment that does not support 802.3X (Pause Packets)
Protocol: Transparent to high layer protocol. Supports 802.1Q VLAN tagging
Modulation: Quadrature Amplitude Modulation (QAM) 4-band
Duplexing Method: FDD (Frequency Division Duplexing)
Frequency Range: CopperLink: 0–12 MHz
Transmission: CopperLink line rate: Up to 50 Mbps
Surge suppression: CopperLink line maximum current surge: 20kA (8/20µs) gas tube
Front Panel Indicators: Power, Link, Ethernet
Power Supply: External AC and DC options: 120VAC, and universal input (UI)—100–240 VAC, or optional -48 VDC, -24 VDC, or -12 VDC
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC
Environment:
Temp.: 32–122°F (0–50°C)
Humidity: Up to 90% non-condensing
Dimensions: 1.5H x 4.13W x 3.75D in. (3.81H x 10.5W x 9.53D cm)
Weight: 0.4 lbs (0.18 kg) without power supply

FEATURES & BENEFITS

- ✔ Operates Over Twisted Pair—Reduces the cost and hassles of new installations. Utilizes installed voice-grade twisted pairs to eliminate the expense of fiber or Cat5e cabling.
- ✔ 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.
- ✔ Multiple Line Rates Supported—Switch-selectable lines rates ensure the best possible line rate for each application

ORDERING INFORMATION

2172/EUI: 50-Mbps Ethernet Extender, 100–240 VAC*
2172/EUI-2PK**: 50-Mbps Ethernet Extender K, 100–240 VAC*

Enviromentally Hardened Multi-Rate 50 Mbps CopperLink Ethernet Extender; 100–240 VAC
ET2172/R/UI: Extended Temp -40 to 85°C Remote Extender
EC2172/R/UI: Enviromentally Controlled 0 to 85°C Remote Extender
EHA2172/R/UI: Enviromentally Hardened 0 to 50°C Remote Extender

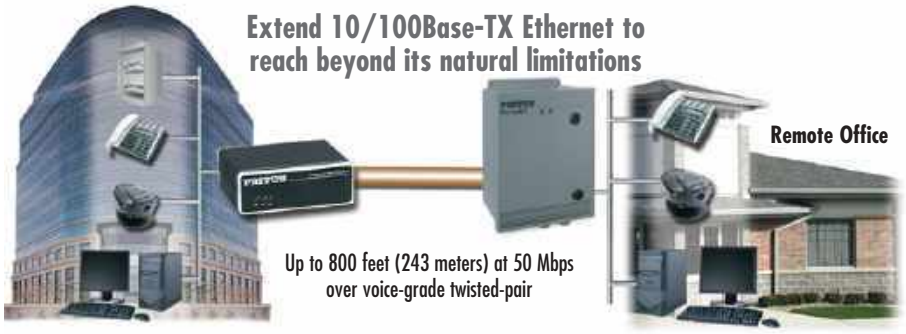
* -12, -24, and -48 VDC power options available.
**You must specify a country specific power cord

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)

Workgroup Ethernet extension application

Model 2172 Extenders provide Ethernet to remote buildings beyond the 328-foot (100-meter) distance limit of Ethernet. 100 Mbps throughput eliminates bandwidth concerns experienced with other copper wired transmission technologies. By using existing voice grade copper pairs the expense and hassle of installing low capacitance or fiber cable is no longer required.



16.67 Mbps Multi-Rate CopperLink™ Ethernet Extender

Model 2168

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

The Patton Model 2168 Multi-Rate CopperLink Ethernet Extender enables the utilization of existing copper infrastructure for high speed Ethernet extensions at data rates up to 16.67 Mbps. The Model 2168 Ethernet Extender includes seven asymmetrical and symmetrical settings which provide the flexibility to increase the distance or speed of the Ethernet connections.

CopperLink applications include Ethernet extension, medical imaging, video-conferencing, Ethernet Bridging, and inter-connecting remote devices or remote networks to a central LAN. The multi-rate symmetrical line rates ensure the highest possible data rate is achieved over various lengths and types of copper wire and environments. Multi-rate asymmetrical line rates make the Model 2168 the ideal solution for service providers who want to differentiate their services or extend the reach of their customer base. The Model 2168 allows service providers to offer unparalleled performance for such applications as always on Internet access, real time bi-directional video streaming, and various multimedia applications.

If you want to take your network and voice connections farther and faster over existing copper and eliminate the expense of fiber, Patton's CopperLink Ethernet Extenders are the products for you!

Just plug it in, power it on, and play!

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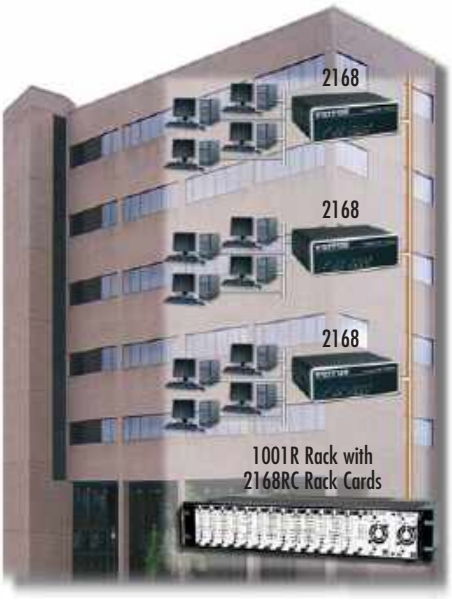
Workgroup Ethernet extension application



Ethernet Extender allows copper instead of fiber for vertical Ethernet spans!

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 workgroups located on different floors in a building no longer requires expensive switches or the installation of low capacitance cable.

SPECIFICATIONS

Line Interface: RJ-45 or terminal block
Ethernet Interface: Shielded RJ-45
POTS-ISDN Interface: RJ-45 (pin 4=ring, pin5=tip)
Transmission: Switch selectable async. and sync. line rates up to 16.67 Mbps
Surge suppression: CopperLink 20kA (8/20μs) gas tube
Power Supply: External AC: UI (100–240); DC: -48,-24, and -12; DC power supplies are optional
Dimensions: 1.5H x 4.13W x 3.75D in. 3.81H x 10.5W x 9.53D cm)
Weight: 0.4 lbs (0.18 kg) without power supply

FEATURES & BENEFITS

- ✔ Low cost/plug and play solution for campus wide network extension and delivery of last-mile ISP services over Ethernet
- ✔ Switch selectable asymmetrical or symmetrical line rates up to 16.67 Mbps!
- ✔ Auto-sensing 10Base-T/100Base-TX port
- ✔ Supports full or half-duplex Ethernet
- ✔ Transparent LAN bridging (Passes 802.1Q (VLAN) packets)
- ✔ Automatic learning, aging, & filtering source address table
- ✔ Stand alone and rack mount versions

Symmetric or asymmetric variable-rate VDSL

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

Asymmetric		
Line Rates		Distance
Upstream	Downstream	26 AWG (0.4 mm)
1.56 Mbps	4.17 Mbps	6,000 feet (1,829 m)
1.56 Mbps	9.38 Mbps	5,500 feet (1,676 m)
2.34 Mbps	16.67 Mbps	5,000 feet (1,524 m)

Symmetric		
Line Rates		Distance
Upstream	Downstream	26 AWG (0.4 mm)
6.25 Mbps	6.25 Mbps	4,500 feet (1,372 m)
9.38 Mbps	9.38 Mbps	4,150 feet (1,265 m)
12.50 Mbps	12.50 Mbps	4,000 feet (1,220 m)
16.67 Mbps	16.67 Mbps	3,300 feet (1,006 m)

ORDERING INFORMATION

16.67 Mbps Ethernet Extender; 100–240 VAC
2168/L/EUI: Local Extender; RJ45 Line
2168/R/EUI: Remote Extender; RJ45 Line
2168/L/TB45/EUI: Local Extender; RJ45 Line + Terminal Block
2168/R/TB45/EUI: Remote Extender; RJ45 Line + Terminal Block

16.67 Mbps Ethernet Extender Kit; 100–240 VAC
2168/EUI-2PK: Local & Remote Extenders; RJ45 Line
2168/TB45/EUI-2PK: Local & Remote; RJ45 Line + Terminal Block

Environmentally Hardened 16.67 Mbps CopperLink Ethernet Extender; 100–240 VAC
ET2168/R/UI: Extended Temp -40 to 85°C Remote Extender
EC2168/R/UI: Environmentally Controlled 0 to 85°C Remote Extender
EHA2168/R/UI: Environmentally Hardened 0 to 50°C Remote Extender

16.67 Mbps Ethernet Extender Rack Card
2168RC/L: Local Extender; RJ45/TB line
2168RC/R: Remote Extender; RJ45/TB line

RACKABLE

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12.5 Mbps CopperLink™ Ethernet Extender

Model 2158

Efficient and cost-effective Ethernet extension over voice-grade wire.

The Patton CopperLink™ Ethernet Extender offers the fastest, most efficient and reliable solution for connecting 10/100Base-TX Ethernet LANs. With a line rate of 12.5 Mbps, the Patton Model 2158 offers premium performance over your existing voice-grade telephone wire, eliminating the cost of installing new LAN-grade cable or expensive fiber.

CopperLink™ Ethernet Extenders are compact, easy to install, and transparent to higher layer protocols. The CopperLink Ethernet Extenders will auto-sense and configure for 10Base-T or 100Base-TX as well as full or half-duplex Ethernet operation. No configuration is required!

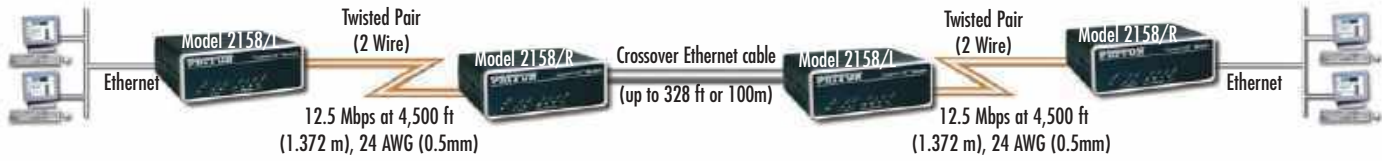
Whether you are looking to make your network connections go farther and faster, increase the efficiency of your existing wiring infrastructure, or just simply extending your LAN, Patton's CopperLink™ Ethernet Extender is one of the most simple and cost-effective solutions around!

FEATURES & BENEFITS

- ✔ Overcomes the 328-ft (100-m) limitations of Ethernet
- ✔ 12.5 Mbps line rate
- ✔ Auto-sensing 10/100Base-TX port
- ✔ Transparent LAN Bridging
- ✔ Supports 802.1 Q VLAN tagging
- ✔ Auto-sensing full or half duplex

Approximate Distances at 12.5 Mbps	
Wire Gauge	**Distance**
26 AWG (0.4 mm)	3856 feet (1.18 km)
24 AWG (0.5 mm)	4656 feet (1.42 km)
22 AWG (0.6 mm)	5256 feet (1.60 km)
20 AWG (0.8 mm)	5556 feet (1.69 km)
18 AWG (1.00 mm)	5756 feet (1.75 km)
16 AWG (1.29 mm)	5856 feet (1.78 km)

Back-to-Back Extension Application



SPECIFICATIONS

CopperLink Interface: RJ-45 (pin 4=TIP; pin 5=RING) and two-position terminal block (supports 19–26 AWG)
Ethernet Interface: Shielded RJ-45. Auto-sensing 10/100Base-TX with half or full-duplex operation
Protocol: Transparent to high layer protocols. Supports 802.1Q VLAN tagging
Transmission: CopperLink line rate: 12.5 Mbps; Data rate: 10 Mbps
Surge Suppression: CopperLink maximum current surge: 20kA ($8/20_{\mu s}$) gas tube
External Power Supply Options:
- Universal Power Supply (100–240 VAC)
- DC: -48 VDC, -24 VDC, and -12 VDC (optional upon request)

Compliance: FCC Part 15 Class A; EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC; CE Mark
Op. Temp.: 32–122°F (0–50°C)
Dimensions:
- Standalone: 1.5H x 4.13W x 3.75D in. (3.81H x 10.5W x 9.53D cm)
- Rack card: 3.0H x 0.83W x 7.84D in. (7.6H x 2.1W x 19.9D cm)

Weight:
- Standalone: 0.4 lbs (0.18 kg) without power supply
- Rack card: 0.3 lbs (0.14 kg) with rear card

ORDERING INFORMATION

12.5 Mbps CopperLink Ethernet Extender
2158/L/EUI: Local Extender; RJ45 Line; 100–240 VAC
2158/R/EUI: Remote Extender; RJ45 Line; 100–240 VAC

12.5 Mbps CopperLink Ethernet Extender Kit
2158/EUI-2PK: Local & Remote Extenders; RJ45 Line; 100–240 VAC

Environmentally Hardened 12.5 Mbps CopperLink Ethernet Extender
EHA2158/UI: Enviromnetally Hardened (external connector), 0 to 50°C Remote Extender; 100–240 VAC

Rack Card 12.5 Mbps CopperLink Ethernet Extender
2158RC/L: Local Extender; RJ45/TB line
2158RC/R: Remote Extender; RJ45/TB line

I'm John, one of Patton's Ethernet Extenders Product Group Managers. If you do not find what you need at ***www.patton.com*** *or in this catalog please call me at* ***+1 301.975.1000, x160****. You can also send e-mail to* ***jgrant@patton.com****.*

Ask the Experts

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2.3 & 4.6 Mbps CopperLink™ Ethernet Extenders with Auto-Rate Adaptation

Models 2156 & 2157

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

LAN extension doesn't *have* to be expensive or difficult. The Auto-Rate Adaptive LAN Extenders are easy to use and take advantage of the existing copper twisted-pair infrastructure to connect LANs at rates up to 4.6 Mbps.

Whether it's connecting corporate LANs or remote offices, the CopperLink is the simple solution for ensuring the best combination of speed and distance in the industry. Many LAN extenders are set for a single rate, or require difficult configurations in order to connect LANs at different distances. With it's auto-rate adaptation feature, the Models 2157 and 2156 ensure that users get the highest speed possible for the distances they are trying to reach. To make it even simpler to use, the Models 2157 and 2156 come with a built in MDI-X switch to allow easy connection to

LANs or PCs with no need for worrying about whether you have a cross-over cable or not. Setup consists of connecting the Ethernet port, connecting the copper twisted pair, and powering up the units!

FEATURES & BENEFITS

- ✔ Auto-rate adaptation gives the highest rate possible for for the extension distance of your network
- ✔ Model 2156: 2.3 Mbps over just a single twisted pair of copper
- ✔ Model 2157: 4.6 Mbps over just a single twisted pair of copper
- ✔ Extension distances up to 32,000 feet (10 km)
- ✔ Auto-sensing 10/100 Ethernet port
- ✔ Integrated MDI-X switch to allow easy connection to any computer or LAN
- ✔ Auto-sensing full or half-duplex operation
- ✔ Support for 802.1 Q VLAN tagged packet transmission

SPECIFICATIONS

Protocol: Transparent to higher layer protocols. Supports 802.1 Q VLAN tagged packet transmission
Transmission Line: Single twisted pair
Line Rates: 2156: Auto-Rate adaptive from 64 kbps to 2.3 Mbps • 2157: Auto-Rate adaptive from 64 kbps to 4.6 Mbps
DTE Rates: 2156: All 64k steps from 64 to 2304 kbps • 2157: All 64k steps from 64 to 4608 kbps
Line Coding: TC-PAM
LED Status Indicators: WAN: Link, TD, RD, Ethernet: Link, 10/100, TD, RD, Power
Connectors: RJ-11 on copper line side, RJ-45 for Ethernet connection, shrouded male IEC320 power connector;
Power: External 90–260 VAC, 50–60 Hz (Universal Input), 10 W. external 40–60 VDC, 10W (DC option)
Line Interface: Transformer coupled, 1500 VAC isolation.
Compliance: FCC Part 15, CE Mark per EMC directive 89/336/EEC and Low Voltage Directive 73/23/EEC, UL1950 UL and cUL listed (Rev A: Listing in process)
Op. Temp.: 32–122°F (0–50°C)
Humidity: 5–95%, non-condensing
Altitude: 0–15,000 ft (0–4,600 m)
Dimensions: 7.3 x 6.6 x 1.62 in. (185 x 168 x 41 mm)
Weight: 2.0 lbs (1.0 kg)

ORDERING INFORMATION

2156/L/EUI: CopperLink Ethernet Extender, (Local unit), 90–260 VAC UI

2156/R/EUI: CopperLink Ethernet Extender, (Remote unit), 90–260 VAC UI

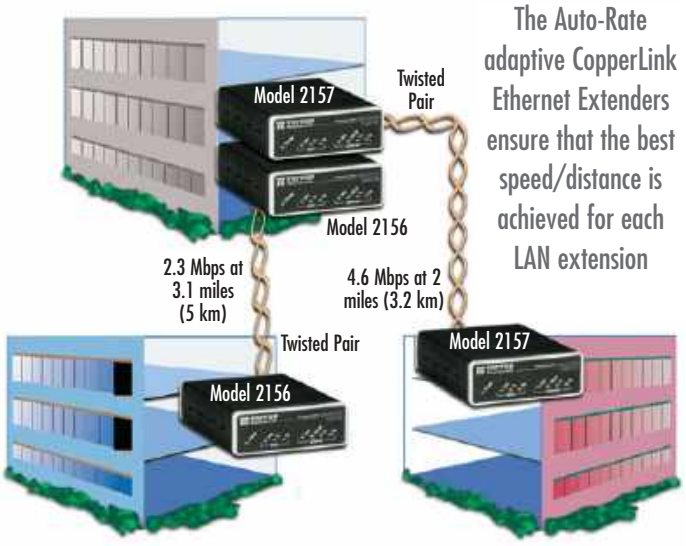
2156/EUI-2PK: CopperLink Ethernet Extender, (Local and Remote units), 90–260 VAC UI

2157/L/EUI: Auto-Rate CopperLink Ethernet Extender, Local unit), 90–260 VAC UI

2157/R/EUI: Auto-Rate CopperLink Ethernet Extender, (Remote unit), 90–260 VAC UI

2157/EUI-2PK: Auto-Rate CopperLink Ethernet Extender, (Local and Remote units), 90–260 VAC UI

Corporate Campus application



The Auto-Rate adaptive CopperLink Ethernet Extenders ensure that the best speed/distance is achieved for each LAN extension

Models 2156 & 2157 Extension Distances

Model 2157 Line Rates / Model 2156 Line Rates		DSL line rate	No Noise									
			26g (0.4 mm)		24g (0.5 mm)		22g (0.6 mm)		20g (0.8 mm)		19g (0.9 mm)	
N	kbps		miles	km	miles	km	miles	km	miles	km	miles	km
3	200		4.4	7.2	5.7	9.4	8.0	13.1	10.3	16.8	12.1	19.7
6	392		4.0	6.6	5.4	8.8	7.5	12.3	8.7	15.8	10.8	17.5
8	520		3.8	6.2	5.1	8.3	7.1	11.6	9.2	14.9	9.7	15.8
12	776		3.5	5.6	4.6	7.5	6.0	9.8	7.8	12.7	8.8	14.3
18	1160		3.0	4.9	4.0	6.4	5.2	8.4	6.7	11.0	7.5	12.3
24	1544		2.8	4.6	3.7	6.1	4.9	7.9	6.4	10.3	6.7	11.0
32	2056		2.5	4.0	3.3	5.3	4.2	6.9	5.6	9.0	5.9	9.6
36	2312		2.3	3.8	3.1	5.0	4.0	6.6	5.3	8.6	5.6	9.1
42	2696		2.3	3.7	3.0	5.0	4.0	6.4	5.2	8.4	5.5	8.9
48	3080		2.2	3.6	3.0	4.8	3.9	6.3	5.0	8.2	5.4	8.7
54	3464		2.1	3.4	2.7	4.5	3.6	5.8	4.7	7.6	4.9	8.8
60	3848		1.9	3.1	2.5	4.1	3.3	5.3	4.3	7.0	4.5	7.4
66	4232		1.7	2.8	2.3	3.7	2.9	4.8	3.9	6.3	4.1	6.6
72	4616		1.5	2.5	2.0	3.3	2.6	4.2	3.4	5.5	3.6	5.9

144 kbps, LAN Extender

Model 2155

The perfect LAN extender for those long haul applications.

There are many applications for long distance LAN extension that do not require ultra-high rates. The Model 2155 is perfect for just those applications. You can connect these modems up to 5 miles (8 km) apart on a single copper twisted-pair without changing the data rate. Just plug them in and power them up, and they take care of the rest. Lots of LAN extenders require you to set up the rate and vary the data rate based on the distance. Not these modems—connect them up and you get the maximum rate at any distance up to their maximum reach of 5 miles (8 km).

The 2155 LAN extenders are completely transparent to higher level protocols, like VLAN tagging, enabling these extenders to fit into almost any location where cost-effective LAN extension is needed. If there is ever a problem, the easy-to-read LEDs and built-in diagnostics make it a snap to verify operation. When you need the same connection to all your remote LANs, use the Patton 2155.

FEATURES & BENEFITS

- ✔ Extend your network up to 5 miles (8 km)
- ✔ 144 kbps using twisted pair of copper
- ✔ Plug-and-play—No configuration necessary!
- ✔ 10Base-T full or half-duplex Ethernet port
- ✔ Support for 802.1 Q VLAN tagged packet transmission
- ✔ LEDs provide quick status at a glance
- ✔ Test mode switch makes troubleshooting easy
- ✔ Convenient standalone desktop model

SPECIFICATIONS

Data Rate: 144 kbps
Diagnostics: V52 compliant (511/511E) pattern generator and detector with error injection mode and Remote Loopback control by a single front panel switch.
LED Status: Copper Link, 10BT Link, Ethernet Status, No Signal, Error, Test Mode
Power: External desk top transformer, 90–260 VAC, 50–60 Hz (Universal Input), 10 W or -48 VDC; shrouded male IEC-320 power connector
Transmission Line: Single Twisted Pair of Copper
Line Coding: 2B1Q
Line Interface: Transformer coupled, 1500 VAC isolation
Physical Connection: RJ-45, 2 wire, polarity insensitive pins 4 and 5
LAN Connection: RJ-45, 10Base-T 802.3 Ethernet
Protocol: Transparent to higher layer protocols. Supports 802.1 Q VLAN tagged packet transmission
Address Aging: Entries are deleted after 8 minutes of inactivity
LAN Address Table: 4096 MAC Addresses
Frame Latency: 1 Frame
Frame Buffer: 512 Frames
Physical Connection: RJ-45, pin 1 Tx Data +, pin 2 Tx Data -, pin 3 Rx Data +, pin 6 Rx Data +pins 4,5,7,8 no connection
Compliance: FCC Part 15, CE Mark per EMC directive 89/336/EEC and Low Voltage Directive 73/23/EEC, CTR 1, UL1950 UL and cUL listed (Rev A: Listing in process)
Op. Temp.: 32–122°F (0–50°C)
Dimensions: 4.1 x 5.5 x 1.6 in. (105 x 140 x 41 mm)
Weight: 1.6 lbs (0.7 kg)

Typical applications

LAN Extension Using Existing Copper Twisted Pair

2-Wire Distance Table in miles (km)				
Data Rate	AWG Wire Gauge (mm)			
	19 (0.9)	22 (0.6)	24 (0.5)	26 (0.4)
All rates	10.8 (17.2)	7.2 (11.5)	7.2 (11.5)	5.0 (8.0)

ORDERING INFORMATION

2155/L/UI: CopperLink 144 kbps Ethernet Extender, (local unit), 90–260 VAC UI

2155/R/UI: CopperLink 144 kbps Ethernet Extender, (Remote unit), 90–260 VAC UI

2155/UI-2PK: CopperLink 144 kbps Ethernet Extender, Local and Remote units), 90–260 VAC UI

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 Patton Model 1173 IP Network Camera Extender enables streaming video rates of up to 50 Mbps over ordinary phone grade twisted pair. Unlike wireless, wireline extension provides a secure and reliable connection without needing a clear line of sight. Dependable performance and streaming rates up to 50 Mbps, the Model 1173 is the perfect solution for transporting high resolution security video footage.

While the device is plug-and-play, the Model 1173 features three user-selectable settings for line rates providing flexibility in achieving the optimal video resolution-distance combination. The Model 1173 is completely transparent to protocols, codecs, and applications ensuring compatibility with any IP camera and its management software.

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)

SPECIFICATIONS

CopperLink line interface: RJ-45 (pin 4 = ring; pin 5 = tip)
Ethernet interface: 8-position shielded RJ-45. Auto-sensing 10/100Base-T with half or full-duplex operation. DIP switch capable of disabling 100-Mbps full-duplex for equipment that does not support 802.3X (Pause Packets)
Protocol: Transparent to high layer protocol. Supports 802.1Q VLAN tagging

Modulation: Quadrature Amplitude Modulation (QAM) 4-band
Duplexing Method: FDD (Frequency Division Duplexing)
Frequency Range: CopperLink: 0–12 MHz
Transmission: CopperLink line rate: Up to 50 Mbps
Surge suppression: CopperLink line maximum current surge: 20 kA (8/20 µs) gas tube

Front Panel Indicators: Power, Link, Ethernet
Power Supply: External AC and DC options: 120 VAC, and universal input (UI)—100–240 VAC, or optional -48 VDC, -24 VDC, or -12 VDC
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC
Environment:
Temp: -10 to 70°C

Humidity
Standard: Up to 90% non-condensing
Conformal Coated: 85% condensing humidity from -10 to 35°C
Dimensions:
1.5H x 4.13W x 3.75D in.
(3.81H x 10.5W x 9.53D cm)
Weight: 0.4 lbs (0.18 kg) without power supply

ORDERING INFORMATION

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

Model 1173R/C/EUI-2PK: IP Network Camera Extender Kit; -10 to 70°C , conformal coated (humidity 85% condensing from -10 to +35°C); UI

USB 1.1 Extender Kit

Model 110

Extends the distance of a USB device to a host computer up to 196 feet (60 m) over Cat5e cable

Patton's Model 110 overcomes USB length limitations of 16 feet so that you have the flexibility to locate your USB printer, camera, web cam or any other USB device where you want them. The Model 110 extends the distance of a USB device to a host computer up to 196ft (60m) over Cat5e. The 110 is plug-and-play with absolutely no special software or drivers to install.

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

SPECIFICATIONS

USB: Fully compliant to USB 1.1
Rates: Full speed (12 Mbps)/Low speed (1.5 Mbps)
Connector:
- Local Unit: USB Type A Male; RJ-45
- Remote Unit: USB Type A Female; RJ-45

Active Pins: Power 1 & 4; Data 2 & 3
Distances:
- **Cat 5:** non-powered 98 ft (30m)
- **Cat 5:** powered 165ft (50m)
- **Cat 5e/6:** non-powered 196 feet (60 m)
- **Cat 5e/6:** powered 263 feet (80 m)

Operating temp.: 32 to 104°F (0 to 40°C)
Storage temp.: -40 to 185°F (-40 to 85°C)

ORDERING INFORMATION

110-KIT: USB Extender Kit

0805XXX: USB Power Supply

RACKABLE

See page 30

CopperLink™-T T1/E1 Extender

Models 2113 & 2115

This transparent, plug-and-play T1/E1 Extender solves the distance and wire limitations of TDM technology by tripling the reach and halving the number of required wire pairs.

Model 2113

Model 2113 & 2115 T1/E1 Extenders are the perfect choice for enterprises, integrators, and service providers needing to extend T1 and E1 circuits beyond their typical reach while conserving the number of wire pairs used.

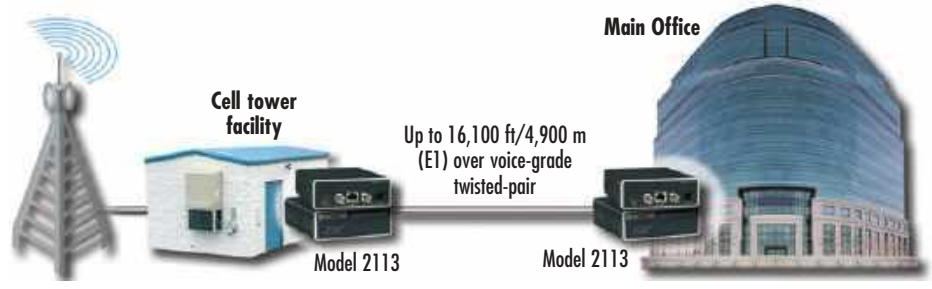
With the CopperLink™-T extenders, zero configuration is required. They operate in clear-channel mode, thereby facilitating the transparent extension of data and voice bearing circuits—including the F-bit on T1 circuits. The two active pins on the RJ connector are polarity insensitive, so you don't even need to worry about which wire you connect on the line interface. Simply take them out of the box, put them on either side of the dry copper pair, connect your T1 or E1 device and the circuit will light up immediately!

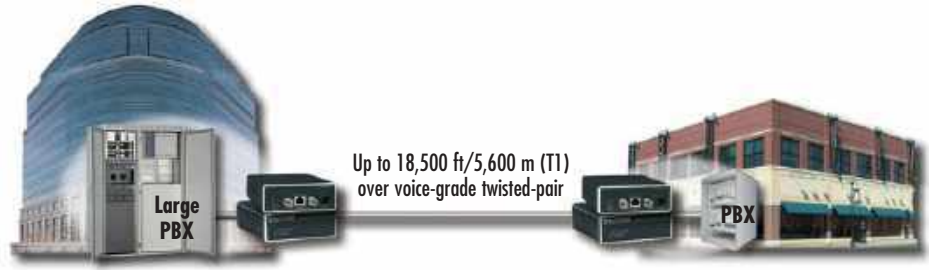
The Model 2113 extends E1 circuits to 16,100 feet (4,900 meters, nearly 5 km) while the Model 2115 extends T1 circuits to more than 3.5 miles (18,500 feet or 5,600 meters). Both models require only two wires (one pair) to extend the TDM circuits, thereby conserving and minimizing the copper plant resources used.

For these reasons, the CopperLink™-T extenders are the ideal solution for most popular applications such as T1/E1 backhaul from a remote site, T1/E1 relocation, T1/E1 extension across a campus or between buildings, and last-mile TDM delivery.

Model 2115

Typical applications





FEATURES & BENEFITS

- ✔ Triple the Distance—Extend T1s to over 3 miles and E1s to almost 5 km over one pair of wires.
- ✔ Half the Wires—The T1/E1 extenders only require one pair of wires to operate.
- ✔ 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).
- ✔ Front Panel Status Indicators—Front panel LEDs provide users with quick feedback on unit operation.

SPECIFICATIONS

Circuit Connector: Model 2113 E1 Extender: Dual 75-Ohm female BNC and single 120-Ohm female RJ-48C • **Model 2115 T1 Extender:** Single female RJ-48C
Supported Line Tests: V.52 511/511E Pattern Generator with RDL; LAL
Clocking: CO unit preset for Network Clock, CPE unit preset for Receive Recover
Line Coding: 16-constellation TC-PAM
Line Interface: Female RJ-11 using pins 2 & 3; Two wires (single twisted-pair)
Front Panel Indicators:
Power—Solid green indicates unit is powered up. Slow blinking indicates unit is in POST. Fast blinking indicates unit failed POST. Dark indicates unit does not have power.
Link—Solid green indicates end-to-end link. Flashing indicates unit is training. Dark indicates link is down.
Frame—Solid green indicates valid framing. Flashing indicates signal being received, but no link established.
Power Supply: External power supply options: Universal 90–260 VAC operating from 50–60 Hz; 120 VAC/60 Hz; 240 VAC/60Hz; -48 VDC
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC
Operating Temp.: 32–122°F (0–50°C)
Humidity: 5–90% non-condensing
Dimensions: 4.7 x 1.52 x 5.0 in. (10.6 x 3.9 x 12.7 cm)

*I'm Antoine, Patton's MEA Regional Manager. If you have any questions about products or applications using Ethernet Extenders, please call me at **+1 301.975.1000, x251**, or send e-mail to **antoine@patton.com**.*

NEED Help?

ORDERING INFORMATION

2113/EUI-2PK: CopperLink-T, E1 Extender, 2 pack
2113/L/EUI: CopperLink-T E1 Extender, Local unit
2113/R/EUI: CopperLink-T E1 Extender, Remote Unit
2115/EUI-2PK: CopperLink-T T1 Extender, 2 pack
2115/L/EUI: CopperLink-T T1 Extender, Local unit
2115/R/EUI: CopperLink-T T1 Extender, Remote unit

Analog Leased-Line Extender

Models 2292 & 2294

Save leased-line costs extending up to four audio lines between two locations over any IP network. Patton's leased-line extenders provide PSTN grade voice quality and integrated QoS mechanisms enable it to work reliably even over the public Internet.

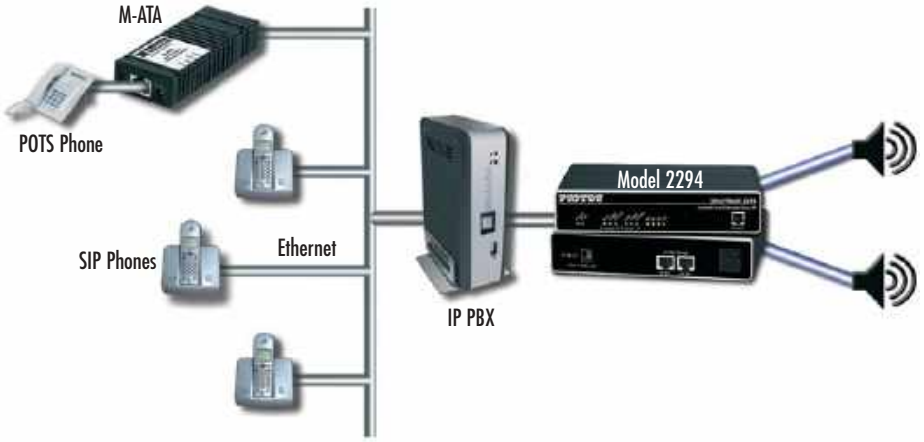
The Leased-Line Extender product family gives you the ability to save big on Leased-Line costs. Using only one Extender on each side, audio information on up to four Leased-Lines can be transported over a packet-based network. This means: Internet access in two different locations around the world is sufficient to establish up to four Leased-Lines between these two locations!

The Extenders ship as a matched pair—and after installation, the connection between the two establishes immediately. It also re-establishes after any kind of problem, should it be needed. The connection is secured with hardware-accelerated 3DES or AES encryption end-to-end between the Extenders, preventing wiretapping and making Patton the right choice for security conscious enterprises.

For advanced users, the Extenders can be bought separately, and multiple Extenders can be arranged in a multi-location formation. This allows e.g. always-on direct intercom between different locations or posts. The integrated SIP and H.323 voice-over-IP (VoIP) protocols enable any VoIP phone system to talk to the Extenders—finally offering real audio interfaces. An intelligent agent inside the Patton 2292 and 2294 can assure the VoIP calls are always up.

The 2292 and 2294 extend leased lines over any IP network

The 2292 and 2294 provide audio interfaces to any VoIP system



FEATURES & BENEFITS

- ✔ Security—Connections are always-on and securely encrypted with IPsec and IKE. Choose DES/3DES or AES.
- ✔ Quality—Advanced traffic management and shaping, combined with Patton's patent-pending DownStream QoS™ enforce uninterrupted toll-quality voice over best-effort networks.
- ✔ Integrated access router with NAT, Firewall, ACL, PPPoE, DHCP, DynDNS and VLAN
- ✔ Connects analog 2-wire 600-ohm voice-grade interfaces via a G.711 RTP stream.
- ✔ Narrow-band FXS style 2-wire hybrid T/R.
- ✔ Talks SIP and H.323—adds real audio interfaces to SIP and H.323 signaling systems.

SPECIFICATIONS

Capacity: 2 audio lines (2292) 4 audio lines (2294)
Audio connectivity: 2-wire RJ-11, Bandwidth 4kHz, Impedance 600-ohm, Narrow Band FXS style hybrid transmit/receive
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
Quality of Service: Audio 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)
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
Voice Processing: CODEC G.711 a-law/mu-law, G.723, G.729ab, • G.726, G.727. T.38 fax relay (9.6 k, 14.4k) • G.711 transparent fax and bypass
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 configuration • Built-in diagnostic tools (trace, debug, call generator)
System: CPU Motorola MPC875 @66MHz • Memory 32MB SDRAM/8MB Flash • Power 100–240 VAC (50/60Hz) • Power dissipation 4-8W, 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 • RoHS

ORDERING INFORMATION

2292/EUI-2PK: Dual port 2-wire Leased-Line audio over IP Extender, dual 10/100 Ethernet, UI power. Package contains two matched units.

2294/EUI-2PK: Quad port 2-wire Leased-Line audio over IP Extender, dual 10/100 Ethernet, UI power. Package contains two matched units

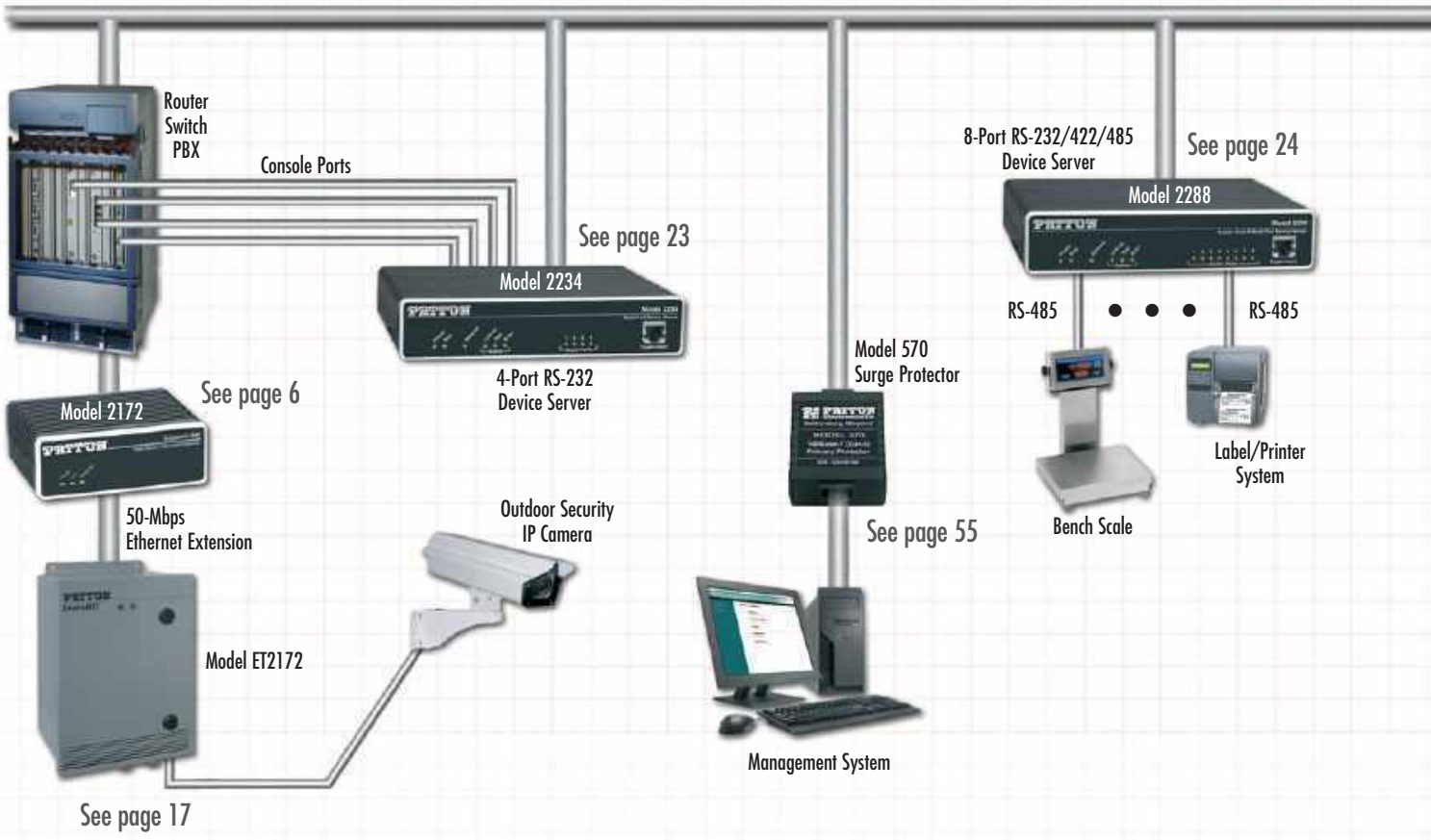
2292/EUI: Dual port 2-wire Leased-Line audio over IP Extender, dual 10/100 Ethernet, UI power. Single unit for integration in existing SIP or H.323 networks

2294/EUI: Quad port 2-wire Leased-Line audio over IP Extender, dual 10/100 Ethernet, UI power. Single unit for integration in existing SIP or H.323 networks.

Industrial Ethernet with Patton

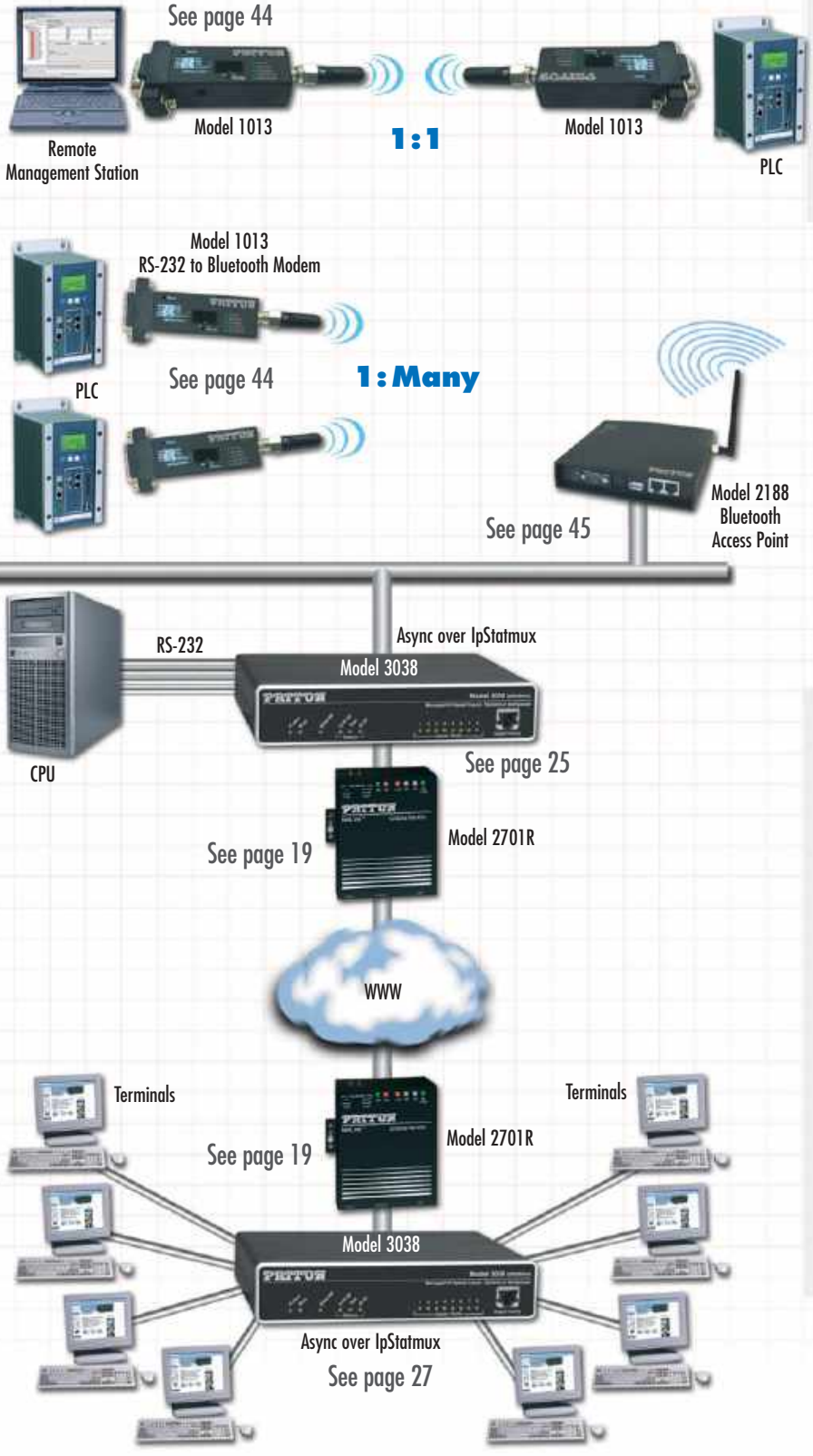
Ethernet is no longer a stranger to the Industrial Community. Ethernet's low cost, reliability, flexibility, and ease to migrate to more bandwidth intensive applications makes it a clear choice over traditional serial communications. Patton offers a wide variety of products to meet these industrial Ethernet requirements. Patton's product line includes device servers, Ethernet LAN drivers, wireless networking, Ethernet/PoE Ethernet surge protectors, and a full range of NEMA 4 and extended temperature products.

- ✔ EtherBITS™ Device Servers — Control, monitor, and collect RS-232/422/485 over an Ethernet LAN
- ✔ CopperLink™ Ethernet LAN Drivers — Extends Ethernet over standard grade twisted pair over its 328 feet (100 meters) limitation at lines rates as high as 50 Mbps.
- ✔ Wireless Networking — Extend RS-232 serial devices over Bluetooth, or control, monitor, and collect RS-232 data over 802.11b WiFi.
- ✔ LAN Protectors — Protects valuable Ethernet and PoE Ethernet device from surges
- ✔ EnviroNET™ — Ethernet extenders, device servers, multiplexers, T1/E1 extenders, VoIP gateways and routers all meeting NEMA 4 (IP65) and -40 to 185°F (-40 to 85°C) specifications.



Link-Up for Less

Bluetooth



In This Section

EnviroNET™ Solutions

EnviroNET™ EH Series
Environmentally Hardened

Built to NEMA 4 specs, the durable EH Series protects against rain, sleet, snow, dirt, dust, ice build-up, high humidity (moisture) and physical tampering. Able to operate in temperatures ranging from 32 to 122°F (0 to 50°C), it is ideal for use in environments with controlled temperatures.

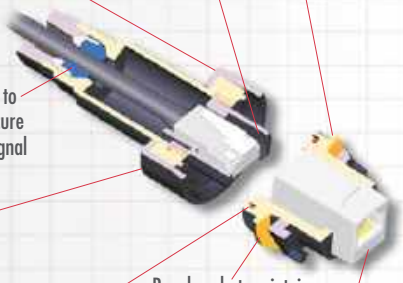
NEMA 4 self-sealing brass cable glands for network connections and power feeds

NEMA 4 case protects against elements such as dirt, rain, sleet, snow, dust, and the external formation of ice on the enclosure.

Shroud for RJ-45 provides protection against damage through misuse and positive alignment for mating of connectors

Coupling ring, screw thread provides secure cable coupling

Sealing gland and cage optimized to maintain IP68 seal and provide secure cable restraint without disrupting signal



Mating connectors install kit included

'O' ring maintains IP68 seal at connector interface

Panel gasket maintains IP68 seal to panel

Shielded CAT5e coupler maintains screening

EnviroNET™ EC Series
Environmentally Controlled

The EC Series offers the same protection from environmental elements as the EH Series, plus it has a temperature control system enabling it to operate in temperatures ranging from 32 to 185°F (0 to 85°C).

EnviroNET™ ET Series
Extended Temperature

In addition to providing the same protection from environmental elements as the EH Series, the advanced ET Series temperature control system enables it to operate in temperature extremes of -40 to 185°F (-40 to 85°C). Potential installation locations and applications for the ET Series are virtually limitless!

Alarm and Power LEDs

NEMA 4 case protects against elements such as dirt, rain, sleet, snow, dust, and the external formation of ice on the enclosure

-40 to 85°C operation allows virtually any Patton device to operate in environments that do not have heating or cooling options

Provisioning for a padlock

NEMA 4 self-sealing brass cable glands for network connections and power feeds

Ethernet Extension

Environmentally hardened and extended temperature solutions for extending Ethernet connections at distances up to 5 miles (8 km) over phone-grade twisted-pair!

The Patton EnviroNET™ Ethernet Extender offers a reliable and robust solutions for connecting peered 10/100Base-T Ethernet LANs; reaching remote PCs and equipment; or delivering last-mile ISP services—at line rates up to 50 Mbps! Patton's EnviroNET allows the Ethernet Extenders to operate under harsh temperatures of -40 to 185°F (-40 to 85°C) and resist various environmental elements such as dust, rain, snow, sleet, etc. Just co-locate an EnviroNET Ethernet Extender at any outdoor data acquisition location and pair it up with an equivalent Patton Ethernet Extender inside the building.

See page 9

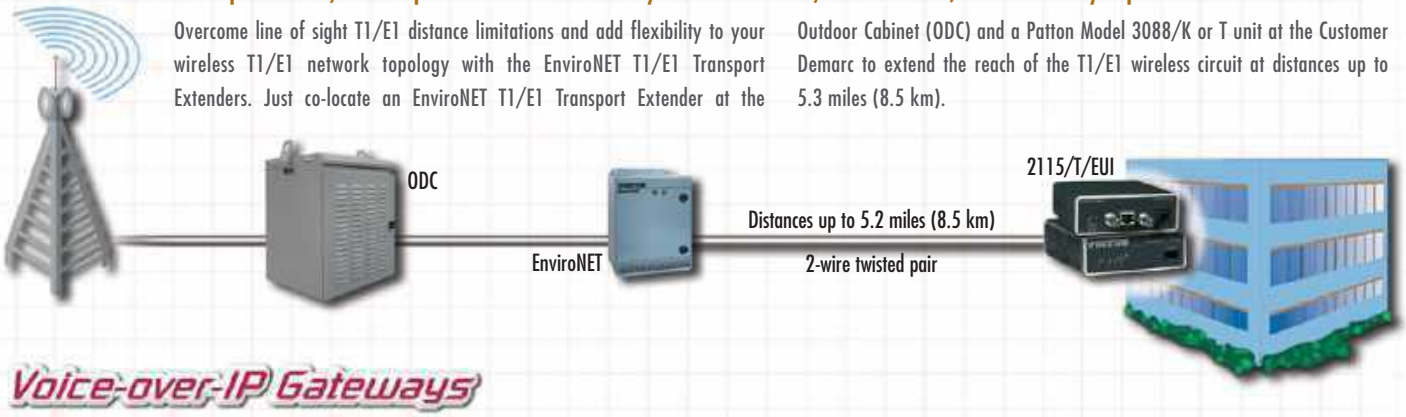
Ethernet Anywhere

EnviroNET™ Hardened Networking Products Deliver...
Voice, Video and Data Communications Services...
In ANY environment.

T1/E1 Transport Extension

EnviroNET™ Extended Temperature T1/E1 Transport Extenders make it easy to terminate a T1/E1 in a remote, environmentally exposed location.

Overcome line of sight T1/E1 distance limitations and add flexibility to your wireless T1/E1 network topology with the EnviroNET T1/E1 Transport Extenders. Just co-locate an EnviroNET T1/E1 Transport Extender at the Outdoor Cabinet (ODC) and a Patton Model 3088/K or T unit at the Customer Demarc to extend the reach of the T1/E1 wireless circuit at distances up to 5.3 miles (8.5 km).



Voice-over-IP Gateways

EnviroNET™ VoIP gateways provide reliable, robust, and secure solutions for converting analog FXS/FXO or digital ISDN circuits to VoIP in harsh environments.

Extending Patton's EnviroNET Voice-over-IP Gateway routers into exposed environments for seamless access between remote packet-voice and local PSTN telephony. Using ToIP call switching, distinctive ring, and Caller-ID a single handset can now access the right service at any time. With Patton's ClearConnect™ fail-over protection, a phone call will be completed. Network health monitoring and ToIP switching ensures a clear call even if the IP network is down. Patton's EnviroNET protective enclosures give service providers unlimited installation locations.

GENERAL PRODUCT SPECIFICATIONS

ET Extended Temperature Product
Operating Temperature: -40 to 85°C
Dimensions: 8.0L x 4.5W x 11.5H in. (203L x 114W x 292H mm)
Weight: 8.5 lbs (3.86 kg)

EC Environmentally Controlled Product
Operating Temperature: 0 to 85°C
Dimensions: 8.0L x 4.5W x 11.5H in. (203L x 114W x 292H mm)
Weight: 8.5 lbs (3.86 kg)

EH & EHA Environmentally Enhanced Products
Operating Temperature: 0 to 50°C
Dimensions: 8.0L x 4.5W x 11.5H in. (203L x 114W x 292H mm)
Weight: 8.5 lbs (3.86 kg)

ORDERING INFORMATION

Extended Temperature Ethernet Extender
- ET2172/EUI: Multi Rate 50 Mbps
- ET2168/EUI: Multi Rate 16 Mbps
- ET2157/EUI: Rate Adaptive 4.6 Mbps
- ET2156/EUI: Rate Adaptive 2.3 Mbps
- ET2155/EUI: Long Range 144 kbps

Extended Temperature Device Servers
- ET2232/EUI: RS-232 Device Server 10Base-T
- ET2211/EUI: RS-232 Device Server 802.11b
- ET2285/EUI: RS232/422/485 Device Server 10/100Base-TX

Extended Temperature T1/E1 Extenders & Converters
- ET2115/T/EUI: T1 Extender
- ET2113/K/EUI: E1 Extender
- ET2720/C/EUI: T1 to V.35 Converter/NTU
- ET2720/I/EUI: Ethernet Extender over T1
- ET2701/C/EUI: E1 to V.35 Converter/NTU
- ET2701/D/EUI: E1 to X.21 Converter/NTU

Extended Temperature xDSL Routers
- ET3087/RIC/UI: 4.6 Mbps G.SHDSL V.35 Router
- ET3087/RID/UI: 4.6 Mbps G.SHDSL X.21 Router
- ET3087/RIK/UI: 4.6 Mbps G.SHDSL E1/T1 Router
- ET3201/R/UI: 2.3 Mbps G.SHDSL Router
- ET3241/R/UI: 4.6 Mbps G.SHDSL Router

Extended Temperature VoIP Gateways & Routers
- ET4524/JS/UI: 4 port FXS VoIP Router
- ET4524/JO/UI: 4 port FXO VoIP Router
- ET4528/4JS4JO/UI: 4 port FXS plus 4 port FXO VoIP Router
- ET4528/8JS/UI: 8 port FXS VoIP Router
- ET4552/2BIS/UI: 2 port BRI VoIP Router

Extended Temperature Serial Extenders
- ET1080A/UI: RS-232 Long Range Extender
- ET3088/D/UI: X.21 Serial Extender
- ET3088/C/UI : V.35 Serial Extender
- ET1052/UI: RS-232 High Speed Sync Extender
- ET1053/UI: RS-232 High Speed Async Extender

Environmentally Hardened Ethernet Extenders
- EHA2172/UI: 50 Mbps Multi-Rate Ethernet Extender; UI
- EHA2172/48: 50Mbps Multi-Rate Ethernet Extender; 48 VDC
- EHA2172/12: 50 Mbps Multi-Rate Ethernet Extender; 12 VDC
- EHA2168/R/UI: 16 Mbps Multi-Rate Ethernet Extender; UI
- EHA2168/R/48: 16 Mbps Multi-Rate Ethernet Extender; 48 VDC
- EHA2168/R/12: 16 Mbps Multi-Rate Ethernet Extender; 12 VD

Ruggedized 50-Mbps Ethernet Extender

Model 2172R

Patton's 2172R extends Ethernet connections at distances up to 5,500 feet (1,676 meters) over already existing infrastructure cabling

The Patton Model 2172R utilizes pre-existing twisted pair infrastructure enabling twisted pair previously used for legacy systems such as DDS, RS232/422/485 to be used for extending or connect Ethernet devices together. With a pair of 2172Rs or combined with a 2172, twisted-pair can carry an extraordinary full-duplex 50 Mbps of bandwidth.

Reusing the already existing infrastructure for Ethernet networking eliminates the cost of purchasing expensive fiber and CAT5e or greater cabling. Most importantly, it completely eliminates the hassle and sometimes overwhelming expense and down time of the cable installations.

The 2172R operates in rugged environments where temperatures range from -10 to 70°C, and it offers optional conformal coating for protecting the device from condensing humidity. The 2172R's aluminum case design enables users to conveniently mount it on a wall or DIN rail.

FEATURES & BENEFITS

- ✔ Operates over twisted-pair—Reduces the cost and hassles of new installations.
- ✔ Plug and Play—No configuration or cables hassles during installation with auto-sensing 10/100, full or half duplex, and auto MDI-X
- ✔ Full duplex data-line rate of 100 Mbps—Provides near fiber performance for bandwidth intensive applications
- ✔ Wall or DIN rail mountable
- ✔ Operating temperature of -10 to 70°C

SPECIFICATIONS

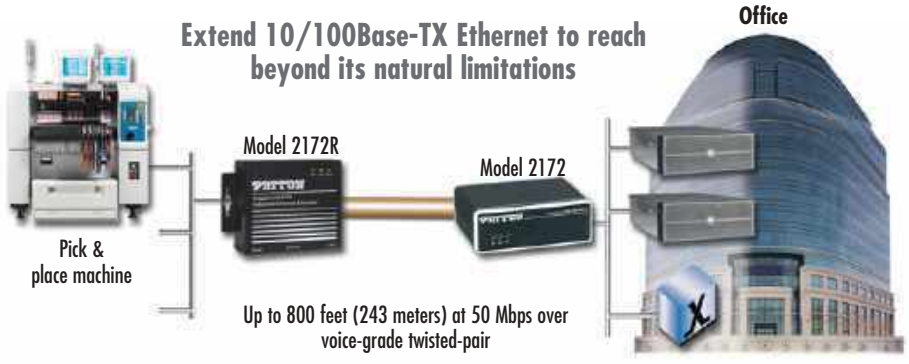
CopperLink line interface: RJ-45 (pin 4 = ring; pin 5 = tip)
Ethernet interface: 8-position shielded RJ-45. Auto-sensing 10/100Base-T with half or full-duplex operation. DIP switch capable of disabling 100-Mbps full-duplex for equipment that does not support 802.3X (Pause Packets)
Protocol: Transparent to high layer protocol. Supports 802.1Q VLAN tagging
Modulation: Quadrature Amplitude Modulation (QAM) 4-band
Duplexing Method: FDD (Frequency Division Duplexing)
Frequency Range: CopperLink: 0–12 MHz
Transmission: CopperLink line rate: Up to 50 Mbps
Surge suppression: CopperLink line maximum current surge: 20kA (8/20µs) gas tube
Front Panel Indicators: Power, Link, Ethernet
Power Supply: External AC and DC options: 120VAC, and universal input (UI)—100–240 VAC, or optional -48 VDC, -24 VDC, or -12 VDC
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC
Environment:
Temp: -10 to 70°C
Humidity
Standard: Up to 90% non-condensing
Conformal Coated: 85% condensing humidity from -10 to 35°C
Dimensions: 1.5H x 4.13W x 3.75D in. (3.81H x 10.5W x 9.53D cm)
Weight: 0.4 lbs (0.18 kg) without power supply

Model 2172R 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)

Application diagram

The Patton EnviroNET Ethernet Extender offers a reliable and robust solutions for connecting peered 10/100Base-T Ethernet LANs; reaching remote PCs and equipment



ORDERING INFORMATION

2172/EUI: 50-Mbps Ethernet Extender; 0 to 50°C; UI

2172R/EUI: Ruggedized 50-Mbps Ethernet Extender; -10 to 70°C; UI

2172R/C/EUI: Ruggedized 50-Mbps Ethernet Extender; -10 to 70°C; conformal coated (humidity 85% condensing from -10 to +35°C); UI

2172R/EUI-2PK: Ruggedized 50-Mbps Ethernet Extender Kit; -10 to 70°C; UI

2172R/C/EUI-2PK: Ruggedized 50-Mbps Ethernet Extender Kit; -10 to 70°C , conformal coated (humidity 85% condensing from -10 to +35°C); UI

Ruggedized G.703/G.704 NTU

Model 2701R

The Patton Model 2701R NTU terminates E1 and Fractional E1 services and provides conversion to V.35, X.21, EIA-530 and 10Base-T Ethernet

One of the smallest and most economical NTUs available, the Model 2701R 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 Model 2701R 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 facing LEDs and easily accessible 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 2701R into your network infrastructure a snap.

The wide variety of features, compact size, and low price make Patton's Ruggedized E1 NTUs the right solution for your next network challenge.

FEATURES & BENEFITS

- ✔ Wall or DIN rail mount—Easily installs into any environment
- ✔ Connect to any terminal interface—Smooth clock V.35, X.21, EIA-530, and 10Base-T Ethernet interfaces
- ✔ Connect at any speed—Select nx64 data channels, or 2-Mbps Clear Channel
- ✔ Eliminate routers—Bridge Ethernet across the WAN using industry standard PPP/BCP
- ✔ Standalone or rack solutions—Available in desktop and high density SNMP managed racks
- ✔ Power it anywhere—Universal input AC (100–240V) and -48 VDC power supply options

ORDERING INFORMATION

2172/EUI: 50-Mbps Ethernet Extender; 0 to 50°C; UI

2172R/EUI: Ruggedized 50-Mbps Ethernet Extender; -10 to 70°C; UI

2172R/C/EUI: Ruggedized 50-Mbps Ethernet Extender; -10 to 70°C; conformal coated (humidity 85% condensing from -10 to +35°C); UI

2172R/EUI-2PK: Ruggedized 50-Mbps Ethernet Extender Kit; -10 to 70°C; UI

2172R/C/EUI-2PK: Ruggedized 50-Mbps Ethernet Extender Kit; -10 to 70°C , conformal coated (humidity 85% condensing from -10 to +35°C); UI

NetLink™ 2701R product family

2701 standalone and 2701R 2U-high rack card versions are available with the same features as the ruggedized 2701R.

	2701R/C 2701/C	2701R/B 2701/B	2701R/D 2701/D	2701R/I 2701/I	2701RC/A/I	2701RC/B/B	2701RC/D/V	2701RC/D/D	2701RC/C/I
DCE Interface	V.35	EIA-530	X.21	10Base-T	V.35	EIA-530	X.21	X.21	10Base-T
Network Interface	RJ-48C		RJ-48C & Dual BNC		RJ-48C			Dual BNC	RJ-48C
Power Supplies	UI (100–240 VAC) or -48 VDC				AC or DC rack power supplies				
Dimensions	1.50 H x 4.17 W x 5.84 D inch (3.84 H x 10.6 W x 14.84 D cm)				3.0 H x 0.83 W x 7.84 D inch (7.6 H x 2.1 W x 19.0 D cm)				
Weight	1.0 lbs (0.45 kg)				0.31 lbs (0.14 kg)				
Line Rate	2.048 Mbps (E1 and Fractional E1)								
Line Coding	AMI or HDB3								
Line Framing	G.703 (unframed) or G.704/G.732 (framed)								
DTE Rates	nx64 kbps (V.35, EIA-530, X.21/V.11); nx64 kbps to 10Base-T (10 Mbps)								
Clocking	Smooth clocking—Internal, External or Receive Recover								
Diagnostics	Local/Remote Loop, 511 and 511E BERT								
Range	1.6 km								
Compliance	CE Mark, G.703, G.704, G.723, G.832, CTR-12 and CTR-13; 1500 VRMS transformer isolation								
Temperature/Humidity	32 to 122°F (0 to 50°C)/5 to 90% relative humidity, non-condensing								

Single Port RS-232 Device Server

EtherBITS™ 2232

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

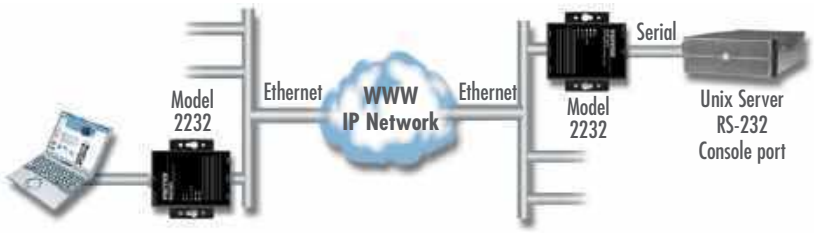
Physical Interface:
Serial: Serial: DB-9M/F; DB-25M/F
Ethernet: Shielded RJ-45
Serial Transmission: RS-232 rates from 1200 bps to 115.2 kbps
Ethernet Transmission: 10Base-T
Management: Monitoring, control, and diagnostics via serial port, TELNET session, or HTTP
LED Indicators: Power, Ethernet Link and 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.



Universal Device Server

EtherBITS™ 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, interconnect, 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 10/100Base-T Device Server

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

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

Call for DB-25 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/F; DB-25M/F
Ethernet: 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 2285s 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.

Wireless (802.11b) Single-Port Device Server

EtherBITS™ 2211

Best, most cost-effective method to control, monitor, and collect data from your RS-232 serial devices over a wireless local area network.

Ethernet continues to be the predominant office networking infrastructure. Now, Ethernet has made its way from the office to the shop floor. Traditional serial environments require the use of multi-port serial cards, expensive cables, and the personnel to manage multiple systems. Patton's Model 2211 Single-Port Device Server provides a quick, inexpensive, and hassle-free solution for connecting legacy serial terminals and devices to a local area network (LAN).

The Model 2211 links legacy serial RS-232 devices to the network by encapsulating serial data into IP packets for transport over the wireless LAN. Using TCP or TELNET, the Model 2211 can connect to any user-defined IP address and port. Once connected to the remote host, data is passed transparently end-to-end. The built-in DHCP Client allows the Model 2211 to dynamically obtain an IP address and a subnet mask from a master server. COM Port Redirector is included with Patton's 2211 enabling companies to use their existing COM/TTY-based software, preventing the hassle and expense of investing in additional software.

Physical layer-connectivity is provided via an RS-232 serial port and a 10Base-T Ethernet port. Configure the serial port's data rate, ranging from 1200bps to 115.2 kbps, and choose from a variety of connector types including DB9 or DB25 male or female.

Patton's Model 2211 offers the lowest transition cost in turning your serial infrastructure to IP.

FEATURES & BENEFITS

- ✔ Control and Monitor Serial Device—Control and monitor your serial asynchronous terminals and devices over the local area network
- ✔ Connects Directly to the Wireless LAN—802.11b WiiFi 10Base-T LAN connection via built-in WiFi module; 64-bit WEP security
- ✔ 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 Wireless 802.11b Device Server

2211-25F/E: 802.11b; DB25F RS-232
2211-25M/E: 802.11b; DB25M RS-232
2211-9F/E: 802.11b; DB9F RS-232
2211-9M/E: 802.11b; DB9M RS-232

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

Mechanical Interface: Serial: DB-9M/F; DB-25M/F; Ethernet: WiFi 802.11b
Serial Transmission: RS-232 Rates from 1200 bps to 115 kbps
Ethernet Transmission: 802.11b Wireless Ad Hoc/Infrastructure Modes; 10Base-T Ethernet
Management: Monitoring, control, and diagnostics via serial port or TELNET session
LED Indicators: Power, Ethernet Link and Activity
Power: External AC: 9–30 VDC, 300mA 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 diagram

The Model 2211 Single-Port Device Server is used to connect various RS-232 serial devices to the Local Area Network through their serial control ports. The 2211 enables monitoring, control, and data collection from this equipment by remote computers located anywhere on the local or wide area network. Both Ad hoc and Infrastructure mode is supported on the 2211.

COM Port Redirector is provided for users who choose to use their existing serial communication application programs. Utilizing the COM Port redirector software provided on the Patton Model 2211 allows existing COM/TTY-based software to be preserved, thus no additional investment is required on additional software.

Multi-Port Asynchronous RS-232 Device Server

EtherBITS™ 2234 & 2238 (RS-232)

The 2230 series is a cost effective Mulit-Port Device Server enabling user to configure, control, and monitor up to eight RS-232 devices over a Local Area Network.

The EtherBITS family of device servers provide easy, feature rich, secure and reliable serial to LAN, WAN or Internet connectivity. Placing serial devices on to the LAN eliminates the hassle of serial cables, dedicated PCs, and local management. Providing Ethernet connectivity to your serial devices not only protects your current hardware investments, but simplifies future expansions and the management of that hardware. LAN connectivity of your serial devices gives you the ability to remotely manage serial devices from anywhere in the world.

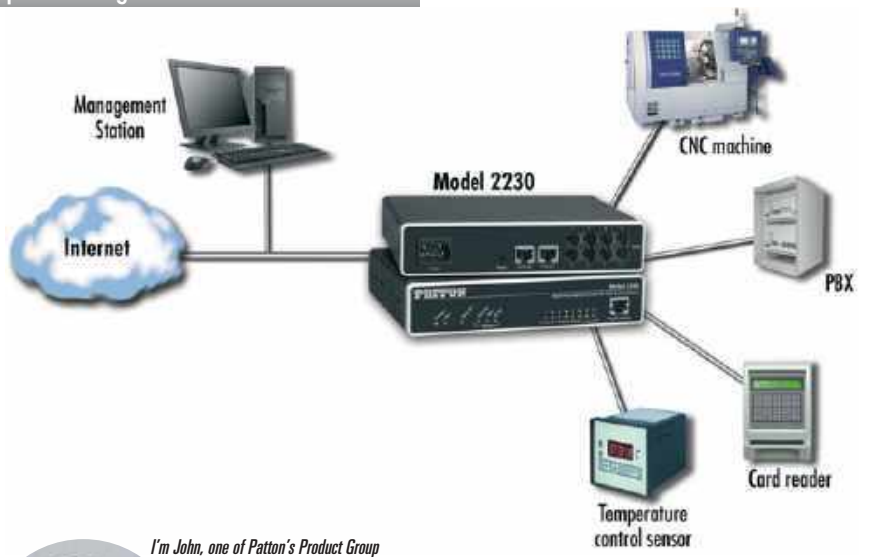
The EtherBITS 2230 series encapsulates the asynchronous serial data of up to 8+1 ports into IP packets for transport through the network via TCP or TELNET. Patton's COM port redirector software makes it possible to establish a connection between the host and a networked serial device by creating a local COM or TTY port on the host computer, allowing existing software applications to work without modification.

The EtherBITS 2230 support a host of applications including industrial automation, credit bureaus, banks, point-of-sale, utilities, and any other applications that require asynchronous RS-232 serial to IP connectivity.

FEATURES & BENEFITS

- ✔ High-density desk top box allows up to 8+1 Async RS-232 to connect to the LAN or WAN.
- ✔ Individually configurable serial channel with speeds of 1200bps to 230 kbps
- ✔ Hardware (RTS/CTS) and software flow control (XON/XOFF)
- ✔ User configurable IP services ensure reliable connectivity to any LAN or WAN. NAT, DHCP and Firewall permits advanced networking and flexibility.
- ✔ Ensure data is secure end to end using IPsec with DES/3DES.
- ✔ Configure and control up to 8 serial devices with Web-based management, SNMP, or command line all with password protection.

Application diagram



SPECIFICATIONS

Terminal/Channel Ports: Serial Asynchronous start-stop • # of Ports: 8 ports (3038); 4 ports (3034) • Max Aggregate Speed: 2Mbps • Interface: CCITT V.24 (EIA-561) on 8-pin RJ-45F • Data Communication Speed: Selectable 50bps-115.2kbps; auto-speed detection up to 115.2kbps • Data Format: Selectable 5,6,7, or 8 bits; 1, 1.5 or 2 stop bits, odd, even, or no parity • Flow Control: Software selectable (XON/XOFF) or hardware (RTS/CTS) in both directions • Break Propagation: Transparent • EIA signal propagation: Status of local DTR signal can be propagated to the remote end • Echo: Character echo can be selectively enabled for each terminal port

Ethernet Port(s): Auto-sensing 10/100BaseTX MDI-X Ethernet • Clock: Receive clock: external; Transmit clock: selectable as internal or external

Supervisory Port(s): Interface Auto-sensing 10/100BaseTX MDI-X on RJ-45 or Serial RS-232 (EIA-561) on RJ-45 • Serial Communication protocol: Asynchronous start-stop • Serial Speed: 300,1200,4800, or 9600 bps • Serial Data format: 7/8 bits, 2 stop bits, odd/even/no parity • Echo: Optional

Commands: Set/modify/view parameters • View status • Store parameters in non-volatile memory • Copy parameters between ports • Provide local/remote loop backs on port • Establish connection between supervisory and terminal ports • Obtain statistic reports • Unit reset; individual port reset • Remote supervisory access • Enable/Disable remote access

IP Services Supported: IPv4 • RIPv1 and v2 (RFC 1058 and 2453) • ICMP redirect (RFC 792); packet fragmentation • DiffServ/ToS set or queue per header bits • Packet policing discards excess traffic • 802.1p/Q VLAN support with 4096 IDs • IPSEC AH & ESP Modes • Manual/IKE keying • AES/DES/3DES Encryption

IP Connectivity Supported: TCPRAW • UDP • Telnet • DHCP • NAT

Operating Environment: Temp.: 0–40°C • Humidity: 5–80% (non condensing)

System: CPU Motorola MPC859 @ 50 MHz • Memory 16MB SDRAM/4MB Flash • Power: 100–240 VAC (50/60 Hz) • Power dissipation: 4W

Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 50950 • CE compliance FCC Part 15 Class A

I'm John, one of Patton's Product Group Managers. If you do not find what you need at ***www.patton.com*** *or in this catalog, or if you have technical questions or comments concerning Device Servers, please call me at* ***+1 301.975.1000, x160.*** *You can also send e-mail to* ***jgrant@patton.com.***

Ask the Experts

ORDERING INFORMATION

2234/EUI: 4 port RS-232

2234/E48: 4 port RS-232

2238/EUI: 8 port RS-232

2238/E48: 8 port RS-232

Multi-Port Async. RS-232/422/485 Device Server

Models 2284 & 2288 (MEI)

The 2280 series is a versatile Mulit-Port Device Server enabling users to configure, control, and monitor up to eight RS-232/422/485 DCE or DTE devices over a Local Area Network.

The EtherBITS family of device servers provide easy, feature rich, secure and reliable serial to LAN, WAN or Internet connectivity. Placing serial devices on to the LAN eliminates the hassle of serial cables, dedicated PCs, and local management. Providing Ethernet connectivity to your serial devices not only protects your current hardware investments, but simplifies future expansions and the management of that hardware. LAN connectivity of your serial devices gives you the ability to remotely manage serial devices from anywhere in the world.

The EtherBITS 2280 series encapsulates the asynchronous serial data of up to 8+1 ports into IP packets for transport through the network via TCP or TELNET. Patton's COM port redirector software makes it possible to establish a connection between the host and a networked serial device by creating a local COM or TTY port on the host computer, allowing existing software applications to work without modification.

The EtherBITS 2280 support a host of applications including industrial automation, credit bureaus, banks, point-of-sale, utilities, and any other applications that require asynchronous RS-232/422/485 serial to IP connectivity.

FEATURES & BENEFITS

- ✔ High-density desk top box allows up to 8+1 Async DCE or DTE RS232/422/485 to connect to the LAN or WAN.
- ✔ Individually configurable serial channel with speeds of 1200 bps to 230 kbps
- ✔ Per port DCE or DTE configurable
- ✔ Hardware (RTS/CTS) and software flow control (XON/XOFF)
- ✔ User configurable IP services ensure reliable connectivity to any LAN or WAN. NAT, DHCP and Firewall permits advanced networking and flexibility.
- ✔ IPsec with DES/3DES ensures data is secure end-to-end.
- ✔ Configure and control up to 8 serial devices with Web-based management, SNMP, or command line all with password protection.

SPECIFICATIONS

Terminal/Channel Ports: Serial Asynchronous start-stop • # of Ports: 8 ports (3038); 4 ports (3034) • Max Aggregate Speed: 2Mbps • Interface: CCITT V.24 (EIA-561) on 8-pin RJ-45F • Data Communication Speed: Selectable 50bps-115.2kbps; auto-speed detection up to 115.2kbps • Data Format: Selectable 5,6,7, or 8 bits; 1, 1.5 or 2 stop bits, odd, even, or no parity • Flow Control: Software selectable (XON/XOFF) or hardware (RTS/CTS) in both directions • Break Propagation: Transparent • EIA signal propagation: Status of local DTR signal can be propagated to the remote end • Echo: Character echo can be selectively enabled for each terminal port

Ethernet Port(s): Auto-sensing 10/100BaseTX MDI-X Ethernet • Clock: Receive clock: external; Transmit clock: selectable as internal or external

Supervisory Port(s): Interface Auto-sensing 10/100BaseTX MDI-X on RJ-45 or Serial RS-232 (EIA-561) on RJ-45 • Serial Communication protocol: Asynchronous start-stop • Serial Speed: 300,1200,4800, or 9600 bps • Serial Data format: 7/8 bits, 2 stop bits, odd/even/no parity • Echo: Optional

Commands: Set/modify/view parameters • View status • Store parameters in non-volatile memory • Copy parameters between ports • Provide local/remote loop backs on port • Establish connection between supervisory and terminal ports • Obtain statistic reports • Unit reset; individual port reset • Remote supervisory access • Enable/Disable remote access

IP Services Supported: IPv4 • RIPv1 and v2 (RFC 1058 and 2453) • ICMP redirect (RFC 792); packet fragmentation • DiffServ/ToS set or queue per header bits • Packet policing discards excess traffic • 802.1p/Q VLAN support with 4096 IDs • IPSEC AH & ESP Modes • Manual/IKE keying • AES/DES/3DES Encryption

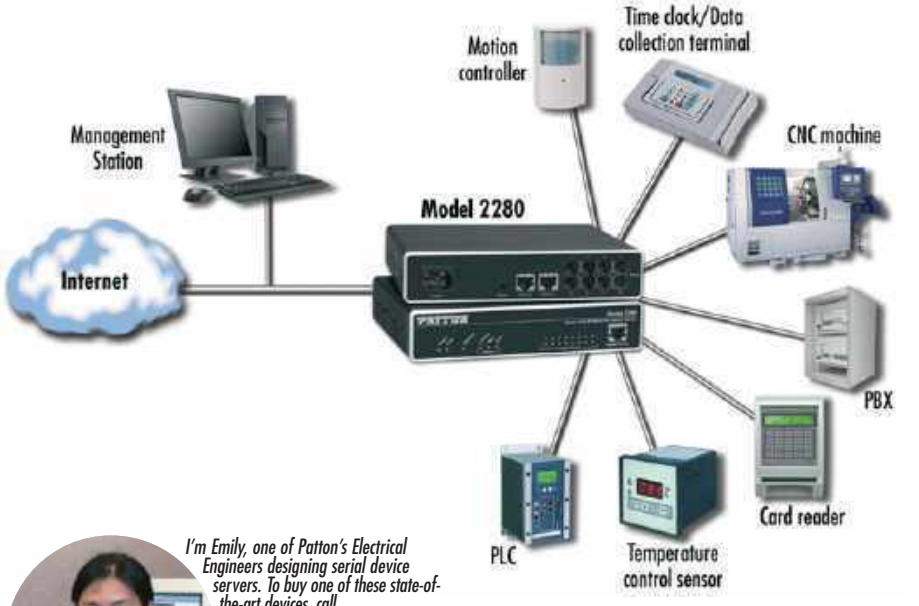
IP Connectivity Supported: TCPRAW • UDP • Telnet • DHCP • NAT

Operating Environment: Temp.: 0–40°C • Humidity: 5–80% (non condensing)

System: CPU Motorola MPC859 @ 50 MHz • Memory 16MB SDRAM/4MB Flash • Power: 100–240 VAC (50/60 Hz) • Power dissipation: 4W

Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 50950 • CE compliance FCC Part 15 Class A

Application diagram



I'm Emily, one of Patton's Electrical Engineers designing serial device servers. To buy one of these state-of-the-art devices, call ***+1 301.975.1000*** *or send e-mail to* ***sales@patton.com****.*

ORDERING INFORMATION

2284/EUI: 4 port 232/422/485
2284/E48: 4 port 232/422/485
2288/EUI: 8 port 232/422/485
2288/E48: 8 port 232/422/485

Multiplexers
Muxes & Sharing Devices

In This Section

Multiplexers

LOW SPEED TDM
Full Duplex, 2-Channel

Connect two sync terminals, or one async and one sync terminal, to a sync modem

- ✔ Data rates up to 19.2 kbps at the sub-channels and 38.4 kbps at the composite channel
- ✔ RS-232 composite port interface and sub-channel interface

Model 3042
Page 27

MINI STAT MUX
Full Duplex, Async

Our MicroStats™ statistical multiplexers double the usefulness of your existing modems!

- ✔ Data rates up to 115.2 kbps and sub-channel data rates to 57.6 kbps
- ✔ Power drawn from main and sub-channel devices—no AC power or batteries required

Model 3032
Page 27

MULTIPORT ASYNC MUX
Up to 8 Ports on a Single Link

Consolidate up to 8 async. data sources onto a single sync. WAN link or IP/Ethernet LAN connection

- ✔ V.35/X.21/T1/E1 Ethernet Composite—Connect to any sync dedicated WAN or use standard PPP or Frame Relay networks
- ✔ Up to 8 Ports on a Single Link—Multiplex up to 8 EIA-232/V.24 ports at 115.2kbps

Models 3034, 3038
Page 26

Modem/Port Sharing Devices

DIGITAL SHARING DEVICE
V.24, X.21, or RS-232/423

Share up to 8 ports (DCE or DTE) to 1 master DTE or DCE

Models 3060
Page 28

MODEM SHARING DEVICE
RS-232

Three RS-232 DTEs can contend for access to one RS-232 modem

Model 3010
Page 29

DB-25 MODEM SPLITTER
Sync or Async

Lets three devices share a single modem

Models 305
Page 29

Multiport Asynchronous Multiplexers

Models 3034 & 3038

The Model 3038 IpStatmux Managed Multiport Asynchronous Multiplexer combines up to eight EIA-232/V.24 interfaces over any composite V.35, X.21, T1/E1, or Ethernet/IP port and offers the lowest-cost, most flexible solution for multiport asynchronous terminal connectivity.

Now it is easier than ever to link up multiple asynchronous terminals, hosts, and devices. Patton's Model 3038 IpStatmux Managed Multiport Asynchronous Multiplexer consolidates up to eight asynchronous data sources onto a single synchronous WAN link or IP/Ethernet LAN connection for secure, reliable, and transparent multiplexing.

The Model 3038 offers advanced network and transmission options. The integrated composite port provides a standard synchronous link connection to NTUs, DSUs or traditional WAN services. By including an Ethernet port as a composite uplink, the Model 3038 also "future proofs" your legacy equipment. Now multiplexed data can use existing LAN, WAN and Internet connections…*simultaneously*. Data security and service quality is ensured with IPSec encryption as well as packet labeling and integrated data QoS with flow-control.

Reliable data is ensured via multiple CRC-16 checks, transparent data checksums and in-order data delivery. In the event of an error, the Model 3038 automatically retransmits the data to ensure transparent and error free delivery. With user configurable flow control including software XON/XOFF, hardware RTS/CTS and combination provides optimal data transfer.

Integrated management offers both local and remote configuration, control and troubleshooting. Use the supervisory port for out-of-band access or use LAN based services such as Telnet, WEB/HTTP and SNMP. Per-port options allow for diagnostics loops, traffic statistics, review channel status and monitor ports and events. Link down, data loss and errors can be signal.

ORDERING INFORMATION

Managed High-Speed RS-232 Async. 8-port Stat Mux

3038/C/EUI: Composite V.35 Sync

3038/D/EUI: Composite X.21 Sync

3038/K/EUI: Composite E1 Sync

Managed High-Speed RS-232 Async. 8-port Stat Mux, 2-Pack

3038/C/EUI-2PK: Composite V.35 Sync

3038/D/EUI-2PK: Composite X.21 Sync

3038/K/EUI-2PK: Composite E1 Sync

Managed High-Speed RS-232 Async. 4-port Stat Mux

3034/C/EUI: Composite V.35 Sync

3034/D/EUI: Composite X.21 Sync

3034/K/EUI: Composite E1 Sync

Managed High-Speed RS-232 Async. 4-port Stat Mux, 2-Pack

3034/C/EUI-2PK: Composite V.35 Sync

3034/D/EUI-2PK: Composite X.21 Sync

3034/K/EUI-2PK: Composite E1 Sync

FEATURES & BENEFITS

- ✔ Up to 8 Ports on a Single Link—Multiplex up to 8 EIA-232/V.24 ports at 115.2kbps with individually configurable speed, flow control, echo and testing.
- ✔ V.35/X.21/T1/E1 Ethernet Composite—Connect to any synchronous dedicated WAN or lower costs using standard PPP or Frame Relay networks. Ethernet/IP can be used over any network or Internet without the expense of dedicated lines.
- ✔ Local & Remote Management—Configure and control with Web-based management, SNMP or command line supervisory port all with password protection.

SPECIFICATIONS

Terminal/Channel Ports: Serial Asynchronous start-stop • # of Ports: 8 ports (3038); 4 ports (3034) • Max Aggregate Speed: 2Mbps • Interface: CCITT V.24 (EIA-561) on 8-pin RJ-45F • Data Communication Speed: Selectable 50bps-115.2kbps; auto-speed detection up to 115.2kbps • Data Format: selectable 5,6,7, or 8 bits; 1, 1.5 or 2 stop bits, odd, even, or no parity • Flow Control: Software selectable (XON/XOFF) or hardware (RTS/CTS) in both directions • Break propagation: Transparent • EIA signal propagation: Status of local DTR signal can be propagated to the remote end • Echo: Character echo can be selectively enabled for each terminal port

Composite Port(s): Auto-sensing 10/100BaseTX MDI-X Ethernet & V.35 or X.21 • Error detection & correction: 16-bit CRC-CCITT with ARQ (automatic re-transmission on error) • Speed: selectable, serial up to 1.2bps–2Mbps, Ethernet auto detect-10/100 • Interface: DB25, V.35; DB15, X.21 • Data Encoding: NRZ or NRZI • Clock: receive clock: external; transmit clock: selectable as internal or external

Supervisory Port(s): Interface auto-sensing 10/100BaseTX MDI-X on RJ-45 or Serial RS-232 (EIA-561) on RJ-45 • Serial Comm. protocol: asynchronous start-stop • Serial Speed: 300, 1200, 4800, or 9600 bps • Serial Data format: 7/8 bits, 2 stop bits, odd/even/no parity • Echo: Optional

Commands: Set/modify/view parameters • View status • Store parameters in non-volatile memory • Copy parameters between ports • Provide local/remote loop backs on port • Establish connection between supervisory and terminal ports • Obtain statistic reports • Unit reset; individual port reset • Remote supervisory access • Enable/Disable remote access

IP Services Supported: IPv4 • RIPv1 and v2 (RFC 1058 and 2453) • ICMP redirect (RFC 792); packet fragmentation • DiffServ/ToS set or queue per header bits • Packet policing discards excess traffic • 802.1p/Q VLAN support with 4096 IDs • IPSEC AH & ESP Modes • Manual/IKE keying • AES/DES/3DES Encryption

IP Connectivity Supported: X.21/V.35 (Frame Relay (8PVCs); RFC1490,FRF.12 fragmentation; LMI, Q933D, ANSI 617D, Gang of Four; PPP,PAP,CHAP,LCP,IPCP; T1/E1 (ITU-T G.703,ANSI T1.403; AMI, B8ZS, HDB3) • TCPRAW • UDP • Telnet • DHCP • NAT

Operating Environment: Temp.: 0–40°C • Humidity: 5–80% (non condensing)

System: CPU Motorola MPC859 @ 50 MHz • Memory 16MB SDRAM/4MB Flash • Power: 100–240 VAC (50/60 Hz) • Power dissipation: 4W

Compliance: EMC compliance: EN55022 and EN55024 • Safety compliance: EN 50950 • CE compliance FCC Part 15 Class A

Application—Remote Office/Branch Office Voice Extension and Access

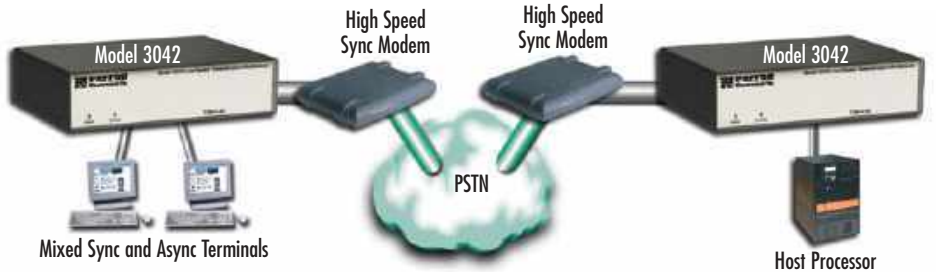
Low-Speed Time-Division Multiplexer

Model 3042

Connect two sync terminals, or one async and one sync terminal, to a high speed sync modem

The Model 3042 is a full-duplex, RS-232, two-channel, time-division multiplexer (TDM) with an independent switch-selectable V.14/V.22-compliant async-to-sync interface adapter on sub-channel 1. It provides two channels that can operate as two sync channels or as one sync and one async channel. TDM techniques are used to interleave data from the two channels into a composite channel that operates at twice the rate of the sub-channels. The composite channel is interfaced with a high speed synchronous modem via a straight-through cable.

RS-232 Two-Channel Multiplexer Application



FEATURES & BENEFITS

- ✔ RS-232 composite port interface and sub-channel interface
- ✔ Provides data rates up to 19.2 kbps at the sub-channels and 38.4 kbps at the composite channel
- ✔ Sturdy aluminum enclosure
- ✔ External wall-mounted power supply
- ✔ UL, CSA, and FCC Class A approvals

SPECIFICATIONS

Capacity: Two sync RS-232 terminals or one sync and one async RS-232 terminal multiplexed on one sync RS-232 modem
Data coding: Sync or async
Data interface: EIA RS-232-C
Data rates: Async–600 to 19,200 bps; Sync–up to 19,200 bps; Composite–38,400 bps
Power source: 110 or 220 VAC, 47 to 63Hz, 5 Watts, external wall-mounted transformer
Op. temp.: 32 to 122°F (0 to 50°C)
Rel. humidity: 5 to 90% non-condensing
Dimensions: 2.0H x 8.30W x 6.10D in. (5.08H x 21.08W x 15.49D cm)
Weight: 2.25 lbs (1.02 kg)

ORDERING INFORMATION

3042: Powered V.24 Micro TDM (TDM-V24)
3042-220 Same as 3042 except pre-configured for 220VAC

Miniature 2-Port Statistical Multiplexers

Models 3022 & 3032

Our MicroStats™ double the usefulness of your existing modems!

These devices enable two asynchronous RS-232 devices to communicate over a single modem link, effectively doubling the capacity of two analog (V.32, V.34, etc.) modems or two short-range modems. They also allow four async RS-232 devices to be connected together over short distances (100 ft/30 m) using just a crossover cable. The devices are configured using extended AT commands (the local and remote mux can be configured from local port 1 or 2) and can perform auto-baud sensing. Hardware (RTS/CTS) and software (X-ON/X-OFF) flow control are supported.

FEATURES & BENEFITS

- ✔ Power drawn from main and sub-channel devices–no AC power or batteries required
- ✔ Model 3022 main and sub-channel data rates to 38.4 kbps
- ✔ Model 3032 main channel data rates to 115.2 kbps and sub-channel data rates to 57.6 kbps

SPECIFICATIONS

Sub-Channels Interface: RJ-45, V.24/RS-232C
Configuration: DCE
Transmission: Async, full duplex
Parity: Odd, even, mark, space, or none
Flow Control: Hardware (RTS/CTS), software (XON/XOFF)

Stop Bits: 1 or 2
Baud Rate: Model 3022—110, 300, 1200, 2400, 4800, 9600, 19200, 38400 bps, selectable or auto detected; **Model 3032**—110, 300, 1200, 2400, 4800, 9600, 19200, 38400 and 57600 bps selectable (auto detected up to 38.4 kbps)

Main Channel Interface: DB-25 male, DTE, V.24/RS-232-C
Transmission: Async, full duplex
Baud Rate: Model 3022—1.2, 2.4, 4.8, 9.6, 19.2, 38.4 kbps, selectable; **Model 3032**—2.4, 4.8, 9.6, 19.2, 38.4, 57.6 and 115.2 kbps, selectable

Word Size: 7 or 8 data bits
Flow Control: RTS/CTS or no flow control
Temp Range: 32–158°F (0–70°C)
Humidity: up to 95%, non-condensing
Dimensions: 2.7 x 2.1 x 7.4 in. (6.9 x 5.3 x 1.9 cm)

ORDERING INFORMATION

3022: 2-Channel Statistical Mux
3032: MicroStat 2-Channel Statistical Mux

Digital Sharing Device

Model 3060

Expand your systems without acquiring additional data lines or modems.

Model 3060/V24 Digital Sharing Device (DSD) act as combined modem and port sharing device. With this high-speed bi-directional unit, up to eight DCE or DTE devices can share one DCE or DTE device in a polled or contention environment. Sub-channels contend for the main channel by activating RTS, DCD, or by detecting data transitions.

Clock signals are provided either by an external modem connected on the master port, or by the internal baud rate generator (which provides rates up to 2,048 kbps). In addition, any sub-channel port can be configured to provide clocking so that if the clock signal provided by the master source fails—or if DCD on sub-channel 1 becomes inactive—the DSD will use the internal clock or a sub-channel clock.

To prevent network lockups, DSDs have anti-streaming features that automatically remove a defective sub-channel from service. Each DSD sub-channel can be configured for DTE or DCE operation. Each channel can be set for Data or Interface Lead contention.

Each DSD comes with an internal power supply that can be set by a switch for 110- or 220-VAC operation.

FEATURES & BENEFITS

- ✔ Contention via RTS, DCD or data transitions, individually selectable in each sub-channel
- ✔ 64-bit tail circuit buffer (TCBs) included
- ✔ Internal or external clock
- ✔ Dial-up modem support
- ✔ Operation is transparent to data
- ✔ Sturdy rack-mountable enclosure (rack mount kit included)
- ✔ Individual sub-channel enable/disable switches
- ✔ Internal power supply; switch selectable for 110 or 220-VAC
- ✔ UL, CSA, TÜV, and FCC Class A

*I'm Glen, one of Patton's Product Marketing Managers. If you do not find what you need at **www.patton.com** or in this catalog, please call me at **+1 301.975.1000, x356**. You can also send e-mail to **gflowers@patton.com**.*

Ask the Experts

SPECIFICATIONS

Capacity: 6 sync/async DTE or DCE devices
Tail circuit buffering: Uni-directional 8-bit ring buffer
Anti-streaming: Automatic–selectable time-out intervals or disable
Sub-channel and modem interface: RS-232 using DB-25s
Data rates: Up to 76.8 kbps
Weight: 4.5 lbs (2.1 kg)
Timing: Internal–DIP switch selectable; Normal– from modem; External–clock provided on any sub-channel, with fallback to internal clock or sub-channel
Power source: 100–120/200–240 VAC, 50/60 Hz, 0.16/0.08A, switch selectable
Humidity: 5–90% non-condensing
Terminal service modes: Scanning– channels are continuously scanned for RTS/DCD or DATA on a sequential basis; Priority– channels are continuously scanned for RTS/DCD or DATA, channel 1 has highest access priority
Op. temp.: 32 to 122 °F (0 to 50 °C)
Dimensions: 1.75H x 17.00W x 11.0D in. (4.44H x 43.18W x 18.93D cm)

ORDERING INFORMATION

3060/V24: RS-232/423 DSD, 8 ports DTE or DCE to 1 master DTE or DCE; 120 VAC version

3060/V24-220: RS-232/423 DSD, 8 ports DTE or DCE to 1 master DTE or DCE; 220 VAC version

Typical application

Modem Sharing Device
Model 3010

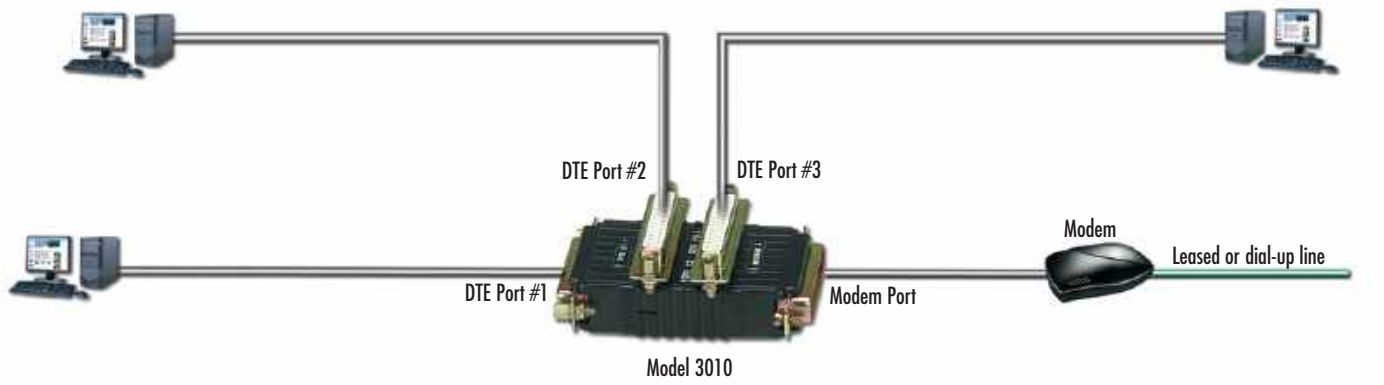
Lets three RS-232 DTEs contend for access to one RS-232 modem

The Model 3010 modem sharing device lets three RS-232 DTEs contend to transmit data to one DCE such as a modem or mux. Supporting asynchronous or synchronous data rates to 38.4 kbps, the Model 3010 passes data and control signals in parallel from the modem to all three DTEs. Each DTE may also raise RTS to contend for the right to transmit exclusively to the modem. If two DTEs raise RTS simultaneously, the Model 3010 prioritizes access by port (1-2-3). The Model 3010 requires no AC power or batteries, no configuration, and plugs directly into the modem or multiplexer's DB-25 port.

FEATURES & BENEFITS

- ✔ Async or sync operation (transparent to protocol)
- ✔ No AC power or batteries required
- ✔ Prioritized monitoring scheme uses RTS contention
- ✔ Modem transmits in parallel to each connected DTE device
- ✔ Miniature size plugs into modem port

Typical application



SPECIFICATIONS

Data Rates: 300 bps to 38.4 kbps
Transmission Format: Async or Sync (transparent to protocol)
Transmission Mode: Full or half duplex

Contention Method: Controlled by RTS
Interface: EIA RS-232/CCITT V.24
Dimensions: 3.13 x 2.11 x 1.20 in. (8 x 5.4 x 3 cm)

Connectors: DB-25 male on modem (DCE) interface, DB-25 female on DTE interfaces
Op. Temp.: 32–122°F (0–50°)

Power: Derived from RS-232 data and control signals, no AC power or batteries required
Humidity: Up to 95% non-condensing

ORDERING INFORMATION

3010: Modem Sharing Device

Micro Modem Splitter
Model 305

Lets three devices share a single modem

The Model 305 Micro Modem Splitter is a passive device that connects up to three computers to a single modem. The splitter is transparent to data format. The DTE pins 2, 4, and 20 are isolated to the modem port; all other pins are passed straight through. The Model 305 supports sync or async operation.

FEATURES & BENEFITS

- ✔ Completely passive device
- ✔ DTE pins 2, 4, and 20 are isolated to the modem port; all other pins are passed straight through
- ✔ Transparent to data format
- ✔ Sync or async operation

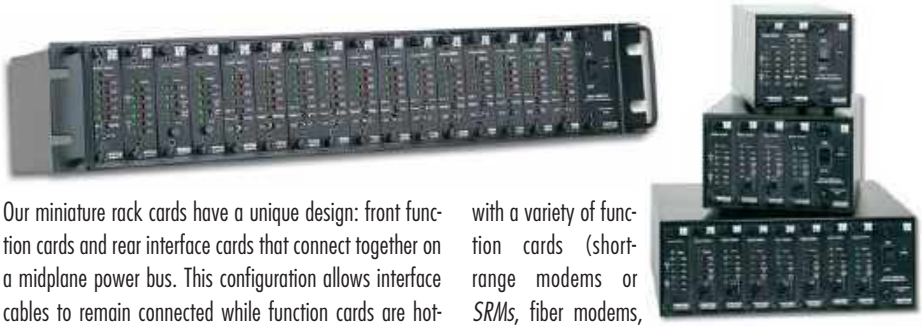
ORDERING INFORMATION

305: Modem Splitter

Mini-Rack System and ClusterBoxes™

Models 1000R16, 1000CU2, 1000CU4, & 1000CU8

Multiple datacom devices fit side-by-side in our mini-rack and ultra-compact ClusterBoxes!



Our miniature rack cards have a unique design: front function cards and rear interface cards that connect together on a midplane power bus. This configuration allows interface cables to remain connected while function cards are hot-swapped (and vice versa). Each mini-rack and ClusterBox has a power supply that services all cards in the chassis. You can configure the mini-rack and ClusterBoxes with a variety of function cards (short-range modems or *SRMs*, fiber modems, converters, etc.) and you can mix-and-match function cards with different interface cards.

16 ports fit a wide variety of Patton products—from CSU/DSUs to short-range modems to converters.

Choose from a variety of rear interfaces: DB-25, RJ-11, RJ-45, UD-26, etc.

FEATURES & BENEFITS

- ✔ Multi-function—Supports interface converters, CSUs, fiber modems and virtually all Patton mini-modems.
- ✔ Hot-swappable—Replace function cards *without turning off the power.*
- ✔ Reliable—Our distributed power system gives each rack card its own power supply circuit
- ✔ Flexible—Convenient rack mount and ClusterBox versions are available to meet your needs

SPECIFICATIONS

Environmental
Op. Temp.: 32–122°F (0–50°C)
Humidity: 5–90%, non-condensing

24 VDC Power
Input Voltage: 18–36 VDC
Input Current: 2A Max at 18 VDC
Surge Protection: Triggered at 39 VDC
Output Voltage: 12 VAC at 2A
Output Power: 24 W
LED indicators: Power, DC Input

48 VDC Power
Input Voltage: 40–60 VDC
Input Current: 1A Max at 40 VDC
Surge Protection: Triggered at 75 VDC
Output Voltage: 12 VAC at 2A
Output Power: 24 W
LED indicators: Power, DC Input

120 VAC Power
Input Voltage: 100–230 VAC
Input Current: 400 mA
Output Voltage: 10 VAC at 2.4 A
Output Power: 24 W
LED indicator: Power

220 VAC Power
Input Voltage: 200–240 VAC
Input Current: 200 mA
Output Voltage: 10 VAC at 2.4 A
Output Power: 24 W
LED indicator: Power

Device type	Standalone Model	Compatible Rack Card	Rack Card (RC) Description (Configuration)	Page
Plug-in Short-Range Modems (SRM)	1000 Series	**1000RC**	Async SRM dual RC	36
	1004A Series	**1004ARC**	High speed multipoint dual RC	37
	1005 Series	**1000RC**	Async SRM dual RC	36
	1008 Series	**1004ARC**	High speed multipoint dual RC	37
	1009 Series	**1000RC**	Async SRM dual RC	36
	1010B Series	**1010RC**	Trans Isolated SRM dual RC	36
	1010R Series	**1010RC**	Trans Isolated SRM dual RC	36
	1012A Series	**1012ARC**	Async., multipoint SRM dual RC	38
	1015 Series	**1000RC**	Async SRM dual RC	36
	1016 Series	**1010RC**	Trans Isolated SRM dual RC	36
	1017 Series	**1010RC**	Trans Isolated SRM dual RC	36
	1019 Series	**1010RC**	Trans Isolated SRM dual RC	36
	1020 Series	**1080ARC**	57.6 Async./Sync. SRM RC	41
	1025 Series	**1080ARC**	57.6 Async./Sync. SRM RC	41
	1030 Series	**1080ARC**	57.6 Async./Sync. SRM RC	41
	1040 Series	**1080ARC**	57.6 Async./Sync. SRM RC	41
Powered Short-Range Modems (SRM)	1050 Series	**1060RC**	115.2 Async. SRM RC	40
	1060 Series	**1060RC**	115.2 Async. SRM RC	40
	1080A Series	**1080ARC**	57.6 Async./Sync. SRM RC	41
Fiber Modems	1110A Series	**1110ARC**	Fiber SRM RC	43
	1140A Series	**1140ARC**	Fiber Optic Modem w/V.54 Diagnostics	43
Converters & Modem Eliminators	2085 Series	**2085RC**	RS-232 to RS-485 Converter dual RC	48
	2089 Series	**2085RC**	RS-232 to RS-485 Converter dual RC	48
	222N Series	**222NRC**	RS-232 to RS-422 Converter dual RC	47
	222N9 Series	**222NRC**	RS-232 to RS-422 Converter dual RC	47

1000CU2—Our 2-Slot ClusterBox™ has about the same footprint as a standalone box, but gives you the flexibility of a rack.

1000CU4—Our 4-slot ClusterBox™ is perfect for an office or workgroup connection. It services four to eight devices

1000CU8—When you don't need a full rack, our 8-slot ClusterBox™ gives you the power of up to 16 short hauls or converters in a single enclosure.

ORDERING INFORMATION

Factory part number encoding

1000XXX Z/ XXX X
- Power Cord Code (see power cord description, A–Z at right)
- Factory Power Configuration (120 = 120 VAC, 230 = 230 VAC 48V = 48 VDC)
- Approvals Designation (P = Standard, E = European CE Marked Configuration)
- Chassis Type (R16 = 16-Slot 19-in. Rack, CU2 = 2-Slot Cluster, CU4 = 4-Slot Cluster, CU8 = 8-Slot Cluster)

Pre-Configured Rack Assemblies

Example 19-in. 2U rack chassis

1000R16P/120K: 120 VAC power module (includes power cord for U.S.A.)

1000R16E/230D: CE compliant, 230 VAC power module (includes power cord for U.K.)

1000R16P/230G: 230 VAC power module (includes power cord for India)

1000R16P/48V: 48 VDC Power Supply

1000R16P/24V: 24 VDC Power Supply

Example Desktop ClusterBoxes™

1000CU2P/120K: 2-Slot Cluster Unit with 120 VAC power module (includes power cord for U.S.A.)

1000CU2E/230D: 2-Slot Cluster Unit with CE compliant, 230 VAC power module (includes power cord for U.K.)

1000CU2P/48V: 2-Slot Cluster Unit with 48 VDC Power Supply

Rack System Parts

Empty Rack

1000R16P: 19-in. 16-Slot Rack Chassis Sub-Assembly

Empty Cluster Chassis

1000CU2: ClusterBox-II 2-Slot Desktop Cluster Sub-Assembly

1000CU4: ClusterBox-IV 4-Slot Desktop Cluster Sub-Assembly

1000CU8: ClusterBox-VIII 8-Slot Desktop Cluster Sub-Assembly

Rear Power Entry Modules

1000RPEM-DC: DC Rear Power Entry Module

1000RPEM-RDC: DC Redundant Rear Power Entry Module

1000RPEM: Standard 120/230 VAC Rear Power Entry Module

1000RPEM-V: CE Compliant 120/240 VAC Rear Power Entry Module

Front Power Supply Modules

1000RPSM-2: 120/230 VAC Front Power Supply Module

1000RPSM-V: CE Compliant Front Power Supply Module

1000RPSM-48A: 48 VDC Front Power Supply Module

1000RPSM-R48A: 48 VDC Redundant Front Power Supply Module (2 Required)

1000RPSM-24A: 24 VDC Front Power Supply Module

1000RPSM-12A: 12 VDC Front Power Supply Module

Power cord sets

0805US: "K" American Power Cord

0805EUR: "A" European Power Cord CEE 7

0805UK: "D" United Kingdom Power Cord

0805AUS: "C" Australia Power Cord

0805DEN: "E" Denmark Power Cord

0805FR: "F" France/Belgium Power Cord

0805IN: "G" India Power Cord

0805IS: "H" Israel Power Cord

0805JAP: "J" Japan Power Cord

0805SW: "L" Switzerland Power Cord

Spare parts, hardware, fuses, panels

05R16FPB1: Single-width Blank Front Panel

05R16FPB4: 4-Slot-Wide Blank Front Panel

05R16RPB1: Single-Width Blank Rear Panel

05R16RPB4: 4-Slot-Wide Blank Rear Panel

0821R4: Fuse, 0.4A (5x20mm)

0821R2: Fuse, 0.2A (5x20mm)

056S1: 16 #4 pan head screws & washers

I'm Brian, one of Patton's Product Validation Engineers who makes sure your mini-rack product works reliably. To buy one of these state-of-the-art devices, call ***+1 301.975.1000*** *or send e-mail to* ***sales@patton.com****.*

10 and 2-Slot Universal Mounting Panels

Models 1001MP10 & 1001MP2

Rack, stack, and organize up to 10 Patton devices with these multi-functional mounting panels.

Model 1001MP10

The Model 1001MP10 Universal Mounting Panel offers the ability to rack up to 10 Patton products side by side. Products that are compatible with the 1001MP10 and 1001MP2 include Ethernet Extenders, xDSL modems, short range modems, NTUs, and much more!

Model 1001MP2

The Model 1001MP10's sturdy 4U design easily installs into any standard 19-inch rack. A combination of a unique groove system and an easily installed back panel enables the 1001MP10 to securely lock the individual Patton modems and their power supplies. For lower density applications, the Model 1001MP2 offers a 1.5U-high, 2-slot panel.

1001MP10 rear view

10 rear slots for device power supplies

The Model 1001MP series offers a convenient method for converting your favorite Patton standalone product into a rack-mounted solution.

FEATURES & BENEFITS

- ✔ Multi-Functionality—Supports NTUs, xDSL Modems, Short Range Modems, and Ethernet Extenders.
- ✔ Independent Slots—Up to 10 independently operating slots to completely do away with any single point of failures.
- ✔ Rackmount—Both Universal Mounting Panels fit into any 19-in. rack. The 10-slot panel is only 4U (7 in./17.78 cm) high. The 2-slot is 1.5U (2.63 in./6.68 cm) high.
- ✔ Cost-Effective—Rack-mount products you have already purchased.

*I'm John, one of Patton's Product Group Managers. If you do not find what you need at **www.patton.com** or in this catalog please call me at **+1 301.975.1000, x160**. You can also send e-mail to **jgrant@patton.com**.*

Ask the Experts

Patton Product Compatibility Table

xDSL Modems	E1/T1 Network Extenders	E1/T1 NTU	Ethernet Extenders	Serial Short-Range Modems
1082: iDSL Modem	**2113**: T-Link E1 Extender	**2701** Series: G.703/G.704 FE1/E1 NTU	**2155**: 144 kbps CopperLink Extender	**1060**: RS-232 115.2 kbps Asynchronous SRM
3088: G.SHDSL Modem	**2115**: T-Link T1 Extender	**2707** Series: G.703 Clear Channel E1 NTU	**2156**: 2.3 Mbps CopperLink Extender	**1070**: RS-232 19.2 kbps Synchronous SRM
3201: 2.3 Mbps G.SHDSL Router		**2720** Series: T1/FT1 NTU	**2157**: 4.6 Mbps CopperLink Extender	**1080A**: RS-232 57.6 kbps Async/Sync SRM
3241: 4.6 Mbps G.SHDSL Router			**2158**: 10 Mbps CopperLink Extender	**1080A-64**: RS-232 64 kbps Async/Sync SRM
1068: VDSL Modem			**2168**: 16 Mbps CopperLink Extender	**1226**: Parallel 115.2 kbps SRM
			2172: 50 Mbps CopperLink Extender	**1075**: X.21 64 kbps Sync SRM
				1226: RS-232 38.4 kbps Async SRM

SPECIFICATIONS

1001MP10

Front Panel: 10 independently operating slots
Dimensions: 19 L x 6.75 W x 7 H in. (48.3 L x 17.15 W x17.78 H cm)
Weight: 4.15 lbs (1.90 kg)

1001MP2

Front Panel: 2 independently operating slots
Dimensions: 19.0 W x 2.63 H x 1.9 D in. (48.3 W x 6.68 H x 4.8 D cm)
Weight: 2 lbs (0.95 kg)

ORDERING INFORMATION

1001MP2: 19-in. Horizontal 2-Slot Rack
1001MP10: 19-in. Vertical 10-Slot Rack

16-Slot Universal Mounting Panel

Model 1001MP16

Rack, stack, and organize with Patton's Multi-Functional Universal Mounting Panel. Rack up to 16 Patton MicroPak Devices into a dense 2U solution.

Rack-Mount any of Patton's MicroPak Products

FEATURES & BENEFITS

- ✔ Mount any MicroPak—Supports media converters, terminal servers, Ethernet bridges, fiber modems, CSU/DSUs, interface converters, short haul modems, and surge protectors
- ✔ Low Profile-2U High—Universal Mounting Panel is only 2U (3.5 in. or 8.9 cm) high and holds up to 16 MicroPaks; Installs quickly into any standard 19 inch rack
- ✔ Dry-erase label blocks and port identification numbers for easy circuit identification
- ✔ Cost Effective—Adapt Patton MicroPak products you already own for use in a standard 19 inch rack, thereby eliminating the expense of upgrading to rack-mounted equipment

The Model 1001MP16 Universal Mounting Panel offers the ability to rack-mount any of Patton's MicroPak products side-by-side. Products that are compatible with the 1001MP16 include Device servers, Media converters, Ethernet bridges, Fiber modems, Interface converters, and many more!

The sturdy 2U design of the 1001MP16 enables quick and hassle-free installation into any standard 19-inch rack. The 1001MP16's unique bracket-and-groove mounting system enables Patton MicroPak cases to be mounted securely into the panel. Dry-erase labels and individually numbered ports are provided for easy circuit/port identification.

The Model 1001MP16 provides an economical method for converting your favorite Patton standalone MicroPak products into a customized rack-mounted solution.

Back View

Unique bracket-and-groove system fastens the MicroPak securely into the panel

Patton Product Compatibility Table

VoIP Micro-ATAs & AFAs

M-ATA M-AFA

Device Servers

2120 Series 2120/A9

Serial Modems

1000R Series 1012AR Series
1007 Series 1017 Series
1010R Series 1052 Series

Surge Protectors

503PC 570 Series
534 Series 580 Series
547 Series 552 Series

Serial/Parallel Converters

2026P 2036P

Ethernet Bridges

2121 Series 2135C Series
2124 Series 2135 Series
2130 Series

Data Taps

3/11 3/45

Interface Converters

1104 Series 2086 Series
2016 Series 2070 Series
2021 Series 2702 Series
2040 Series 2090 Series
2041 Series 2094 Series
2042 Series

Baluns

460 Series 470 Series
462 Series 471 Series
463 Series 472 Series
465 Series

CSU/DSUs

2710 Series 2715 Series
2711 Series 2400 Series

Modem Eliminators

1205 Series 1206

and many more...

SPECIFICATIONS

Front panel: 16 Operationally independent slots
Dimensions: 19L x 1.5W x 3.8H in. (48.3L x 3.8W x 8.9H cm)
Weight: 1.1 lbs (0.5 kg)
Latching: 16 individual steel clips with hardware (Included with unit)
Power: None required. Some units may require individual power supplies

ORDERING INFORMATION

1001MP16: 19-inch, 16-Slot Mounting Panel
1001MP-PS8: 8-Barrel 5V, 4A Power Supply

Line Drivers

Short-Range Modems and Modem Eliminators

Self-Powered Line Drivers

ASYNC

DB-25, DB-9, DB-15

to 19.2 kbps
17 miles
(27 km)

Model 1000, 1009, 1015
Page 36

ASYNC/MULTIDROP

DB-25, DB-9

to 115.2 kbps
9 miles
(14.5 km)

Model 1004A/1008
Page 37

SYNC & ASYNC

Low Speed

to 38.4 kbps
12 miles
(19.3 km)
Multi-Drop

Model 1040
Page 38

Powered Line Drivers

LOW SPEED UNITS

Basic

to 38.4 kbps
14 miles
(22.5 km)

Model 1050
Page 40

Multipoint

to 115.2 kbps
14 miles
(22.5 km)

Model 1060
Page 40

Long Range & Multipoint

to 64 kbps
17 miles
(27 km)

Model 1080A
Page 41

Fiber Modems

ASYNC RS-232

to 19.2 kbps
5 miles
(8 km)

Model 1110A
Page 43

ASYNC RS-485

to 115.2 kbps
1.25 miles
(2.01 km)

Model 1104
Page 43

ASYNC/SYNC RS-232

to 38.4 kbps
4 miles
(6.4 km)

Model 1140A
Page 43

Modem Eliminators

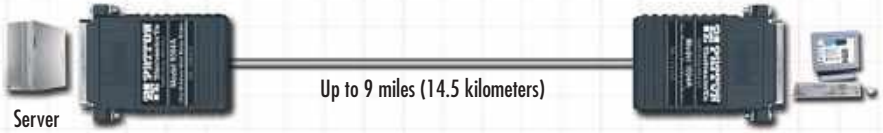
ASYNC

Null Modem
Adapters

Model 6
Page 59

Typical Line-Driver Application

See page 37



Going the Distance

SYNC & ASYNC

High Speed

to 64 kbps
6 miles
(9.7 km)

Model 1045
Page 39

PARALLEL

Wire Speed

2,000 feet
(610 m)

Model 1225
Page 39

INDUSTRIAL MODEMS FOR OUTDOOR USE

Temp: 32 to 158°F (0 to +70°C) **Temp: 14 to 158°F (-10 to +70°C)**

Environmentally ruggedized sync./async. baseband modems

Model 1065A (Standard Temp/Humidity)
Page 42

Model 1065E (Extended Temp/Humidity)
Page 42

USB & Wireless Modems

USB

to 196 feet
(60 m) over
Cat5e cable

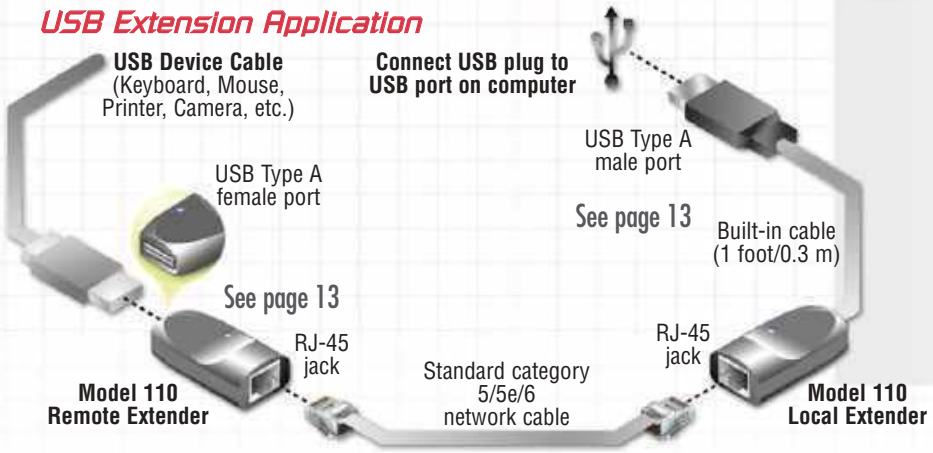
Model 110
Page 13

WIRELESS

to 380 kbps
3,900 feet
(1,188 meters)

Model 1013
Page 44

USB Extension Application



In This Section

Basic Point-to-Point Async SRMs

Models 1000 & 1009

The Model 1000 async short range modem plugs directly into a DB-25 RS-232 port. A pair of Model 1000s supports distances up to 17 mi (27.4 km) at 1200 bps over two 19 AWG (0.9 mm) unconditioned twisted pairs. Operating at data rates up to 19.2 kbps, this cost saving device does not require AC power or batteries to operate. The Model 1000 is DCE/DTE switchable, and is compatible with the Patton Model 1009 (DB-9) and 1015 (DB-15).

The Model 1000S incorporates 600 watts per wire of built-in Silicon Avalanche Diode surge protection.

Rack card, DB-9 (EIA-574), & DB-15 versions are also available!

The dual-port Model 1000RC rack card incorporates two Model 1000 short range modems. You can fit up to 32 SRMs in each 19-in. rack. The Model 1000RC card is available with RJ-11 or RJ-45 rear interface cards.

FEATURES & BENEFITS

- ✔ Range to 17 miles (27.4 km) on 19 AWG at 1,200 bps
- ✔ Data rates to 19,200 bps
- ✔ External DCE/DTE switch
- ✔ FCC Approved—Part 15 Class A

SPECIFICATIONS

Transmission Format: Async
Data Rate: 0 to 19,200 bps (no strapping)
Control Signal: CTS (Pin 5) turns ON immediately after the terminal raises RTS (Pin 4); DSR (Pin 6) and DCD (Pin 8) turn ON immediately after the terminal raises DTR (Pin 20)
Transmit Line: 4 wire, unconditioned line (2 twisted pair)
Transmit Mode: Full duplex, 4-wire
Transmit Level: 0 dBm
Line Connection: RJ-11 or RJ-45 jack or 5 screw terminal posts and a strain relief
Surge Protection: 600W power dissipation at up to 1 msec
Power: None required, uses ultra low power from EIA data and control signals
Dimensions: 2.20 x 1.75 x 0.75 in. (5.59 x 4.45 x 1.91 cm)

ORDERING INFORMATION

1000M: Male DB-25/terminal block
1000F: Female DB-25/terminal block
1000SM: DB-25, surge protected
1000F RJ11: DB-25/RJ-11 jack
1000M RJ45: DB-25/RJ-45 jack

1009M: Male DB-9/terminal block
1009F: Female DB-9/terminal block
1009SM: DB-9, surge protected
1009F RJ11: DB-9/RJ-11 jack
1009M RJ45: DB-9/RJ-45 jack)

Rack card supports two modems per card.
1000RC11: Dual Rack Card, RJ-45 DTE, RJ-11 line
1000RC45: Dual Rack Card, RJ-45 DTE, RJ-45 line

Note: Other models (including DB-15) are available, call for details.

Transformer Isolated SRMs Guard Against Ground Loops

Models 1010B, 1016 & 1019

The Patton Model 1010B async, 4-wire, transformer isolated short range modem is the best choice for data-only RS-232 connections between buildings. Capable of distances up to 9.5 miles, the Model 1010B's transformer isolation provides immunity from ground loops. 600 watts of built-in surge protection is standard. No AC power or batteries are required for operation.

Rack card, DB-9, DB-15, & RJ-11 versions are also available!

Patton has DB-9, DB-15, RJ11 and rack-card versions! And they're all compatible with the Model 1010B up to 19.2 kbps!

FEATURES & BENEFITS

- ✔ Immune to ground loops
- ✔ Range to 8 miles (12.9 km) over 2 twisted pairs
- ✔ Asynchronous data rates to 115.2 kbps (Model 1010B only)
- ✔ Surge protection is standard (on Model 1010B only)
- ✔ External DTE/DCE switch
- ✔ Support async, point-to-point, RS-232, communication over two twisted pairs
- ✔ Connects to DB-9 and DB-15 interfaces
- ✔ Compatible with Patton Model 1000
- ✔ Transformer isolated Models 1016 and 1019 for between-building applications

SPECIFICATIONS

Transmission Format: Asynchronous, full duplex
Transmission Line: Two unconditioned twisted pair 19–26 AWG
Interfaces: EIA RS-232, CCITT V.24
Data Rates: Low speed mode: 300 bps–57.6 kbps; High speed mode: 2400 bps–115.2 kbps
Isolation: Minimum 1500V RMS using custom transformers
Control Signals: DSR and DCD follow DTR from the terminal (DTE); CTS follows RTS from the terminal (DTE)
Surge Protection: 600W power dissipation
Connectors: DB-25 male or female on RS-232 side; RJ-11, RJ-45 or terminal block with strain relief on line side
Dimensions: 2.66 x 2.10 x 0.73 in. (6.7 x 5.3 x 1.9 cm)
Power Supply: None required; uses power from EIA data and control signals
Op. Temp: 32–122°F (0–50°C)
Altitude: 0–15,000 ft (0–4,572 m)
Humidity: 5 to 95% non-condensing
Weight: 2 oz. (56.8 grams)

ORDERING INFORMATION

1010BM: Male DB-25/terminal block
1010BF: Female DB-25/terminal block

1010BF RJ11: with RJ-11 jack
1010BM RJ45: with RJ-45 jack

Rack card supports two modems per card
1010RC11: Dual Rack Card, RJ-45 DTE, RJ-11 Line
1010RC45: Dual Rack Card, RJ-45 DTE, RJ-45 Line

High-Speed, Multipoint Short-haul Modem

Models 1004A, 1004A Rack Card, & 1008

Still the best choice for high speed multidrop applications

The **Model 1004A** 2/4 wire short range modem (shown at right) gives you up to 50 terminal drops over one (half duplex) twisted pair, and supports async data rates up to 115.2 kbps. Great for same-building applications, the Model 1004A has high/low impedance settings, selectable RTS/CTS delay and a DTE/DCE switch. *Plus*, 600 watts of surge protection is *standard*.

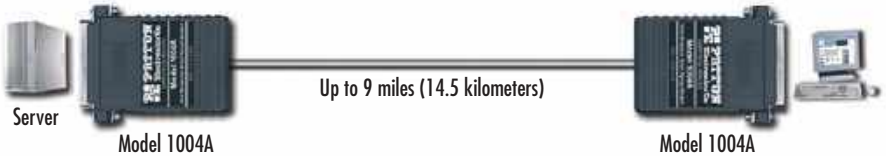
The **Model 1008** modem supports all the features of the popular Model 1004A, but with a DB-9 (EIA-574) connector. Plug them directly into closely-spaced serial ports. They are even compatible with stand-alone and rack-mount versions of the 1004A!

1004A rack card houses two SRMS!

Plug 16 Model 1004A rack cards into a 2U Patton 1001 or 1000 rack system and get 32 short-range modems!

Typical application

Typical application



Model 1004 & 1008 distance table, in miles (kilometers)				
Data Rate (kbps)	**Wire Gauge**			
	19 (0.9mm)	**22 (0.6mm)**	**24 (0.4mm)**	**26 (0.2mm)**
115.2	3.5 (5.6)	2.6 (4.2)	1.4 (2.3)	0.9 (1.4)
38.4	5.0 (8.0)	2.9 (4.7)	2.2 (3.5)	1.5 (2.4)
9.6	7.1 (11.4)	4.6 (7.4)	3.5 (5.6)	2.8 (4.5)
1.2	9.0 (14.5)	6.5 (10.5)	5.0 (8.0)	3.9 (6.3)

FEATURES & BENEFITS

- ✔ Point-to-point full-duplex operation over 4 wires
- ✔ Multipoint (half-duplex) operation over 2 or 4 wires
- ✔ Multidrop up to 50 terminals
- ✔ Async. data rates to 115.2 kbps
- ✔ Range to 9 mi (14.5 km) on 19 AWG (0.9mm) at 1.2 kbps
- ✔ No AC power or batteries required

See Pg 30

SPECIFICATIONS

Transmission Format: Asynchronous
Data Rate: Up to 115,200 bps
Transmit Line: 2, 4 wire unconditioned twisted pair
Transmit Mode: Full or half duplex
Transmit Level: 0 dbm
Range: Over 9 miles (14.5 km)
Dimensions: 2.66 X 2.10 X 0.73 in. (6.8 X 5.3 X 1.9 cm)
Surge Protection: 600W power dissipation for up to 1 msec
Control Signals: DSR turns "ON" immediately after the terminal raised DTR; DCD turns on after recognizing the receive signal from the line; CTS turns on 8 mSec after the terminal raises RTS
Power: None required, uses ultra low power from EIA data and control signals
Carrier: The carrier is a strap selected for either continuous operation or controlled by RTS

ORDERING INFORMATION

1004AM: Male DB-25/terminal block
1004AF: Female DB-25/terminal block
1004AFRJ11: with RJ-11 jack
1004AMRJ45: with RJ-45 jack
1004AMDR11: with dual RJ-11
1004AMDR45: with dual RJ-45
1004ARC11: Dual Rack Card, RJ-45 DTE, RJ-11 line:
1004ARC45: Dual Rack Card, RJ-45 DTE, RJ-45 line
1008M: Male DB-9/terminal block
1008F: Female DB-9/terminal block
1008FRJ11: with RJ-11 jack
1008MRJ45: with RJ-45 jack
1008MDR11: with dual RJ-11
1008MDR45: with dual RJ-45

Note: More models are available, check online at www.patton.com or call for details.

Multidrop Transformer-Isolated Asynchronous Short-Range Modem

Models 1012B & 1012ARC

Perfect for multidrop environments, transformer isolated for between-building applications.

The Model 1012B asynchronous short range modem is ideal for multidrop environments or for applications requiring hardware control signals. Attaining DC isolation through custom-designed ferrite core transformers, the Model 1012B operates effectively between buildings. In a point-to-point application, the Model 1012B will operate full or half duplex up to 5.2 mi (8.4 km). Supporting data rates to 38.4 kbps, the Model 1012B requires no AC power for operation. 600 watts per wire of silicon avalanche diode surge protection on the line side is standard.

The Model 1012ARC is a rack-mountable version of the Model 1012A. Model 1012ARC plugs into Patton's 2U high 19 inch chassis and provides you with two short haul modems per card. And, they are available with RJ-11 or RJ-45 line connectors.

Model 1012 distance table, in miles (kilometers)			
Data Rate	Wire Gauge		
	19 (0.9mm)	22 (0.6mm)	24 (0.4mm)
1,200 to 38,400	5.2 (8.4)	2.8 (4.5)	2.0 (3.2)

SPECIFICATIONS

Trans. Format: Asynchronous
Transmit Line: 4 wire unconditioned twisted pair
Transmit Mode: Full or half duplex
Transmit Level: -6 dBm

Control Signals: DSR turns "ON" immediately after the terminal raises DTR; DCD turns "ON" after recognizing the receive signal from the line; carrier is continuously "ON" or controlled by RTS; CTS turns "ON" 40 mSec after the terminal raises RTS

Surge Protection: 600W power dissipation at 1 mS
Data Rate: 0 to 38.4 kbps (no strapping)
Range: Up to 6 miles (9.7km), depending on wire gauge

Power: None required
Dimensions: 2.66" x 2.10" x 0.73" (6.8 x 5.3 x 1.9 cm)

FEATURES & BENEFITS

- ✔ Data rates to 38.4 kbps
- ✔ Supports 15 drops in a multipoint polling environment
- ✔ Transmits and receives one control signal each way
- ✔ Transformer isolated and surge protected
- ✔ External DCE/DTE switch

ORDERING INFORMATION

1012BFR11TB: Female DB-25; RJ-11 & terminal block
1012BMR11TB: Male DB-25; RJ-11 & terminal block
1012BFR45TB: Female DB-25; RJ-45 & terminal block
1012BMR45TB: Male DB-25; RJ-45 & terminal block
1012ARC11: Dual Rack Card, RJ-45 DTE, RJ-11 Line
1012ARC45: Dual Rack Card, RJ-45 DTE, RJ-45 Line

Note: More models are available, call for details.

Synchronous/Asynchronous Short-Range Modem

Model 1040

Sync/async in a compact SRM.

The Model 1040 self-powered miniature short range modem packs the features of Patton's Model 1080 into a package that requires no AC power. Operating asynchronously or synchronously, the Model 1040 supports data rates to 38.4 Kbps and distances to 12 miles (19.3 km). The Model 1040 will operate over 2 or 4 wires, in point-to-point or multipoint environments. In synchronous mode, the Model 1040 supports internal, external or receive loopback clocking.

The Model 1040 incorporates two V.54 and two V.52 BER test modes, which can be activated via the RS-232 interface. Built-in LEDs let you monitor test mode operation.

Additional peace of mind comes from knowing that the Model 1040 has both transformer isolation and surge protection to guard against data loss. The Model 1040 is designed to plug directly into the RS-232 interface. Twisted pair wire is connected using RJ-11, RJ-45 or terminal blocks.

SPECIFICATIONS

Range: 10 miles (16.1Km) @ 1200 bps on 22 AWG 2-pair wire
Data Rates: Sync & Async: 1.2, 1.8, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, 19.2, 28.8, 38.4, externally switch selection
Operation: Point-to-point or multipoint
Transmit Mode: 2-wire/half duplex, 4-wire/full duplex

Connectors: DB-25 M, F (RS-232), RJ-11 jack and terminal block
Diagnostics: 100% V.54 compliant and 100% V.52 compliant BER tests
LED Indicators: BERT indicator, Loop/Test indicator
Interface: EIA RS-232, CCITT V.2

Carrier: Constantly ON or controlled by RTS
RTS/CTS Delay: Externally strap selected to 0.7, or 50 mS
Receive Clock: Derived from receive signal
Isolation: Transformer, 1500V RMS

Transmit Clock: Internal, external or looped back from recovered signal
Surge Protection: 600 watts power dissipation for up to 1 msec
Dimensions: 2.6 x .73 x 2.1 in. (6.6 x 1.9 x 5.3 cm)

FEATURES & BENEFITS

- ✔ Async or sync operation
- ✔ RS-232 data rates to 38.4 kbps
- ✔ Distances to 12 mi (19.3 km)
- ✔ Point-to-point or multipoint
- ✔ 2-wire half duplex, 4-wire full duplex
- ✔ V.54 and V.52 test modes
- ✔ Internal, external or receive recover clocking (sync. mode)
- ✔ Transformer isolation and surge protection

ORDERING INFORMATION

1040M: Male DB-25/terminal block
1040F: Female DB-25/terminal block
1040SM: with surge protection
1040F RJ11: with RJ-11 jack
1040M RJ45: with RJ-45 jack

Note: More models are available, call for details.

See Pg 30

High Speed, Short-Range Modem (RS-232 & RS-530)

Model 1045

Great for LAN-to-LAN or Tail Circuit Applications in Sync or Async Environments

The Model 1045 KiloModem is Patton's most capable plug-in short haul modem to date. The Model 1045 supports both async and sync communication at switch selectable data rates of 32, 56 and 64 kbps. Deriving power from an external AC transformer, the Model 1045 supports distances up to 6 miles/9.7 km (19 AWG at 32 kbps) over two unconditioned twisted pair. Synchronous transmit clock options are internal, external and receive recover clock. The Model 1045 includes V.54 loopback diagnostics and a built-in V.52 BERT pattern generator/detector. Transformer Isolation and surge protection guard against ground loops and transients. A rack mount version, the Model 1045RC, fits in Patton's 16 slot rack chassis and 2/4/8-slot ClusterBoxes™.

SPECIFICATIONS

Transmission line: 19–26 AWG (0.9–0.4mm) private unloaded twisted pair or unconditioned telephone company local area data (LAD) channels; (see AT&T specification 41028)
Data Rates: Async. 32, 56 and 64 kbps. Sync. 32, 56 and 64 kbps.
Carrier: Always on or controlled by RTS (point-to-point or multipoint operation)
Interface: EIA RS-232 or CCITT V.35
RTS/CTS delay: Switch-selected to 0, 7, or 53 mS
Diagnostics: 100% compliance with V.54 test modes (switch-selectable)
BERT: 100% compliance with V.52 including 511 & 511E bit pattern generation (switch-selectable)
Receive clock: Derived from receive signal
Transmit clock: Internal, external (from pin 24) or receive recover
Indicators: Status LEDs for TD, DCD,PWR and Test
Isolation: 1500V RMS via isolation transformers
Power supply: External wallmount transformer available with 120 or 230V
Surge suppression: 600W power dissipation
Dimensions: 3.55 x .2.1 x 78 in. (9.0 x 5.3 x 2 cm)

Model 1045 distance table, in miles (kilometers)

Data Rate	Wire Gauge		
	19 (0.9mm)	24 (0.5mm)	24 (0.4mm)
64,000	5.3 (8.5)	4.2 (6.7)	2.5 (4.0)
56,000	6.8 (10.9)	4.2 (6.7)	2.6 (4.2)
32,000	9.1 (14.6)	4.7 (7.5)	3.0 (4.8)

FEATURES & BENEFITS

- ✔ Async or sync operation
- ✔ Data rates of 32, 56 & 64 kbps
- ✔ Distances to 6 miles (9.7 km)
- ✔ Built-In V.52 BER generator/detector
- ✔ Internal, external or receive recover clocking in sync mode
- ✔ Transformer isolation and surge protection

ORDERING INFORMATION

RS-232/V.24 Versions
1045/24M: RJ-11 Male DB-25/RJ-11 jack
1045/24F RJ-11: Female DB-25/RJ-11 jack
1045/24M RJ-45: Male DB-25/RJ-45 jack
1045/24F RJ-45: Female DB-25/RJ-45 jack

CCITT V.35 Versions
1045/35M RJ-11: Male DB-25/RJ-11 jack
1045/35F RJ-11: Female DB-25/RJ-11 jack
1045/35M RJ-45: Male DB-25/RJ-45 jack
1045/35F RJ-45: Female DB-25/RJ-45 jack

Async./Sync. Rack Card
1045RC11: DB-25 DTE & RJ-11 Line
1045RC45: DB-25 DTE & RJ-45 Line
1045RC4511: RJ-45 DTE & RJ-11 Line
1045RC4545: RJ-45 DTE & RJ-45 Line

Note: More models are available, call for details.

Self-Powered Line Extenders

Model 1225 ParaLink™

Extend parallel communication to 2,000 feet (610 m) over a single twisted pair

The Model 1225 ParaLink answers a common office complaint: "Why can't we move our printer further away?" Using surface mount technology, the interface-powered ParaLink converts parallel signals to serial and transmits them up to 2,000 feet (610 m) before converting them back to parallel. This overcomes the inherent distance limitations of parallel communication! What's more, the ParaLink transmits over a single pair of wires—no more bulky 25 or 36-conductor cables. Because the ParaLink lets you choose between BUSY and ACKNOWLEDGE handshaking modes, it is compatible with most parallel printers and sharing devices on the market.

FEATURES & BENEFITS

- ✔ Interface Powered—No AC Needed
- ✔ Switchable ACK/BUSY handshaking enhances printer compatibility
- ✔ Accommodates "low power" printer interfaces
- ✔ DB-25 or Centronics connectors
- ✔ RJ-11, RJ-45 or terminal block twisted pair connection

SPECIFICATIONS

Interface: Centronics/IBM parallel (DB-25)
Data Rate: 5 kbps (parallel)/40 kbps (serial)
Range: Up to 2,000 feet (610 m)
Transmit Line: One unconditioned twisted pair (2 wires)
Transmit Mode: Half duplex
Line Connection: RJ-11 or RJ-45 jack or 2 position terminal post and a strain relief
Interface Signals: Data bits 0-7, ground, busy or acknowledge (external switch selectable)
Power Supply: Interface powered, no AC power or batteries required
Dimensions: 2.67L x 2.10W x 0.74H in. (6.7L x 5.3W x 1.88H cm)

ORDERING INFORMATION

Terminal block version
1225TM: Transmitter, male DB-25
1225CRM: Centronics receiver, male
1225RM: Receiver, male DB-25
1225RF: Receiver, female DB-25

RJ-11 version
1225TMRJ11: Transmitter, male DB-25
1225CRM: Centronics receiver, male
1225RM: Receiver, male DB-25
1225RF: Receiver, female DB-25

Note: More models are available, call for details.

See Pg 30

AC Powered, Asynchronous SRM (up to 38.4 kbps)

Model 1050

The Key Features You Need at a Price that Leaves a Small Footprint on Your Budget!

The Model 1050 AC Powered Asynchronous Short Range Modem is to our AC powered short haul line what the Model 1000 is to our interface powered line—a basic short haul at a great price! And the Model 1050 has the key features you need: optical isolation, a local loopback test mode, LED indicators and a DCE/DTE switch.

The Model 1050 supports asynchronous RS-232 data rates to 38.4 kbps, and supports distances up to 14 miles (22.5 km). Housed in an ultra-compact enclosure, the Model 1050 provides both an external RJ-11 jack and internal terminal block for line connection. On the RS-232 side, a female DB-25 is

standard. The Model 1050 is designed for point-to-point applications, with one unit on each end of the line. However, the Model 1050 is also compatible with the Patton Models 1060 and 1226 short hauls.

FEATURES & BENEFITS

- ✔ Asynchronous RS-232 operation over two twisted pair
- ✔ Data rates to 38,400 bps
- ✔ Optical isolation
- ✔ Loopback test
- ✔ Distances to 14 miles (22.5 km)
- ✔ DCE/DTE switchable
- ✔ Ultra-compact enclosure

SPECIFICATIONS

Transmission Line: 19 to 26 AWG twisted pair
Range: 4 Miles (6.4 Km) on two 24 AWG pairs
Serial Interface: EIA RS-232 /CCITT V.24, DB-25 female
Line Connection: RJ-11 and internal terminal block w/ strain relief
Data Rates: 1.2 to 38.4 kbps
Diagnostics: Local Loopback
Indicators: Tri-state LEDs for RD, TD and Test
Power: External wallmount transformer available with 115 or 240V
Optical Isolation: 2500V RMS on DCE Interface
Dimensions: 1.58H x 4.16W x 3.75D in. (10.6H x 4.1W x 8.8D cm)

ORDERING INFORMATION

1050-120: Async., Powered, Standalone: Short Haul Modem (120V)
1050-230: Async., Powered, Standalone: Short Haul Modem (230V)

Note: More models are available, call for details.

AC Powered, Asynchronous SRM (up to 115.2 kbps)

Model 1060

The ideal choice for async UTP or STP applications!

The Model 1060 AC Powered, Asynchronous Short-Range Modem is Patton's most sophisticated async twisted-pair short haul. The Model 1060 adapts to a wide range of applications, while providing the resources to deal with less-than-optimum conditions. Supporting hardware or software flow control, the Model 1060 operates in point-to-point and multipoint. The Model 1060 handles data rates to 115.2 kbps, and supports distances to 14 miles (22.5 km) over two twisted pair.

Because the line side is optically isolated and surge protected, you can install the Model 1060 in environments where EMR or ground loops would normally prohibit twisted pair data communications. Assignable control signals and DCE/DTE switchability complete the picture.

FEATURES & BENEFITS

- ✔ Asynchronous RS-232 operation over two twisted-pair
- ✔ Data rates to 115.2 bps
- ✔ Optical isolation
- ✔ Loopback test
- ✔ Distances to 14 miles (22.5 km)
- ✔ DCE/DTE switchable
- ✔ Ultra-compact enclosure

Model 1050 & 1060 distance table, in miles (kilometers)			
Data Rate	Wire Gauge		
	19 (0.9mm)	24 (0.5 mm)	24 (0.4mm)
115.200*	1.8 (2.9)	0.75 (1.2)	0.38 (0.6)
57,000	2.5 (4.0)	1.3 (2.1)	0.95 (1.5)
38,400	3.7 (6.0)	1.5 (2.4)	1.33 (2.1)
19,200	4.17 (6.7)	1.9 (3.1)	1.42 (2.3)
9,600	5.41 (8.7)	2.6 (4.2)	2.08 (3.3)
4,800	7.05 (11.3)	3.8 (6.1)	2.84 (4.6)
2,400	11.5 (18.5)	7.0 (11.3)	4.83 (7.8)
1,200	14.0 (22.5)	8.5 (13.7)	5.68 (9.1)

* Model 1060 only.

SPECIFICATIONS

Transmission Format: Asynchronous
Interface: RS-232 (CCITT V.24) DB-25 female
Data Rate: 0 to 115.20 bps
Transmission Line: 4-wire, unconditioned via RJ-11 or terminal blocks (RJ-45 optional)
Diagnostics: Loop 3 and 4, local and remote analog loopback
Indicators: Tri-state indicators for Transmit Data, Receive Data, Control In and Control Out
Power: Wall-mount, 12VAC, 200mA
Dimensions: 4.17W x 1.52H x 5.0L in. (10.6W x 3.9H x 12.7L cm)

ORDERING INFORMATION

1060: Async., Powered, Standalone: Short Haul Modem (120V)
1060-220: Async., Powered, Standalone: Short Haul Modem (230V)
1060RC11: Async., Powered, Rack Card: w/ DB25 DTE & RJ-11 Line
1060RC45: Async., Powered, Rack Card: w/ DB25 DTE & RJ-45 Line
1060RC4511: Async., Powered, Rack Card: RJ-45 DTE, RJ-11 Line
1060RC4545: Async., Powered, Rack Card: w/ RJ-45 DTE & RJ-45 Line

Note: More models are available, call for details.

Universal Short Range Modem

Models 1080A & 1080A-64

You can use the Model 1080A in just about any RS-232 UTP or STP application

The Model 1080A AC Powered, Universal Short Range Modem is the mainstay of our RS-232 short haul line, and it is now better than ever! Recent improvements in the Model 1080A include increased distances (up to 17 miles (27.4 km) on one or two unconditioned twisted pair), support for higher data rates (up to 57.6 kbps), and the addition of a built-in V.52 BER test pattern generator. Of course, the Model 1080A retains all the features that you have come to expect: asynchronous or synchronous RS-232 operation, half duplex communication over two wires or a choice of half or full duplex communication over four wires, support for point-to-point or multipoint applications, and fully compliant V.54 test modes (local analog loop and remote digital loop).

New automated features include equalization, gain control and noise filtering (a separate filter for each data rate is built into a custom VLSI chip). To combat the many nemeses of clear data transmission, the Model 1080A includes surge protection (guards against transients), transformer isolation (eliminates ground looping) and a new anti-streaming timer (stops data streaming).

The Model 1080A packs a lot of convenience into a tiny box: front panel LEDs give a clear picture of link status; V.54 tests can be activated remotely or via the front panel; and the unit can be externally configured (no need to open the case). Best of all, the Model 1080A standalone is fully compatible with the Model 1080A rack card and the new self-powered Model 1040 short haul.

Model 1080ARC rack cards are also available!

The Model 1080ARC fits in Patton's 2U high rack chassis and 2/4/8 ClusterBoxes™. Four plug-in rear interface cards are available.

See Pg 30

Model 1080A distance table, in miles (kilometers)			
Data Rate (kbps)	Wire Gauge		
	19 (0.9mm)	22 (0.6 mm)	24 (0.4mm)
57,600	12.0 (19.3)	7.0 (11.2)	5.3 (8.5)
38,400	13.0 (20.9)	7.5 (12.1)	6.2 (10)
19,200	16.0 (25.8)	8.5 (13.7)	7.0 (11.3)
9,600	18.5 (29.8)	13.0 (20.9)	10.4 (16.7)
4,800	19.5 (31.4)	14.0 (22.5)	11.3 (18.2)
2,400	20.5 (33.0)	15.0 (24.2)	11.6 (18.7)
1,200	20.0 (32.2)	15.0 (24.2)	11.4 (18.4)

Model 1080A-64 distance table, in miles (kilometers)			
Data Rate (kbps)	Wire Gauge, in AWG (mm)		
	19 (0.9mm)	22 (0.6 mm)	24 (0.4mm)
64,000	11.0 (17.7)	6.5 (10.5)	5.0 (8.1)
32,000	13.5 (21.7)	7.5 (12.1)	6.4 (10.3)
16,000	16.5 (26.6)	10.0 (16.1)	8.4 (13.5)

FEATURES & BENEFITS

- ✔ Async or sync operation
- ✔ 4-wire half or full-duplex/2-wire half-duplex only
- ✔ RS-232 data rates to 57.6 kbps
- ✔ Distances over 17 miles (27.4 km)
- ✔ Point-to-point or multipoint
- ✔ V.54 and V.52 test modes
- ✔ Automatic equalization/gain control
- ✔ Internal, external, or received recover clocking in sync. mode
- ✔ Custom VLSI noise filter chip
- ✔ Transformer isolation/surge protection
- ✔ Anti-streaming timer
- ✔ Fully compatible with the Model 1040 synchronous/asynchronous short-range modem

I'm Maria, one of Patton's Sales Coordinators. If you have questions about our products, call **+1 301.975.1000** or send e-mail to **sales@patton.com**.

SPECIFICATIONS

Range: 17.5 miles at 1200 bps, 19 AWG 2-pair wire
Data Rates: Sync or Async: 1.2, 1.8, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, 19.2, 28.8, 38.4, and 57.6 kbps, externally switch selected
Operation: Point-to-point or multipoint

Transmit Mode: Synchronous or asynchronous, 2-W/half duplex, 4-W/half or full duplex
Interface: EIA RS-232, CCITT V.24
Diagnostics: V.54 compliant local analog loopback & remote digital loopback; V.52 compliant 511 and 511E test pattern generator
LED Indicators: TD, RD, RTS, DCD, Power, Test

Carrier: Constantly ON or Controlled by RTS
RTS/CTS Delay: Strap selected: 0.0, 8.5 or 50 mS
Isolation: Transformer, 1500V RMS
Connectors: DB-25 female (RS-232), RJ-45 jack and terminal block (RJ-11 optional)
Transmit Clock: Internal, external or receive recover

Surge Protection: SAD, 600W power dissipation
Power Supply: External transformer, 120V or 230V
Dimensions: 4.17W x 1.52H x 5.0L in. (10.6W x 3.9H x 12.7L cm)

ORDERING INFORMATION

1080: Async./Sync. Standalone Short Haul Modem (120V)
1080A-220: Async./Sync. Standalone Short Haul Modem (230V)
1080A-64-120: Async./Sync. 64k Standalone Short Haul Modem (120V)
1080A-64-230: Async./Sync. 64k Standalone Short Haul Modem (230V)
1080ARC11: Async./Sync. Rack Card with DB-25 DTE & RJ-11 Line
1080ARC45: Async./Sync. Rack Card with DB-25 DTE & RJ-45 Line
1080ARC4511: Async./Sync. Rack Card with RJ-45 DTE & RJ-11 Line
1080ARC4545: Async./Sync. Rack Card with RJ-45 DTE & RJ-45 Line

Note: More models are available, call for details.

See Pg 30

Industrial Short-Range Modem for Outdoor Use

Model 1065

This environmentally enhanced, async. and sync., baseband modem provides reliable data communications—even in the harshest of environments.

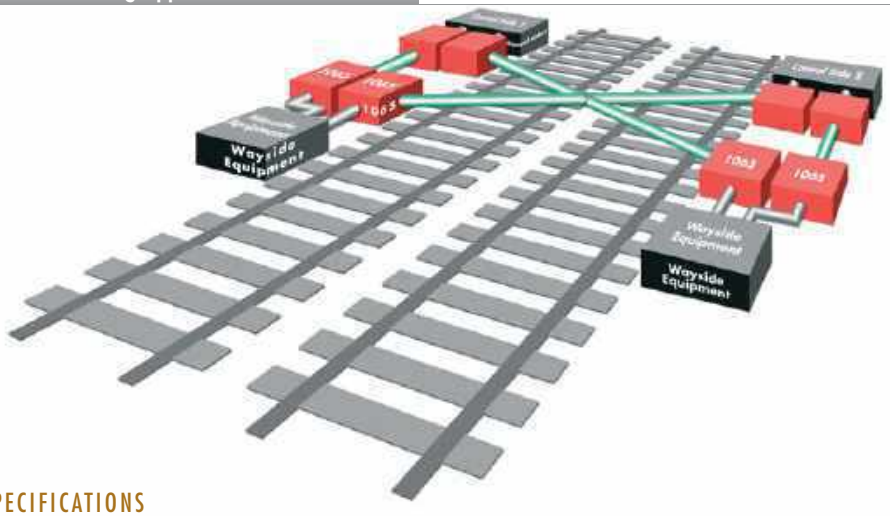
The Model 1065 comes housed in a ruggedized chassis that includes extended-temperature components and protective treatments that make it ideal for use in harsh industrial settings such as railways, refineries, and manufacturing facilities.

With built-in transformer isolation and surge protection, the 1065 supports data rates to 64 kbps at distances over 12 miles (19.2 km)

For centralized data centers, users can cluster up to 14 1065RC modem rack cards in the Model 1001 rack chassis. The Model 1001 rack system includes redundant power supply options that protect against power-related failures, providing fault-tolerant operation.

Typical applications for the Model 1065 include using it in automatic train control systems where the modems relay data between central control sites and track-side control/monitoring equipment. This application requires equipment that is reliable in all weather conditions, because the electronic interlocking systems must continuously control wayside equipment such as signals, point machines, derailers, etc., in such a manner that trains run on time, and passengers and cargo travel safely to their destinations.

Traffic Monitoring Application



FEATURES & BENEFITS

- ✔ Environmentally ruggedized sync./async. baseband modem
- ✔ V.14 async. to sync. conversion, standard and extended rates.
- ✔ Character lengths of 8, 9, 10, and 11 bits, start and stop bits included
- ✔ Supports point-to-point or multi-point operation
- ✔ Supports data rates up to 64 kbps at distances over 12 miles (19.2 km)
- ✔ Supports 4-wire half- or full-duplex operation, or 2-wire half-duplex operation
- ✔ Internal, external or received recovered sync clocking modes
- ✔ Compliant with V.52 BER and V.54 test modes
- ✔ High voltage transformer isolation/surge protection

ORDERING INFORMATION

Ruggedized Industrial Baseband Modems

1065A/120/z: Async/sync, ruggedized, DB25F, RS-232, RJ-45 line, desktop, 120 VAC power

1065A/230/z: Async/sync, ruggedized, DB25F, RS-232, RJ-45 line, desktop, 230 VAC power

1065RC/A/B: Async/sync, DB25F, RS-232, RJ-45 line, rack card

Extended Environmental Industrial Baseband Modems

1065E/A/120/z: Async/sync, extended environmental, DB25F, RS-232, RJ-45 line, desktop, 120 VAC power

1065E/A/230/z: Async/sync, extended environmental, DB25F, RS-232, RJ-45 line, desktop, 230 VAC power

1065RCE/A/B: Async/sync, extended environmental, DB25F, RS-232, RJ-45 line, rack card

Note: More models are available, call for details.

SPECIFICATIONS

Transmission: Sync. or Async., 2-wire/half-duplex, 4-wire/full- or half-duplex, point-to-point or multi-point operation.
DTE Interface: RS-232/V.24, DB-25 female
Line Interface: 2- or 4-wire UTP, 19-26 AWG

Data Rates: Switch-selectable 1.2, 1.8, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, 64 Kbps
Clocking: Internal, external, or receive recover
RTS Anti-stream Timer: Switch-selectable for disabled, 12.5 sec, or 50 sec operation.

Diagnostics: V.52 compliant BER pattern (511/511E pattern) generator and detector with error injection mode; V.54-compliant local analog and remote digital loopbacks, activated by front panel switch or RS-232 DTE interface
Carrier: Always-on or controlled by RTS; selectable RTS/CTS delay of no delay, 7, or 53 ms

Isolation: Transformer at 2000 VRMS; Extended models 200Meg. Ohm at 500VDC
Surge protection: Immune to IEC-801-5 Level 2, 1kV
Power: 120/230 VAC switchable; IEC-320 male-shrouded connector
Temp/Humidity:
Standard models: 0 to +70°C with 5–95% relative humidity, non-condensing
Extended models: -10 to +70°C, 100% condensing humidity from -10 to +30°C; Absolute humidity from +30 to +70°C
Dimensions: 5.5W x 7.5D X 1.6H in. (13.9W x 19D x 4H cm)r

Miniature, Async/Sync RS-232, Fiber Optic Modems

Models 1110A & 1140A

Have the noise and transient immunity of fiber optics in a miniature, self-powered package!

The Patton Model 1110A and 1140A miniature RS-232 fiber optic modems pack all the advantages of fiber into compact self-powered packages. When it comes to data communication integrity, optical fiber has several advantages over twisted pair copper:

- Copper wire requires shielding against RFI/EMI noise in many environments, whereas fiber is immune to RFI/EMI.
- In building-to-building applications, copper wire requires DC isolation to avoid ground looping. Fiber, since it does not have DC continuity, is not subject to ground looping.
- If a copper link passes through a field of energy created by a lightning strike, this transient energy will be conducted to the hardware at either end. But a fiber link will not pick up this harmful radiated energy–it is immune to transients.

The Models 1110A and 1140A fiber modems have all of these advantages. Neither modem uses AC power or batteries to operate because they draw their power from the data and control signals on the RS-232 interface. Carrier may be internally switch selected for "Continuously On" or "Controlled by RTS".

The **Model 1110A** communicates in full or half-duplex over two fibers while supporting data rates to 19.2 kbps and distances up to 5 miles (8 km). It features an external DCE/DTE switch, which eliminates the need for RS-232 crossover cables. The miniature size of the Model 1110A allows it to fit in tight installation spaces.

The **Model 1140A** brings all the advantages of fiber to your network, plus 100% compliant V.52 and V.54 diagnostics. Besides communication integrity, the supports distances to 4 miles (6.4 km) and data rates to 38.4 kbps over two fibers. The 1140A operates async or sync—full or half duplex. While in synchronous mode, the fiber modem supports three clocking methods: internal, external, and receive recover.

Streamline your fiber cabling with Patton's rackmount cards!

If several fiber links are running into the same location, use the 1140ARC rack card. The Model 1140ARC sits in Patton's 16 slot rack chassis, as well as Patton's 2, 4, and 8 slot ClusterBoxes™. Mid-plane architecture and "hot swapping" capability allows different function/interface modules to be plugged in while the system is running.

Uses Patton's Self-Powered Fiber Technology.
Patented: U.S. Patent 4,151,540

Model 1104 Miniature Async RS-485 Fiber Optic Modem Also Available!

FEATURES & BENEFITS

Models 1110A & 1140

- ✔ 1110: Async., RS-232 operation/ 1140: Async/Sync RS-232
- ✔ Full or half duplex
- ✔ 1110: Data rates up to 19.2 kbps; 1140: Up to 38.4 kbps
- ✔ 1110: Range up to 5 miles (8 km); 1140: Up to 4 miles (6.4 km)
- ✔ Continuous or controlled carrier
- ✔ External DCE/DTE switch
- ✔ Very thin case (0.75 in./1.9 cm) for closely spaced computer ports
- ✔ EMI/RFI and transient immunity
- ✔ No AC power required
- ✔ ST connector options
- ✔ 1140: V.52 and V.54 loopback test modes
- ✔ 1140: Internal, external or received loopback clocking in sync mode

Model 1104

- ✔ Async. or sync. RS-232 operation
- ✔ Dual fiber optic interface
- ✔ Data rates to 38.4 kbps
- ✔ Range up to 4 miles (6.4 km)
- ✔ No AC power required
- ✔ Continuous or controlled carrier
- ✔ ST connector options

ORDERING INFORMATION

1110AM-ST: Mini Async Fiber Modem: Male DB-25 & ST Fiber

1110AF-ST: Mini Async Fiber Modem: Female DB-25 & ST Fiber

1110ARC-ST: Async Fiber Modem Rack Card: Female UD-26 & ST Fiber

1110A-26M/25M: UD-26 to DB-25 Male Cable

1110A-26M/25F: UD-26 to DB-5 Female Cable

1140AM-ST: Mini Async Fiber Modem : Male DB-25 & ST Fiber

1140AF-ST: Mini Async Fiber Modem: Female DB-25 & ST Fiber

1140ARC-ST: Async Fiber Modem Rack Card: Female UD-26 & ST Fiber

1140A-26M/25M: UD-26 to DB-25 Male Cable

1140A-26M/25F: UD-26 to DB-25 Female Cable

1104F-ST: Mini Async RS-485 Fiber Modem; Female DB-25; 100–200 VAC

1104M-ST: Mini Async RS-485 Fiber Modem; Male DB-25; 100–200 VAC

1104TB-ST: Mini Async RS-485 Fiber Modem; Terminal Block; 100–200 VAC

Note: More models are available, call for details.

SPECIFICATIONS

Model 1110A & 1140A

Transmission Line: Dual multi-mode optical cable
Transmission Mode: 1110: Async., full or half duplex; **1140:** Sync or async, full or half duplex
Range: 1110: 5 miles (8 km); **1140:** 4 miles (6.4 km) over continuous fiber (with attenuation 2.5 dB/km). Over continuous fiber (with attenuation 2.5 dB/km)
Receiver Sensitivity:—42 dBm
Coupled Output Power: -18 to -24 dBm (depending on fiber specs)
Optic Wavelength: 850 nm
Indicators: One LED indicates transmission of data
Interface: EIA RS-232/CCITT, V.24 male or female connectors
Data Rates: 1110: 0–19.2 kbps; **1140:** 0–38.4 kbps
Power: Derived from EIA data and controls
Dimensions:
1110: 2.66 x 2.10 x 0.73 in. (6.8 x 5.3 x 1.9 cm)
1140: 3.55 x 2.1 x 0.73 in. (6.8 x 5.3 x 1.9 cm)

Model 1140A

RS-485 Serial Interface: One DB-25 Male, DB-25 Female, or Terminal Block
Serial Transmission: RS-485 Asynchronous, 0 to 115.2 Kbps
Fiber Interface: ST style fiber connectors (TX and RX)
Transmission Line: Dual multi-mode optical cable, optimized to work with 62.5/125 micron fiber–850nm wavelength
Range: Up to 1.25 miles (2.01 km)
Power Budget: 12dB with 62.5/125 micron fiber
Power Supply Options: External Universal Power Supply (100–240 VAC)
Temperature: 32 to 122°F (0 to 50°C)
Altitude: 0–15,000 ft (0–4,572 km)
Humidity: Up to 95% non-condensing
Dimensions: 3.0L x 1.8W x 0.8H in. (7.6L X 4.4W X 1.9H cm)
Weight: 2 oz. (57 g)

Note: Country specific power cords are ordered separately.

RS-232 Bluetooth Wireless Modem 2-Packs

Model 1013

The Model 1013 provides hassle-free wireless RS-232 connections with line rates up to 380 kbps at distances up to 3,900 feet (1,188 meters)!

Patton's newest short range modem, the Model 1013, is a wireless serial short range modem that connects RS-232 devices using Bluetooth V.1.1 technology. The Model 1013 eliminates the hassle and expense of running a dedicated cable connection between RS-232 devices thus giving installers, maintenance workers, and others the ability to remotely monitor and control RS-232 devices.

The Patton Model 1013 supports point-to-point and point-to-multipoint connections. Users can configure the Model 1013 through a user-friendly Windows utility application, standard AT commands, or by DIP switch and push buttons. The 1013 includes a plug-and-play auto-pairing button that will automatically link two Model 1013s for a dedicated point-to-point connection.

Serial connections are provided by an RS-232C DB-9 connector. Bluetooth transmits over the built-in stub antenna at distances up to 328 feet (100 meters). For greater distances, Patton offers optional dipole and patch antennas that can increase the wireless RS-232 range up to 3,280 feet (1,188 meters)!

Patton's wireless RS-232 short range modems effectively eliminate the expense and hassle of cables!

Application diagram

Bluetooth enables wireless RS-232 connections, making installations and service calls more efficient by eliminating the time, hassle, and expense of cable runs.

Antenna Distance Chart	
Default Antenna to Default Antenna	328 feet (100 meters)
Default Antenna to Dipole Antenna	492 feet (150 meters)
Dipole Antenna to Dipole Antenna	656 feet (200 meters)
Patch Antenna to Dipole Antenna	1,312 feet (400 meters)
Patch Antenna to Patch Antenna	3,937 feet (1,200 meters)

FEATURES & BENEFITS

- ✔ RS-232 Serial Cable Replacement—Wireless RS-232 connections can be made over 3,900 feet (1,188 meters) at line rates up to 380 kbps
- ✔ Auto-Pairing Feature—Unique feature that enables plug-and-play installations
- ✔ Windows Utility Configurable—Clear and concise tool for fine tuning your wireless RS-232 connections
- ✔ Bluetooth Protocols Supported—RFCOMM, L2CAP, SDP
- ✔ Interface Powered—No external power supply required for operation

10-BT-PAT

10-BT-DAT

10-BT-UPA

10-BT-DPA

ORDERING INFORMATION

1013: Wireless RS-232 Short Range Modem

1013-2PK: Wireless RS-232 Short Range Modem Extender Kit

Accessories

10-BT-SAT: Bluetooth Stub Replacement Antenna

10-BT-DAT: Bluetooth Dipole Antenna

10-BT-PAT: Bluetooth Patch Antenna

10-BT-UPA: Bluetooth USB to Power Adapter Cable

10-BT-DPA: Bluetooth DC to Power Adapter Cable

10-BT-CBL-1: Bluetooth 1M Antenna Extension Cable

SPECIFICATIONS

Bluetooth v1.1 Specifications:
Power Class: Class 1
RF Range: Standard stub antenna up to 328 feet (100m)
Bluetooth Protocol: RFCOMM, L2CAP, SDP
Frequency: 2.4–2.4738 GHz
Baud Rate: Up to 380 kbps

Serial Specifications
Serial Interface: EIA RS-232C
Connector Type: DB-9 Female
Baud Rate: 1,200 bps to 230.4 kbps
Hardware flow control: ON/OFF

General Product Specifications
Operating Temperature: -4 to 158°F (-20 to 70° C)
Dimensions: 2.5L x 1.20W x 0.63H inch (63L x 30W x 16H mm)
Weight: 0.1 lbs (0.06 kg)

EtherBITS™ Bluetooth IP Access Point

Model 2188

The Model 2188 provides hassle-free wireless Bluetooth to IP connections for up to 7 Bluetooth devices

Patton's Model 2188 enables up to 7 Bluetooth devices to simultaneously connect to any 10/100Base-TX Ethernet Network. Using the 2188 in conjunction with the Model 1013 eliminates the hassle and expense of running a dedicated cable connection between RS-232 devices thus giving installers, maintenance workers, and others the ability to remotely monitor and control RS-232 devices.

The Model 2188 supports multiple Bluetooth profiles for the serial port, dial-up networking, LAN access and PAN. Versatile host modes allow for a wide variety of user applications such as, TCP Server and Client modes for TCP/IP-Bluetooth replay applications, Vertex mode for multicasting, repeater mode, serial hub mode, and RS-232 mode. The Model 2188's flash memory allows for easy field upgradeable software upgrades. A built in web server and web interface allows for simple installation and remote configuration and management.

FEATURES & BENEFITS

- ✔ RS-232 Serial Cable Replacement—Bluetooth connections can be made over 3,280 feet (1,000 meters).
- ✔ Wide Variety of supported Bluetooth Profiles—Serial Port, LAN Access, PAN and Dial up Networking.
- ✔ Supports Many Applications & Host Modes—TCP Server & Client, Vertex mode, Repeater mode, and RS-232 modes.
- ✔ Network Protocols Supported—HTTP/FTP/Telnet/IP Sharing/DHCP/PPP/RADIUS Authentication SNMP v1/v2/v3

10-BT-PAT

10-BT-DAT

10-BT-UPA

10-BT-DPA

1013

Application diagram

Bluetooth enables wireless RS-232 connections, making installations and service calls more efficient by eliminating the time, hassle, and expense of cable runs.

Antenna Distance Chart	
Default Antenna to Default Antenna	328 feet (100 meters)
Default Antenna to Dipole Antenna	492 feet (150 meters)
Dipole Antenna to Dipole Antenna	656 feet (200 meters)
Patch Antenna to Dipole Antenna	1,312 feet (400 meters)
Patch Antenna to Patch Antenna	3,937 feet (1,200 meters)

ORDERING INFORMATION

2188/EUI: EtherBITS Bluetooth to IP Access Point

Accessories

1013: Wireless RS-232 Short Range Modem
10-BT-SAT: Bluetooth Stub Replacement Antenna
10-BT-DAT: Bluetooth Dipole Antenna
10-BT-PAT: Bluetooth Patch Antenna
10-BT-UPA: Bluetooth USB to Power Adapter Cable
10-BT-DPA: Bluetooth DC to Power Adapter Cable
10-BT-CBL-1: Bluetooth 1M Antenna Extension Cable

SPECIFICATIONS

Ethernet Interface: 10/100BaseTX connection via RJ45 • Static IP and Dynamic IP address **Bluetooth Interface:** Bluetooth V1.1; Class 1 • Level: -18dBM • Profiles: Serial Port, LAN Access, PAN, Dial up Networking • Distance: 32–1,312 feet (10–400 meters) • Protocols Supported: HTTP; FTP, Telnet, DHCP client; SNMP v1/v2/v3; PPP server and PPP tunneling; RADIUS • Management: Windows Utility; Web, Telnet, Console; Modem AT command set • Diagnostic LEDs: Power, Status, Error, NET and EXP **General Product Specifications:** Operating Temperature: 40–122°F (5–50° C) • Dimensions: 5.8L x 4.4W x 1.3H inch (147 L x 112 W x 32H mm) • Weight: 0.5 lbs (225 g)

Interface & Media Converters

In This Section

Interface Converters

INTERFACE POWERED

RS-232 to RS-422

These tiny converters are the size of a DB-25 (or DB-9) backshell!

- ✔ Async. transmit & receive data signals only
- ✔ Operates at rates up to 19,200 bps

Models 222N, 222N, 222NRC
Page 47

RS-232 to RS-485

Enables async. RS-232 and RS-485 to communicate with handshaking

- ✔ Operates at rates up to 115,200 bps
- ✔ Opto-isolation available
- ✔ Range up to 9 mi. (14.5 km)

Models 2084, 2085, 2086, 2089
Page 48

SELF POWERED

RS-232 to TTL

Enables async. RS-232 devices to communicate with TTL devices

- ✔ Operates bi-directionally at rates up to 320 kbps
- ✔ Data and control signals independently selectable for inverting/non-inverting

Model 2002
Page 47

Serial to Parallel Converters

AUTO-DIRECTIONAL SERIAL TO PARALLEL

RS-232 to RS-422

These converters automatically select parallel/serial mode and come with a built-in 6 foot (1.8 meter) cable

- ✔ Data rates to 38.4 kbps (Models 2025 & 2029) or up to 115.2 kbps (Models 2035 & 2039)
- ✔ Automatic DCE/DTE mode selection
- ✔ Link Status LED indicator

Models 2025, 2029, 2035, 2039
Page 51

RS-232 to RS-422

These tiny converters automatically sense and select parallel/serial and DCE/DTE modes

- ✔ Data rates from 300 bps to 38.4 kbps (Models 2026 & 2027) or up to 115.2 kbps (Models 2036 & 2037)
- ✔ Automatic DCE/DTE mode selection
- ✔ External configuration switches

Models 2026, 2027, 2036, 2037
Page 51

Current Loop Converters

Enables async. RS-232 devices to communicate with active or passive 20mA or 60mA current loop devices

- ✔ Data rates to 115.2 kbps
- ✔ Up to 4 mi. (6.4 km) on two twisted pair)

Model 2017 Series
Page 50

Video Baluns

CCTV PASSIVE

BNC to TB/RJ-45

Pass a single composite CCTV video signal via unshielded twisted pair

- ✔ Connect twisted pair using RJ-45 or terminal block
- ✔ Distances up to 2,230 ft. (680 meters) over Cat 5 cable

Model 310 Series
Page 52

RJ-45 Pass-Thru

Pass power, PTZ, and video over a single 4-pair Cat 5 cable

- ✔ Power, Video, and Control signals pass-thru
- ✔ Distances up to 2,230 ft. (680 meters) over Cat 5 cable

Model 320 Series
Page 53

CATV PASSIVE

RJ-45 or Terminal Block

Transmit a CATV, VHF, or FM video signal via twisted pair cable

- ✔ Connect twisted pair using RJ-45 or terminal block
- ✔ Distances up to 328 ft. (528 meters) over Cat 5 cable

Model 330 Series
Page 53

Interface-Powered, RS-232 to RS-422 Converters (Transmit & Receive Data Only)

Models 222N, 222N9, & 222NRC

These miniature converters are no bigger than a DB-25 (or DB-9) backshell!

The Model 222N Series of converters comes in three versions: the Model 222N, 222N9, and 222NRC.

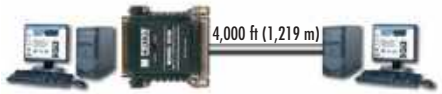
The **Model 222N** enables an RS-232 device with DB-25 port to connect to an RS-422 device—at distances up to 4,000 ft (1,219 m) away—over two twisted-pair wires. The **Model 222N9** does the same thing for an RS-232 device with a DB-9 port (now called EIA-574).

The **Model 222NRC** is a dual port rack card version of the Model 222N, with two converters in one card! The front card incorporates 13 status LEDs, while the rear card presents four RJ-11 or RJ-45 connectors for hardware connection. The Model 222NRC fits in Patton's 16-slot rack chassis and our unique line of 2-, 4, and 8-slot ClusterBoxes™.

FEATURES & BENEFITS

- ✔ Converts EIA-232 data to EIA-422
- ✔ Async. transmit & receive data signals only
- ✔ EIA-232 control signals wired together
- ✔ Operates at rates up to 19,200 bps
- ✔ No AC power or batteries required
- ✔ DCE/DTE selectable interfaces
- ✔ Virtually any connectorization available

RS-232 to 422 converter



ORDERING INFORMATION

Examples of DB-25 and DB-9 versions

DB-25 versions

222NM: Male DB-25 with terminal block (TB)
222NF: Female DB-25 with TB
222NF RJ11: With RJ-11 jack
222NM RJ45: With RJ-45 jack
222NM-25F: With DB-25 male to female
222NF-25F: With DB-25 female to female
222NSF: With surge protection

DB-9 versions

222N9M: Male DB-9 with TB
222N9F: Female DB-9 with TB
222N9F RJ11: With RJ-11 jack
222N9M RJ45: With RJ-45 jack
222N9SF: With surge protectio

Rack card versions (two converters per card)

222NRC11: Dual Rack Card, RJ-11
222NRC45: Dual Rack Card, RJ-45

Note: Many other models are available, check online at www.patton.com or call for details.

SPECIFICATIONS

Data Format: Asynchronous
Data Rate: 0 to 19,200 bps (no strapping)
Control Signals: (RS-232 Side) RTS wired to CTS; DTR wired to DSR and DCD
Transmit Mode: Full duplex, 4-wire
DTE/DCE Switch: On standalone Model 222N version only
CE Approved: Yes
Power Supply: None required; uses ultra low power from EIA data and control signals
Connectors: Model 222N—Male or female DB-25 (232 side); Male or Female DB-25, RJ-11 jack, RJ-45 jack or terminal posts (422 side).
Model 222N9—Male or female DB-9 (EIA-574 side); RJ-11 jack, RJ-45 jack or terminal posts (422 side).
Dimensions:
Model 222N
2.20 x 1.75 x 0.75 in. (5.6 x 4.4 x 1.9 cm)
Model 222N9
2.50 x 1.20 x 0.75 in. (6.4 x 3 x 1.9 cm)

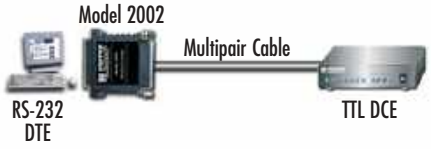
Self-Powered RS-232 to TTL

Model 2002

Now async RS-232 devices can communicate bi-directionally with TTL devices

The Model 2002 RS-232 to TTL interface converter lets an async RS-232 device communicate bi-directionally with an asynchronous TTL device. Supporting data rates up to 230 kbps, the Model 2002 passes data (TD, RD) plus five control signals (CD, DTR, DSR, CTS and RTS). In addition, the Model 2002 allows data and control signals to be independently jumper-selected as *inverting* or *non-inverting*. The Model 2002 is available DCE-to-DTE and DTE-to-DCE.

Typical application



SPECIFICATIONS

Humidity: Up to 95% non-condensing
Power Supply: None required; uses power from RS-232 and TTL data and control signal
Dimensions: 2.24L x 2.1H x 0.7W in. (5.6L x 5.3H x 1.8W cm)
Weight: 1.7 oz. (48.2g)

FEATURES & BENEFITS

- ✔ Supports data rates to 230 kbps
- ✔ Passes TD & RD plus five control signals: CD, DTR, DSR, CTS & RTS
- ✔ Data and control signals independently selectable for inverting/non-inverting
- ✔ RS-232 interface is a DB-25 female, TTL interface is a DB-25 male

ORDERING INFORMATION

2002FC-MT: RS-232 (DB-25 female/DCE) to TTL (DB-25 male/DTE)
2002FT-MC: RS-232 (DB-25 female/DTE) to TTL (DB-25 male/DCE)

Note: Other models are available, check online at www.patton.com or call for details.

Interface Powered, RS-232 to RS-485 Interface Converters (with Handshaking)

Models 2084, 2085, 2086, & 2089

Connect a DB-25 or DB-9 equipped PC or workstation to RS-485 data acquisition & control equipment.

The Model 208X Series of RS-232 to RS-485 converters include the Model 2085 DB-25 4-wire converter, Model 2089 DB-9 4-wire converter, Model 2084 DB-25 2-wire converter, Model 2086 DB-25 converter with built-in opto-isolation, and the Model 2085RC rack card.

The **Model 2085** high speed RS-232 to RS-485 interface converter supports async RS-232 data rates to 115.2 kbps over one or two unconditioned twisted pair. Passing one control signal in each direction, the Model 2085 can handle up to 50 terminal drops in a multipoint polling environment. The Model 2085 has five configuration parameters, allowing the unit to be "fine tuned" to a variety of point-to-point or multipoint applications. In addition, silicon avalanche diodes provide 600 watts per wire of protection against harmful data line transient surges.

The **Model 2089** is Patton's first high speed EIA-574 (RS-232 on a DB-9) to RS-485 interface converter. Offering the same features as the Model 2085, except in a smaller DB-9 package, it supports async data rates to 115.2 kbps over one or two unconditioned twisted pair. The Model 2089 also handles up to 50 terminal drops in a multipoint polling environment; yet it is small enough to plug directly into a DB-9 serial port…and requires no AC power or batteries for operation. We've even managed to squeeze silicon avalanche diode surge protection into its tiny case. *Amazing!*

The **Model 2084** provides 2-wire conversion of RS-232 to RS-485. Otherwise, the unit has the same features as the Model 2085.

The **Model 2086** DB-25 RS-232-to-RS-485 converter provides opto-isolation.

The **Model 2085RC** is a dual port rack card version of the Model 2085, with two converters in one card! The front card incorporates 13 status LEDs, while the rear card presents four RJ-11 or RJ-45 connectors for hardware connection. The Model 2085RC fits in Patton's 16-slot rack chassis and our unique line of 2-, 4-, and 8-slot ClusterBoxes™.

FEATURES & BENEFITS

- ✔ Fully conforms to the EIA-232 and EIA RS-485 standards
- ✔ Operates asynchronously, point-to-point or multipoint, over 2 or 4 wires (Model 2084 is 2-wire only)
- ✔ Data rates to 115,200 bps
- ✔ Range up to 9 mi. (14.5 km) when used in pairs
- ✔ Selectable RTS-CTS delay
- ✔ Selectable high/low impedance
- ✔ Operates with or without "echo"
- ✔ Up to 50 terminal drops in a multi-point polling environment
- ✔ No AC power or batteries required
- ✔ 600 watts of silicon avalanche diode surge protection
- ✔ Model 2086 features opto-isolation

SPECIFICATIONS

Transmission Format: Asynchronous
Data Rate: Up to 115,200 bps
RS-232 Interface: DB-25, male or female (DCE/DTE switchable)
DB-9, male or female (Model 2089)
RS-485 Interface Options: DB-25, male or female; RJ-11 or RJ-45 jack; terminal block with strain relief
RTS/CTS Delay: 0 or 8 msec
Carrier: The carrier is switch selected either continuous operation or controlled by RTS
Control Signals: DSR turns "ON" immediately after the terminal raises DTR; DCD turns "ON" after recognizing the receive signal from the line; CTS turns "ON" after the terminal raises RTS.
Power: Draws operating power from RS-232 data and control signals; no AC power or batteries required.
Temperature: 32–122°F (0–50°C)
Size: 2.66 x 2.10 x 0.73 in. (6.8 x 5.3 x 1.9 cm)

Rack Mountable Units, Too!

These rack cards each contain two converters, so you can fit up to 32 converters in a 19 in. rack.

Versions available for 2-wire RS-485 operation OR built-in opto-isolation.

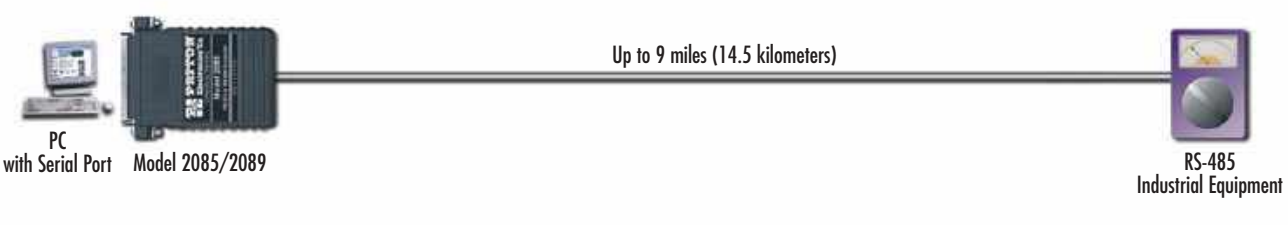
Two converters in one rack card!

See page 30

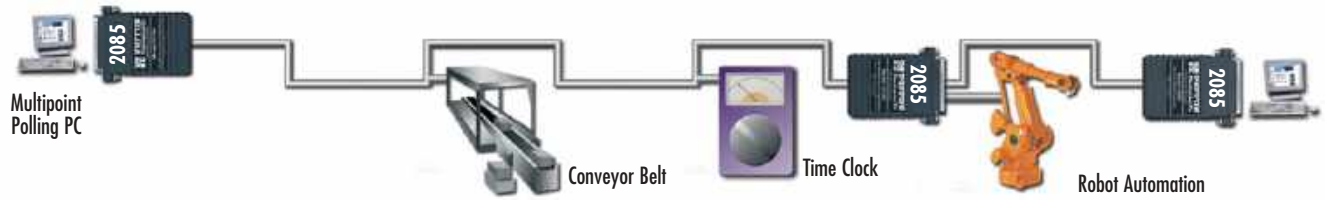
Transmission Distances												
Line Rate (bps)	19 AWG (0.9mm)			22 AWG (0.6mm)			24 AWG (0.5mm)			26 AWG (0.4mm)		
	feet	miles	km	feet	miles	km	feet	miles	km	feet	miles	km
1200	47520	9.0	14.5	34320	6.5	10.5	26400	5.0	8.0	21120	4.0	6.4
9600	36960	7.0	11.2	24288	4.6	7.4	18480	3.5	5.6	14784	2.8	4.5
38.4 k	26400	5.0	8.0	15312	2.9	4.7	11616	2.2	3.5	7920	1.5	2.4
115.2 k	18480	3.5	5.6	13728	2.6	4.2	7392	1.4	2.3	4752	0.9	1.5

Distances for the Models 2085 and 2089 when used in pairs.

RS-232 to RS-485 conversion



Connecting RS-232 and RS-485 devices in a multi-drop environment



ORDERING INFORMATION

Model 2085—4-wire DB-25 versions

2085M: Male DB-25 with terminal block
2085F: Female DB-25 with terminal block
2085X-RJ11: With RJ-11 jack
2085X-RJ45: With RJ-45 jack
2085X-DR11: With Dual RJ-11 jacks
2085X-DR45: With Dual RJ-45 jacks
2085X-25F: With DB-25 female
2085X-25M: With DB-25 male

Example

2085M-RJ11: Male DB-25, RJ-11 jack

Model 2089—DB-9 versions

2089M: Male DB-9 with terminal block
2089F: Female DB-9 with terminal block
2089X-RJ11: With RJ-11 jack
2089X-RJ45: With RJ-45 jack
2089X-DR11: With Dual RJ-11 jacks
2089X-DR45: With Dual RJ-45 jacks
2089X-25F: With DB-25 female
2089X-25M: With DB-25 male

Rack card versions (two converters per card)

2085RC11: Dual Rack Card, RJ-11
2085RC45: Dual Rack Card, RJ-45

Model 2084—2-wire DB-25 versions

2084M: Male DB-25 with terminal block
2084F: Female DB-25 with terminal block
2084X-RJ11: With RJ-11 jack
2084X-RJ45: With RJ-45 jack
2084X-DR11: With Dual RJ-11 jacks
2084X-DR45: With Dual RJ-45 jacks
2084X-25F: With DB-25 female
2084X-25M: With DB-25 male

Model 2086—Opto-Isolated DB-25 versions

2086M: Male DB-25 with terminal block and power supply
2086F: Female DB-25 with terminal block and power supply
2086X-RJ11: With RJ-11 jack
2086X-RJ45: With RJ-45 jack
2086X-DR11: With Dual RJ-11 jacks
2086X-DR45: With Dual RJ-45 jacks
2086X-25F: With DB-25 female
2086X-25M: With DB-25 male

Note: *X* = Male or female

RS-232 to Current Loop Converters (20mA or 60mA)

Model 2017 Series

Whether your current loop device is active or passive, we've got your converter!

The Patton Model 2017 Series of current loop converters lets an async. RS-232 device communicate with a 20mA or 60mA current loop device. The interface-powered Model 2017P (20mA) and 2017P60 (60mA) operate passively, and therefore are suitable for connection to active current loop devices. The AC-powered Model 2017A works with either active or passive 20mA current loop devices. All models support distances to 4 miles (6.4 km) and data rates to 115.2 kbps. In addition, all models are optically isolated, surge protected and DCE/DTE switchable. The Model 2017A also provides three LED indicators. Twisted pair running to the current loop device attaches by RJ-11 jack, RJ-45 jack or terminal blocks.

The Model 2017RC is an async device that operates bi-directionally in full- or half-duplex modes. The Model 2017RC occupies one slot of the 1000R/16 front-load rack. It has dual independent converters that enable two async DTE RS-232 devices to communicate with two 20-mA current loop devices over two twisted pairs. It can be configured for active or passive transmitters.

SPECIFICATIONS

Transmission Line: 19 to 26 AWG (.9 to .4mm) twisted pair
Range: 4 miles on 24 AWG (.5mm) wire
Interfaces: Async., EIA RS-232, CCITT V.24 full duplex, 20mA or 60mA current loop
LEDs: (Model 2017A only)—TD (Transmit Data) and RD (Receive Data)
Connectors: DB-25 male or female on RS-232 side RJ-11, RJ-45 or terminal posts with strain relief for current loop side
Data Rates: up to 115,200 bps
Isolation: 2500V RMS via opto-isolators
Surge Suppression: Over-voltage protection for opto-isolators via silicon avalanche diodes
Op. Temp.: 32–122°F (0–50°C)
Altitude: 0–15,000 feet
Humidity: Up to 95% non-condensing
Power Supply: Model 2017A—9V to 12V on pin 9 of RS-232 interface or external wall mount transformer; Model 2017P and 2017P60—None required; uses power from interface data signals
Dimensions: 2.50L x 1.2H x 0.75W in. (6.4L x 3H x 1.9W cm)
Weight: 1.5 oz. (43 grams)

FEATURES & BENEFITS

- ✔ Data rates to 115.2 kbps
- ✔ Up to 4 mi. (6.4 km) on two 24 AWG (.5mm) twisted pair
- ✔ Model 2017P & 2017P60 work with active 20mA or 60mA receivers
- ✔ Model 2017A works with active or passive 20mA receivers
- ✔ Externally accessible DCE/DTE switch
- ✔ Optically isolated and silicon avalanche diode surge protected

ORDERING INFORMATION

2017PM: RS-232 to 20 mA (passive) DB-25M with terminal block)
2017PF: RS-232 to 20 mA (passive) (DB-25F with terminal block)
2017P60M: RS-232 to 60 mA (passive) (DB-25M with terminal block)
2017P60F: RS-232 to 60 mA (passive) (DB-25F with terminal block)
2017AM: RS-232 to 20 mA (active) (DB-25M with terminal block)
2017AF: RS-232 to 20 mA (active) (DB-25F with terminal block)
2017XXRJ11: With RJ-11 jack
2017XXRJ45: With RJ-45 jack

Example
2017PM RJ11: Male DB-25, RJ-11 jack

Rack card versions
2017RC11: Dual 20 mA rack card, RJ-11
2017RC45: Dual 20 mA rack card, RJ-45

Note: Other models are available, call for details.

See page 30

RS-232 to 20mA Current Loop Converter (DB-25 to DB-25)

Model 2018

This optically isolated converter performs multiple functions

The Model 2018 is a multi-function converter. Connect it to an active 20mA current loop circuit and it becomes a passive converter. Attach it to a passive 20mA current loop circuit, add DC power to one of several DB-25 interface pins, and it functions as an active converter. Connect two units together, supply DC power to one interface, and you have an optically isolated RS-232 distance extender.

The Model 2018 supports data rates to 19.2 kbps, and current loop distances to 4 mi. (6.4 km) over two twisted pair. It connects directly to the RS-232 interface or the 20mA current loop interface using a male or female DB-25 connector. An external DCE/DTE switch eliminates the need for RS-232 crossover cables.

SPECIFICATIONS

Interfaces: Asynchronous
Transmit Line: 19–26 AWG (.9–.4mm)
Range: 4 mi. (6.4 km) on 24 AWG twisted pair
Interfaces: EIA RS-232, CCITT V.24 (.5 mm) full duplex, 20mA current loop
Data Rate: 50–19.2 Kbps
Isolation: 2500V RMS via opto-isolators on line side
Connectors: Male or female DB-25 on both sides
Op. Temp.: 0–50°C (32–122°F)
Humidity: Up to 95% non-condensing
Power Supply: None required; uses power from NIC data signals
Dimensions: 2.21L x 0.8H x 2.10W in. (5.6L x 2.0H x 5.3W cm)
Weight: 1.7 oz. (48.2g)

FEATURES & BENEFITS

- ✔ Data rates from 50 bps to 19.2 kbps
- ✔ Range to 4 mi. (6.4 km) on two 24 AWG (0.5 mm) twisted pair
- ✔ No AC power required; draws necessary power for (passive) operation from RS-232 interface
- ✔ Optically isolated on line side
- ✔ DB-25 connectors on both ends
- ✔ Two units can work together as optically isolated RS-232 distance extenders

ORDERING INFORMATION

2018M-F: Male RS-232 to female 20 mA
2018F-M: Female RS-232 to male 20 mA

Note: Other models are available, check online at www.patton.com or call for details.

Auto-Directional Serial to Parallel Converters

Models 2025, 2029, 2035, & 2039

These miniature converter cables automatically select parallel/serial mode

The Models 2025 & 2029 miniature converters represent a breakthrough in size and performance. They support auto-directional data conversion, serial data rates to 38.4 kbps, plus hardware and X-On/X-Off handshaking. Yet they are no larger than a DB-9 or DB-25 backshell (excluding cable), and require no AC power or batteries for operation.

The Model 2025 plugs directly into an RS-232 device with a DB-25 serial port. The Model 2029 plugs directly into an EIA-574 (RS-232) device with a DB-9 serial port. Both models use microprocessor technology to automatically orient themselves for serial-to-parallel or parallel-to-serial data conversion. A single LED indicator monitors five modes, including transmit status.

Model 2025

Model 2029

FEATURES & BENEFITS

- ✔ Data rates to 38.4 kbps (Models 2025 or 2029) or 115.2 kbps (Models 2035 or 2039)
- ✔ Integral 6 foot (1.8m) cable
- ✔ Auto-directional data conversion
- ✔ Automatic DCE/DTE mode selection
- ✔ Support for hardware *and* software X-On/X-Off flow control
- ✔ Data rates to 38,400 bps (Models 2025 and 2029)
- ✔ Data rates to 115.2 bps (Models 2035 and 2039)
- ✔ Link Status LED indicator

SPECIFICATIONS

Data Rate: 0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4 kbps selected by external DIP switch (for speeds up to 115.2 kbps (2035 and 2039)
Data Format: Asynchronous serial/36-pin parallel
Characters: 7 or 8 data bits, one stop bit
Parity: Even, odd, or no parity
Cable Length: 6.0 feet (1.8m)
Power: No AC power required

ORDERING INFORMATION

DB-25 versions

2025: Serial (DB-25 female) to parallel (36-pin male)
2025-25M: Serial (DB-25 female) to parallel (DB-25 male)
2025GCM: Serial (DB-25 male) to parallel (36-pin male)
2025GCM-25M: Serial (DB-25 male) to parallel (DB-25 male)
2035: Serial (DB-25 female) to parallel (36-pin male)
2035-25M: Serial (DB-25 female) to parallel (DB-25 male)
2035GCM-25M: Serial (DB-25 male) to parallel (DB-25 male)

DB-9 versions

2029: Serial (DB-9 female) to parallel (36-pin male)
2029-25M: Serial (DB-9 female) to parallel (DB-25 male)
2039: Serial (DB-9 female) to parallel (36-pin male)
2039-25M: Serial (DB-9 female) to parallel (DB-25 male)

Note: Other models are available, call for details.

Compact Interface Serial to Parallel Converters

Models 2026, 2027, 2036, & 2037

These converters automatically sense and select parallel/serial and DCE/DTE modes

These auto-directional parallel to serial converters automatically orient themselves for parallel/serial direction and DTE/DCE orientation. In addition, all units are self-powered, support hardware and X-ON/X-OFF flow control, and can be configured from external DIP switches.

The Model 2026 supports serial data rates up to 38.4 kbps, while the Model 2036 goes all the way up to 115.2 kbps!

The 2026 and 2036 have a DB-25 and a 36-pin connector. The Model 2027 supports serial data rates up to 38.4 kbps, while the 2037 supports rates up to 115.2 kbps. The 2027 and 2037 have DB-25 connectors at both ends.

Model 2026

Model 2027

FEATURES & BENEFITS

- ✔ Auto-directional data conversion
- ✔ Automatically selects parallel-to-serial or serial-to-parallel operation
- ✔ Automatically selects DCE/DTE mode
- ✔ Supports hardware *and* software X-On/X-Off flow control
- ✔ Data rates from 300 bps to 38.4 kbps (Models 2026 & 2027) or up to 115.2 kbps (Models 2036 & 2037)
- ✔ External configuration switches

SPECIFICATIONS

Data Rate (selected by external switches): 2026 & 2027—300, 600, 1200, 2400, 4800, 9600, 19,200, 38,400 bps; 2036 & 2037—up to 115.2 kbps
Parity: Even, odd, or no parity with 7 or 8 data bits
Power: No AC power required; uses ultra low power derived from the RS-232 data and control signals
Connectors: Model 2026 & 2036—DB-25 female, 36 pin male or female; Model 2027 & 2037—two DB-25 female connectors

ORDERING INFORMATION

2026-F: Converter, serial DB-25 female and parallel 36-pin male
2036-M: Converter, serial DB-25 male and parallel 36-pin male
2036-F: Converter, serial DB-25 female and parallel 36-pin male
2027F-F: Converter, serial DB-25 female and parallel DB-25 female
2027F-M: Converter, serial DB-25 female and parallel DB-25 male
2037F-F: Converter, serial DB-25 female and parallel DB-25 female
2037F-M: Converter, serial DB-25 female and parallel DB-25 male

CCTV Passive Baluns

Model 310 Series

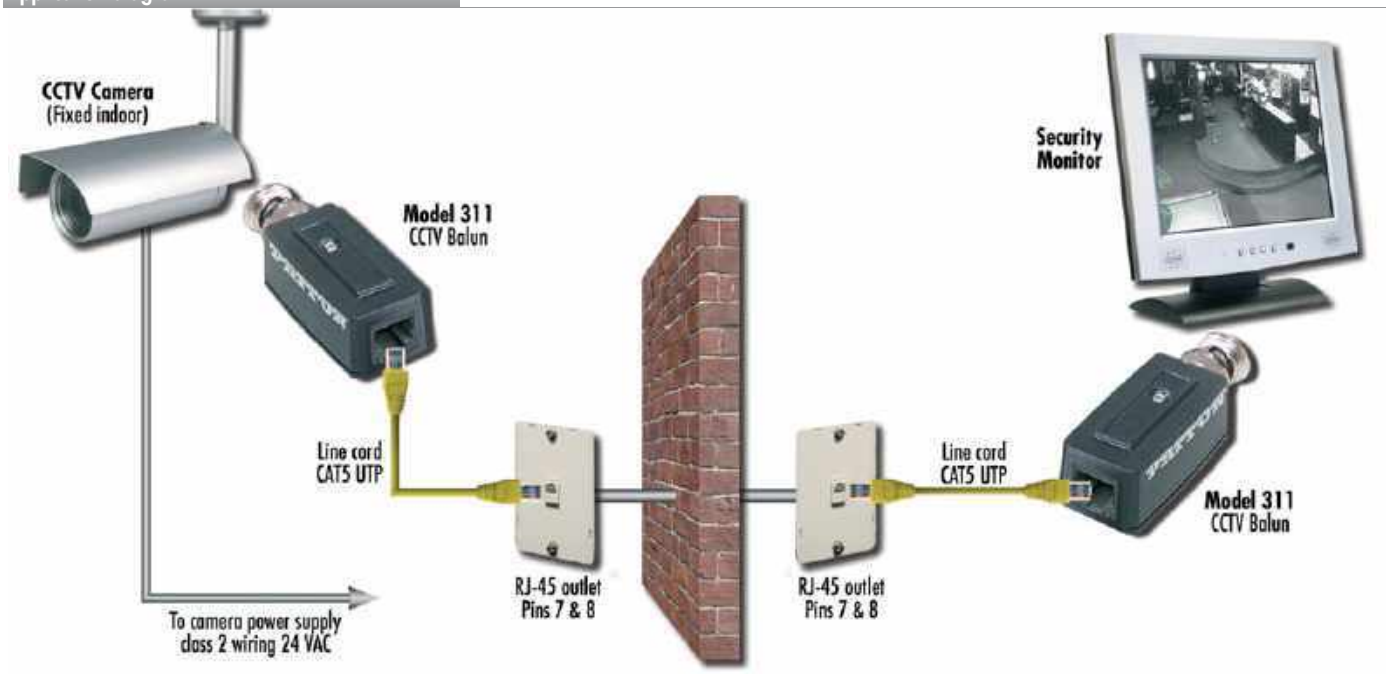
Why use expensive and difficult-to-manage coax cabling when you can use inexpensive twisted-pair?

The Model 310M CCTV Modular Balun allows a single composite CCTV video signal to be transmitted via a single unshielded twisted pair for more versatile security and surveillance cabling. Used in pairs, the CCTV Balun eliminates costly and bulky coax cable.

FEATURES & BENEFITS

- ✔ Communicate over existing telephone lines or other twisted pair media
- ✔ Connect twisted pair using RJ45 or terminal block
- ✔ Distances up to 2,230 feet (680 meters) over Cat5 cable
- ✔ No AC or power required and supports bi-directional signal conversion

Application diagram



SPECIFICATIONS

UTP: 24 gauge or lower, twisted pair
Impedance: 100 ohm at 1 MHz
Max. Capacitance: 20 pf/ft
Attenuation: 6.6 dv/1000 feet at 1 MHz
BNC: Impedance: 75 ohm at 1 MHz (RG-59)
Bandwidth: Video DC to 8 MHz
Maximum Input: 1.1 Vp-p

Impedance: 75 to 100 ohm
Insertion Loss: Max 2 dB per pair over frequency range from DC to 8 MHz
Return Loss: Greater than 15 dB over the frequency range from DC to 8 MHz
Common mode rejection: Greater than 40 dB at 8 MHz
Active Pins: 8+ 7-

ORDERING INFORMATION

310M: CCTV BNC male to TB/RJ45; wiring 8+,7-
310F: CCTV BNC female to TB/RJ45; wiring 8+,7-
311M: CCTV std type balun for indoor BNC male to RJ45
312M: CCTV std type balun for outdoor BNC male to RJ45

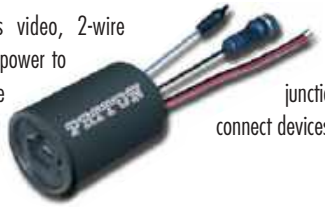
*I'm Jen, one of Patton's Sales Associates. Call me at **+1 301.975.1000** when you want to purchase Patton products or if you have questions about our products. You can also send e-mail to **sales@patton.com**.*

CCTV Passive Pass-Thru Baluns

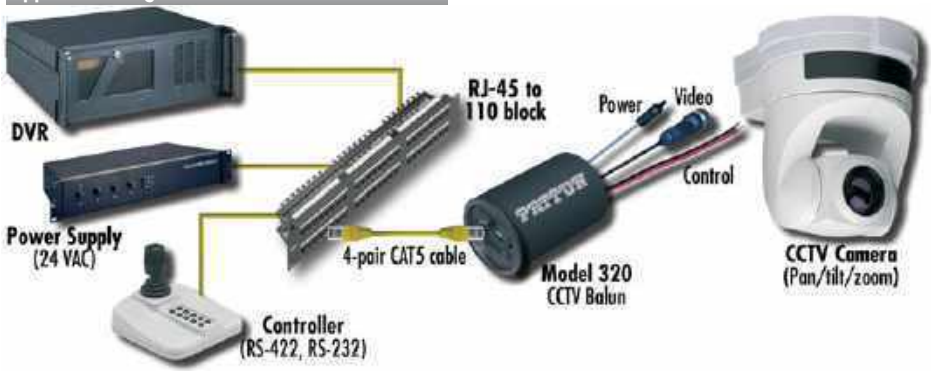
Model 320 Series

Pass power, PTZ, and video over a single Cat 5 cable.

Patton's CCTV Pass-Thru Balun allows video, 2-wire pan/tilt/zoom (PTZ) control and remote power to be transmitted via one 4-pair Cat5 cable eliminating the need to install multiple cables in the CCTV security and surveillance environment. The pass-thru balun may be used in pairs or in conjunction with standard twisted pair cross-connect devices and other Patton CCTV baluns.



Application diagram



FEATURES & BENEFITS

- ✔ Distances up to 2,230 feet (680 meters) over Cat5 cable

SPECIFICATIONS

Except for the following, specifications are the same for Model 320 and Model 310

Max. Distance: 24 VAC via three pairs with 10% voltage drop at camera
5VA: 519 feet (170 meters)
10VA: 258 feet (85 meters)
20VA: 130 feet (43 meters)
30VA: 86 feet (28 meters)

Max Input Voltage: 50V (AC RMS/DC)

Max Current Rating: 4.5A (AC RMS/DC)

Active Pins:
Model 320: 8+ 7- (video), 1 2 3 4 5 6 (power)
Model 321: 8+ 7- (video), 1 2 3 6 (power), 4, 5 (data, PTZ control)
Model 322: 8+ 7- (video), 4 5 3 6 (data, speed dome)

ORDERING INFORMATION

320P: CCTV Balun RJ45 Power-thru type Male w/DC power plug, 8+7- (video), 123456 (power)

320J: CCTV Balun RJ45 Power-thru type Male w/DC power Jack, 8+7- (video), 123456 (power)

320: CCTV Balun RJ45 Power-thru type Male w/o DC power Plug and Jack, 8+7- (video), 123456 (power)

321P: CCTV Balun RJ45 Power-thru type Male w/DC power plug, 8+7- (video), 1236 (power), 4,5 (data, PTZ control)

321J: CCTV Balun RJ45 Power-thru type Male w/DC power jack, 8+7- (video),1236 (power), 4, 5 (data, PTZ control)

322: CCTV Balun RJ45 Power-thru type Male w/o DC power Jack, 8+7- (video), 4536 (data, speed dome)

CATV Passive Baluns

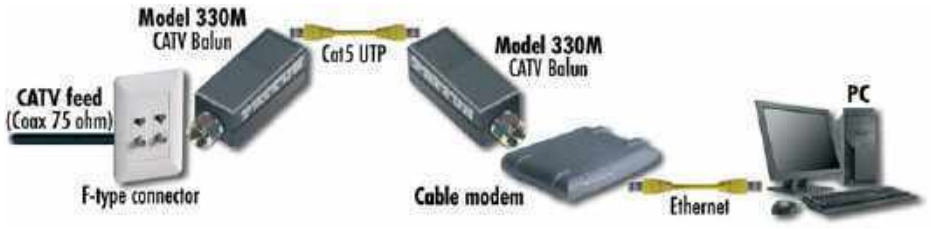
Model 330 Series

Model 330MP shown

Why use expensive and hard-to-manage coax cables when you can use inexpensive twisted-pair?

Patton's 330 Series CATV Baluns enable one CATV, VHF, and FM video signal to be transmitted via one twisted-pair cable in a point-to-point connection. The CATV balun saves the cost of installing expensive and bulky coax cable and is a smart, fast way of connecting RF video equipment to TVs, monitors, and other RF equipment.

Application diagram



FEATURES & BENEFITS

- ✔ Communicate over existing telephone lines or other twisted pair media
- ✔ Connect twisted pair using R-J45 or terminal block
- ✔ Distances up to 328 feet (528 meters) over Cat5 cable

SPECIFICATIONS

UTP: 24 gauge or lower, twisted pair
Impedance: 100 ohm
Pins: 7 & 8
F Connector: Impedance: 75 ohm
Bandwidth: 5 to 862 MHz
Insertion Loss: Less than 3 dB (5 dB max. for CATV 2-27)

Return Loss: More than 18 dB from 10 to 862 MHz
Common mode rejection: More than 20 dV from 40 to 862 MHz
Max. Distance: 197 feet (60 meters) over Cat5; 328 feet (100 meters) with amplifier

ORDERING INFORMATION

330F: F Male to RJ45 Jack, wiring 8+/7-

330MP: PAL Male to RJ45 Jack, wiring 8+/7-

331F: F Female to Toolless IDC with cover

331M: F Male to Toolless IDC with cover

331FP: PAL Female to Toolless IDC with cover

331MP: PAL Male to Toolless IDC with cover

Surge Protection

In This Section

Multiport Protection

10/100BASE-TX (CATEGORY-5)

Up to 100 Mbps
(PoE 802.3af available)

Protects 8 or 16-port Category-5 interfaces (including RS-422, RS-423, 10/100Base-TX, Token Ring, Fast Ethernet, and ATM) twisted-pair hubs against transients

Models 570R & 580R
Page 56

Single-port Protection

RS-232

DB-25

DB-9

These asynchronous surge protectors guard RS-232 data and control signals against harmful transients. Ideal for situations where you have equipment such as multiplexers, repeaters, concentrators, and short-range modems connected to long lengths of cable, they protect against signal noise and surges.

- ✔ Protect your expensive communications equipment from line-to-line and line-to-ground transients.
- ✔ Highly sensitive avalanche-diode circuitry
- ✔ Install quickly and easily
- ✔ Available with DB-9 and DB-25 connections

Models 501 & 509
Page 55

10/100 BASE-TX

Cat 5 Certified

These 10/100Base-TX surge protectors are EIA/TIA TSB-40A Category-5 certified, and can protect your RS-422/423, Token Ring, and ATM equipment too!

- ✔ Install at equipment locations (570) or wiring closets (580)
- ✔ Complies with transient immunity standards IEC 801-2, 801-4, & 801-5
- ✔ PoE 802.3af

Model 570/580
Page 55

Optical Isolators

ASYNCHRONOUS RS-232

Don't let ground loops disrupt your RS-232 communications! The Model 590 Series of RS-232 optical isolators guard your asynchronous equipment from the hazards of ground looping. Plugging directly into your DTE hardware, the Model 590 Series provides 2500V RMS peak DCE/DTE isolation.

- ✔ Models 590A and 592 support asynchronous data rates up to 19.2 kbps
- ✔ Models 5911A and 594 support asynchronous data rates up to 115.2 kbps
- ✔ 2500 VRMS peak isolation

Model 590 Series
Page 57

ASYNCHRONOUS RS-422/485

Prevent the early failure of your RS-422/485 devices! The Model 593 series of RS-422/485 optical isolators protects your RS-422/485 equipment from the hazards of ground looping. Connect the Model 593 directly to your equipment via a DB-25 or RJ-45 connector, or a terminal block.

- ✔ Supports asynchronous data rates up to 115.2 kbps
- ✔ Installs quickly and easily
- ✔ 2500 VRMS peak isolation

Model 593 Series
Page 57

Async DB-25 Surge Protectors

Models 500 & 501

FEATURES & BENEFITS

- ✔ **Model 500** protects pins 2, 3, 7 and 20 (pin 1 and shell connected to ground)
- ✔ **Model 501** protects pins 2, 3, 4, 5, 6, 7, 8 and 20 (pin 1 and shell connected to ground)

Sync DB-25 Surge Protector

Model 502

FEATURES & BENEFITS

- ✔ Protects pins 2–8, 15, 17, 22 & 24
- ✔ Diverts surge energy to pin 1 and D-shell at both ends

Sync DB-9 Surge Protector

Model 509

FEATURES & BENEFITS

- ✔ Two clamping voltages: 7.5 V (RS-422) or 18V (EIA-574/RS-232)
- ✔ Combined surge-handling of 5,400 watts
- ✔ Protects all 9 pins

ORDERING INFORMATION

Models 500 & 501
500: Async DB-25 Surge Protector
501: Async DB-25 Surge Protector

Model 502
502: Sync DB-25 Surge Protector

Model 509
509/6: DB-9 Surge Protector (for RS-422/485)
509/25: DB-9 Surge Protector (for RS-232)

Model 509
503S: RS-232 Serial DB-25 Surge Protector
503S/6: RS-422/485 Serial DB-25 Surge Protector

Model 570, 580, & 570-POE, 580-POE
570: 10/100Base-T (CAT-5) Protector Point of Use (8-Wire)
570-POE: 10/100Base-T PoE Protector Point of Use
580: 10/100Base-T (CAT-5) Protector Barrier (8-Wire)
580-POE: 10/100Base-T PoE Protector Barrier

Serial DB-25 Surge Protector (All 25 Leads)

Model 503S

This universal surge protector guards any RS-232 system (synchronous or asynchronous) against data loss and hardware damage caused by data line transients. There are many sources of such transients—lighting strikes, fluorescent lights, elevator motors, even UPSs. AC protection alone is not enough! The Model 503S diverts harmful data line surges to chassis ground (through either D-shell) before they reach your hardware.

FEATURES & BENEFITS

- ✔ Protects all 25 serial pins on the DB-25 connector
- ✔ Combined surge handling capacity of 36,000 watts
- ✔ Diverts surges safely to chassis ground through D-shell connectors

10/100Base-TX (Cat-5) Secondary Surge Protector

Models 570, 580, & 570-POE, 580-POE

Our Cat-5 protector works at speeds up to 100 Mbps

These 10/100Base-TX surge protectors are EIA/TIA TSB-40A Category-5 certified, and can protect your RS-422/423, Token Ring, and ATM equipment too! With a NEXT spec of -43dB (worst pair), you can rest assured that these units will protect your 10/100Base-TX, RS-422 or 100VG-AnyLan data lines without hindering critical network performance. The Model 570 is designed for use at the sensitive equipment port, while the Model 580 protects barriers (such as wiring closets).

FEATURES & BENEFITS

- ✔ EIA/TIA TSB-40A Category-5 certified
- ✔ Models for use at the equipment (570) or barriers/wiring closets (580)
- ✔ Near-end cross-talk (NEXT) better than -43 db for transparent protection
- ✔ Complies with transient immunity standards IEC 801-2, 801-4, & 801-5
- ✔ Response time of 0.1 µs
- ✔ 802.3af compliant models available

SPECIFICATIONS

Environment: Category-5 interfaces that use the RJ-45 connector, including RS-422/423, 10Base-T, Token Ring, 100Base-TX & ATM
Connectors: RJ-45 Female
Response Time: Clamped to 13 V after 0.1 µs
Characteristic Impedance: 100 ohm

Surge Clamp Voltage: Model 570—13 V max with 1 KV Input; Model 580—15 V max with 2 KV Input
NEXT Loss: 570: worst pair better than -46 dB at 100 MHz; 580: worst pair better than -43 dB at 100 MHz
Surge Rating: IEC 801.5 Standard Level

DC Clamp Voltage: Common Mode to Gnd, each line 7.5 V @ 50 mA; Differential mode, per pair 8.1 V @ 50 mA
Insertion Loss: Less than 0.4 dB at 100 MHz (including connector)
Return Loss: Better than 14 dB
Group Delay: None, 1–100 MHz
Series Resistance: Less than 400 milli-ohms

Grounding: External ground strap provides separate unit- to chassis-ground
Dimensions: 2.25 x 1.69 x 0.75 in (5.72 x 4.29 x 1.91 cm)
570 & 580
Common mode (to ground) (each line): 7.7 V @ 10mA (pulse)

Differential mode (per pair): 8.6 V @ 10 mA (pulse)
570-POE & 580-POE
Pairs (1, 2) & (3, 6)
Common mode (to ground) (each line): 7.7 V at 10mA (pulse)
Differential mode (per pair): 8.6 V at 10 mA (pulse)

Pairs (4, 5) & (7, 8)
Common mode clamping voltage is 69 V at 1 mA (pulse transient) and
Differential mode clamping voltage is 70 V at 1 mA (pulse transient).

10/100Base-TX (Cat-5) Secondary Multiport Protectors, Hub and Panel (Rack Mount) Formats

Models 57X & 58X

Our Cat-5 protector works at speeds up to 100 Mbps.

The Model 57X and 58X Series Category-5 hub protectors are available in 4, 6 or 8-port standalone versions, as well as 8 or 16-port rack mount panels. All Model 57X and 58X units are EIA/TIA TSB-40A Category-5 certified, and divert harmful data line transients to chassis ground through a single braided metal strap. This approach reduces the number of ground connections required. Specifications like near-end cross-talk

(NEXT) of better than -43 dB at 100Mhz, as well as insertion loss of less than 0.4 dB, insure transparent operation.

FEATURES & BENEFITS

- ✔ Provides 4, 6, 8 or 16 ports of protection against transients
- ✔ Guards twisted-pair interfaces at speeds up to 100 Mbps
- ✔ EIA/TIA TSB-40A Category-5 Certified
- ✔ Models for Point-of-Use (57X) or Barriers/Wiring Closets (58X)

SPECIFICATIONS

Connectors: RJ-45 Female
Response Time: Less than 5 ns
Characteristic Impedance: 100 ohm
NEXT Loss: Better than -43 dB at 100 MHz
Surge Clamp Voltage: Model 57X—13 V max with 1 kV Input; Model 58X—15 V max with 2 kV Input
Surge Rating: IEC 801.5 Standard Level
DC Clamp Voltage: Common Mode to Gnd, each line 7.5 V @ 50 mA; Differential mode, per pair 8.1 V @ 50 mA
Return Loss: Better than 14 dB
Insertion Loss: Less than 0.4 dB (including connector) at all frequencies
Series Resistance: Less than 400 milli-ohms
Grounding: External ground strap through mounting screws

ORDERING INFORMATION

574: 4-Port, 10/100Base-TX (CAT-5) Hub Protector Point for Use
576: 6-Port, 10/100Base-TX (CAT-5) Hub Protector Point for Use
578: 8-Port, 10/100Base-TX (CAT-5) Hub Protector Point for Use
570R8: 8-Port 10/100Base-TX (CAT-5) Panel Protector Point for Use
570R16: 16-Port 10/100Base-TX (CAT-5) Panel Protector Point for Use
584: 4-Port 10/100Base-TX (CAT-5) Hub Protector for Wiring Closets
586: 6-Port 10/100Base-TX (CAT-5) Hub Protector for Wiring Closets
588: 8-Port 10/100Base-TX (CAT-5) Hub Protector for Wiring Closets
580R8: 8-Port 10/100Base-TX (CAT-5) Panel Protector for Wiring Closets
580R16: 16-Port 10/100Base-TX (CAT-5) Panel Protector for Wiring Closets

Multiport RS-232 & RS-422 Surge Protectors

Model 51X Series

The Model 51X Series is a convenient way to provide data line surge protection for hosts, terminal servers, or other multiport devices. Guarding either RS-232 or RS-422/485 equipment, the Model 51X Series houses 4, 6, 8 or 12 surge protectors in a high density array. A choice of two different clamping voltages—11 volts for RS-422/485 devices or 27 volts for RS-232 devices—assures you of an unimpeded data flow.

Matching RJ-45 input/output ports on the front and rear panels allow the Model 51X Series to connect conveniently in-line with each port on your device. All versions of the Model 51X Series support data rates up to 230 kbps. Harmful data line transients are intercepted before they reach equipment ports and are diverted safely to chassis ground. Employing a solid state hybrid circuit, the Model 51X Series is able to handle repeated surges up to 1.5 kWatts. One 6-inch (15.2 cm) patch cable is included for each port on the unit.

FEATURES & BENEFITS

- ✔ Four Port Densities Available: 4, 6, 8 or 12 Modular Ports per Enclosure
- ✔ Two Clamping Voltages: 11 Volts (RS-422/485) or 27 Volts (RS-232)
- ✔ Data Rates up to 230 kbps
- ✔ 1.5 kW of Surge Handling Capability
- ✔ Surge Energy Diverted to Ground through Braided Metal Strap

Typical application

Model 514

ORDERING INFORMATION

RS-232 Surge Protector
514/25: 4-Port Modular
516/25: 6-Port Modular
518/25: 8-Port Modular
513/25: 12-Port Modular

RS-422/485 Surge Protector
514/6: 4-Port Modular
516/6: 6-Port Modular
518/6: 8-Port Modular
513/6: 12-Port Modular

Asynchronous RS-232 Optical Isolators

Model 590 Series

Don't let ground loops disrupt your RS-232 communications!

The Model 590 Series of RS-232 optical isolators guard your asynchronous equipment from the hazards of ground looping. Plugging directly into your DTE hardware, the Model 590 Series provides 2500V RMS peak DCE/DTE isolation. Both the Model 590A (19.2 kbps max) and Model 591A (115.2 kbps max) isolate 4 lines on the RS-232 interface—two of which are selectable by internal jumpers. The Model 592 (19.2 kbps max) and Model 594 (115.2 kbps max) isolate 7 pre-wired lines on the RS-232 interface.

FEATURES & BENEFITS

- ✔ 2500V RMS peak isolation
- ✔ Models 590A and 592 support async data rates to 19.2 kbps
- ✔ Models 591A and 594 support async data rates to 115.2 kbps

SPECIFICATIONS

Transmission Format: Asynchronous, full or half duplex
Interface Standard: EIA RS-232E
Connectors: DB-25 female on DCE side (direct connection to DTE equipment); DB-25 male on DTE side (connects by cable to DCE equipment)

Data Rates: Model 590A/592—0 to 19.2 kbps; Model 591A/594—0 to 115.2 kbps
Lines Isolated: Model 590A/591A—TD (2), RD (3), DTR (20) or RTS (4); CD (8), DSR (6) or CTS (5). Model 592/594—TD (2), RD (3), RTS (4), CTS (5), DSR (6), CD (8) and DTR (20).

Power Supply: Model 590A/591A—RS-232 Interface powered, or user-supplied 12V DC input on pin 9 of the DCE interface (45mA); Model 592/594—External AC transformer
Isolation: 2500V RMS peak isolation
Dimensions: 3.8 x 2.1 x 0.79 in. (9.7 x 5.3 x 2.0 cm)
Op. Temp.: 32–122°F (0–50°C)

Altitude: 0–10,000 feet (0–3,078 m)
Humidity: Up to 95% non-condensing

ORDERING INFORMATION

RS-232 Optical Isolator (DB-25M to DB-25F)

590AF: 19.2 kbps, 4 Lines Isolated
591AF: 115.2 kbps, 4 Lines Isolated
592/25F: 19.2 kbps, 7 Lines Isolated 120 V
594/25F: 115.2 kbps, 7 Lines Isolated,120 V

230 VAC version also available, call for details.

RS-422/485 Optical Isolators

Model 593 Series

Prevent the early failure of your RS-422/485 devices!

The Model 593 series of RS-422/485 optical isolators protects your RS-422/485 equipment from the hazards of ground looping. Connect the Model 593 directly to your equipment via a DB-25 or RJ-45 connector, or a terminal block. The Model 593 supports data rates up to 115.2 kbps.

FEATURES & BENEFITS

- ✔ 2500 Vrms peak isolation
- ✔ Supports asynchronous data rates up to 115.2 kbps

SPECIFICATIONS

Transmission Format: Asynchronous, full- or half-duplex
Interface standard: RS-422/485, or terminal block
Data rates: Up to 115.2 kbps

Power Supply: AC external power supply
Isolation: 2500 Vrms peak isolation
Op. Temp.: 32–140°F (0–60°C)
Altitude: 0–10,000 ft (3,048 m)

Dimensions:
593/45 & 593/TB:
3.8L x 2.1W x 0.79H in.
(9.7L x 5.3W x 2.0H cm)

593/25:
4.1L x 2.1W x 0.79H in.
(10.4L x 5.3W x 2.0H cm)

Humidity: 5–95% non-condensing

ORDERING INFORMATION

RS-422/485 Optical Isolator

593/45: RJ-45F to RJ-45F, 115.2 kbps 4 lines isolated
593/25F: DB-25F to DB-25F, 115.2 kbps 4 lines isolated
593/TB: Terminal block to terminal block, 115.2 kbps, 4 lines isolated

DB-25 & DB-9 Data Taps

Models 3 & 3/9

Monitor data line activity or connect 2 devices to one RS-232 port! Models 3 and 3/9 provide a simple, inexpensive way to "tap" into a data line so you can use a scope or monitor to see what is occurring without interrupting the flow of data. Three DB-25 (Model 3) or DB-9 (Model 3/9) connectors—wired straight through—make tapping into existing RS-232 lines simple and neat. These handy little devices can also be used anywhere you would use a "Y" cable, such as connecting 2 terminals in parallel to one port. Please specify gender: MF-M, MF-F, MM-M, MM-F, FF-M, or FF-F).

FEATURES & BENEFITS

- ✔ All pins wired straight through to all three connectors
- ✔ A great way to monitor data line activity or connect two devices to one RS-232 port
- ✔ Available in all gender combinations

ORDERING INFORMATION

Model 3
3XY-Z: DB-25 Data Tap (specify genders)

Model 3/9
3/9XY-Z: DB-9 Data Tap (specify genders)

Model 3/9HDX
3/9HDXY-Z: DB-9 Data Tap (Half-Duplex) (specify genders)

Example:
3/9 FM-F
X= (M) Male or (F) Female
Y= (M) Male or (F) Female
Z= (M) Male or (F) Female

DB-25 Cube Tap

Model 4

This cube tap takes the data top one step further. As you might imagine, the Model 4 has all 25 pins of all four connectors wired straight through. It's like having a single data tap with up to four different gender combinations. Or it's like having a "universal gender changer." You can even use it to create a DB-25 "X" cable.

FEATURES & BENEFITS

- ✔ Data junction box with all 25 pins connected straight through on all four connectors
- ✔ Available with ***all possible*** gender combinations (normally supplied with two male and two female connectors)

DB-25 to Modular Adapters

Models 11 & 12

FEATURES & BENEFITS

- ✔ DB-25 (Male or Female) to RJ-11/RJ-12, RJ-45, or Dual RJ-11/RJ-12
- ✔ Available as Solder Kits, Pushpin Kits
- ✔ Complete with Case, Connectors, Captive Screws and Saddle Washers

ORDERING INFORMATION

Model 11, DB-25 to RJ-11/12
11KS M: DB-25 Male, solder kit
11KS F: DB-25 Female, solder kit
11KP M: DB-25 Male, pushpin kit
11KP F: DB-25 Female, pushpin kit

Model 12, DB-25 to RJ-45
12KS M: DB-25 Male, solder kit
12KS F: DB-25 Female, solder kit
12KP M: DB-25 Male, pushpin kit
12KP F: DB-25 Female, pushpin kit

DB-9 & DB-15 Modular Adapters

Models 15 & 16

FEATURES & BENEFITS

- ✔ High Density 15 Pin Connector (Male or Female) to RJ-11/RJ-12 or RJ-45
- ✔ Available as Solder Kits, Pushpin Kits

ORDERING INFORMATION

Model 15, DB-15 to RJ-11/12 or RJ-45
1511KPM: DB-15 Male, pushpin kit
1511KPF: DB-15 Female, pushpin kit
1545KPM: DB-15 Male, pushpin kit
1545KPF: DB-15 Female, pushpin kit

Model 16, DB-9 to RJ-11/12 or RJ-45
1611KPM: DB-9 Male, pushpin kit
1611KPF: DB-9 Female, pushpin kit
1645KPM: DB-9 Male, pushpin kit
1645KPF: DB-9 Female, pushpin kit

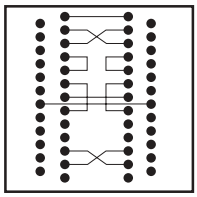
Async Null Modem Adapters

Models 6A, 6B, & 6C

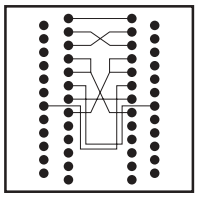
Data Terminals don't want to "talk" to each other! Neither do Personal Computers or serial printers! They will only talk to modems (DCEs), not to each other (DTEs). But these devices can be "fooled" into thinking they are connected to "modems" when they are not. Our null modem adapters (also called async modem eliminators or cross over cables) will do the job.

FEATURES & BENEFITS

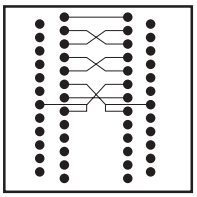
- ✔ **Model 6A**—No Handshake: This is the most frequently used arrangement
- ✔ **Model 6B**—Standard Handshake: This connection allows for the most common hardware flow control
- ✔ **Model 6C**—Full Handshake: This model is for full query and response between two RS-232C devices



Model 6A
No Handshake



Model 6B
Standard Handshake



Model 6C
Full Handshake

Loopback Adapter

Model 6L

FEATURES & BENEFITS

- ✔ Loops back DB-25 Pins 2 & 3, 4 & 5, 6, 8 & 20 on both ends
- ✔ The easy way to produce a "local echo" for testing RS-232 devices
- ✔ One male, one female connector

ORDERING INFORMATION

Model 6, Null Modem Adapter
6AXX: No Handshake
6BXX: Standard Handshake
6CXX: Full Handshake
XX = Specify genders.

DB-25 Micro Breakout Box

Model 9

FEATURES & BENEFITS

- ✔ All 25 Pins From Both DB-25 Connectors are Accessible
- ✔ Gold Plated Sockets
- ✔ Three Sets of Sockets to Make Jumpering Easy
- ✔ 25 Jumpers Supplied (19 AWG, soild)
- ✔ One Male & One Female DB-25 Connector

ORDERING INFORMATION

Model 9, Breakout Box
9MF: DB-25 Micro Breakout Box

DB-25 PockeTester™

Model 50

FEATURES & BENEFITS

- ✔ Monitors Async RS-232 Pins 2, 3, 4, 5, 6, 8, and 20
- ✔ All 25 Pins are Wired Straight Through
- ✔ 1 Male & 1 Female DB-25 Connector
- ✔ Interface Powered—No AC Power or Batteries Needed
- ✔ Data bias can be inferred from intensity of the colors

ORDERING INFORMATION

Model 50
50MF: DB-25 PockeTester

DB-9 PockeTester™

Model 51

FEATURES & BENEFITS

- ✔ Seven LEDs Monitor RS-232 Signals
- ✔ All 9 Pins are Wired Straight Through
- ✔ Data Bias can be Inferred from the Intensity of the Colors
- ✔ 1 Male & 1 Female DB-9 Connector

ORDERING INFORMATION

Model 51
51: DB-9 PockeTester™

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