

# REALITY CHECK

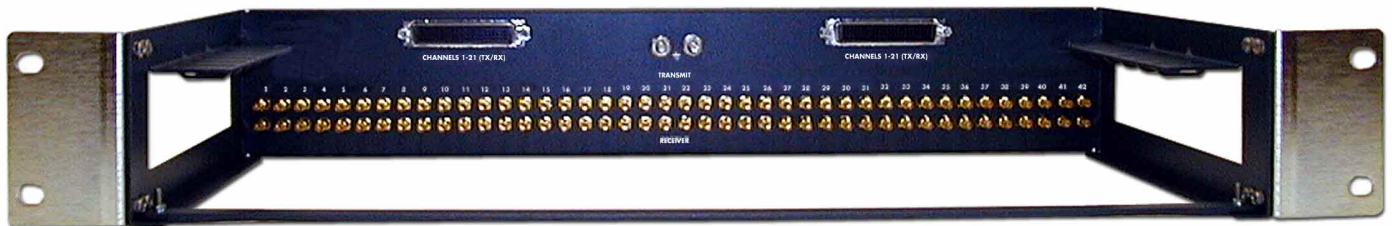
application solutions for your world

## U.S. Switch Manufacturer Relies on Patton Balun Technology to Enable Global Expansion

### Two Eras in Today's Backbone

The revolution is over. Optical transport has arrived, heralding a new era of high-speed wide-area communications. In most of the developed world fiber has long since replaced copper as the blazing core of today's network. Yet in regions beyond the core, twisted pairs (North

their new cutting-edge optical switch. This new switch delivers both legacy copper and next-generation optical transport, up to 10 gigabits/second, on multi-service interfaces, including SONET, SDH, Ethernet, T1 & E1. Originally designed for the North American market, the switch's E1 interface card delivers 42 twisted-pairs on two 96-pin telco connectors.



America) and coaxial cables (elsewhere) reliably carry their loads like pack animals from a bygone era. And not only do these proven legacy infrastructures work, they're fully paid for.

### Living with Legacy

"If it ain't broke, don't fix it" goes the adage. So copper and coax aren't going away. And like legacy T1 and E1 technologies, the world remains divided on which flavor of optical transport should prevail. In North America, next-generation Synchronous Optical Network (SONET) links meet T1s on copper twisted pairs, while elsewhere (Europe, Latin America, Asia, Australia and others) Synchronous Digital Hierarchy (SDH) links interface with E1s on dual coaxial cables.

### World-Class Optical Flagship

Enter one of the leading U.S. network equipment manufacturers with

### The Problem: Rigging for Global Waters

This vendor's products already carry 80% of the world's network traffic. Yet to sail their optical flagship between two eras and into international markets, the vendor had to seamlessly integrate legacy infrastructures with next-generation optical technology: adapting E1 120-Ohm twisted-pair interfaces for 75-Ohm coaxial connections. Yet rather than diverting valuable R & D resources from their core competencies, this vendor wisely decided to outsource. And because Patton Electronics Co. has twenty years experience designing and manufacturing interface conversion products,



when selecting a solutions partner to develop their ultra-high-density balun panel. . . they chose Patton.

## Key Benefits of OEM Partnership with Patton

### ✓ Use Your Business Resources More Efficiently

Save Time & Money

### ✓ Focus on Core Competencies

Play to Your Strengths ... and Ours

### ✓ Integrate Legacy Technologies with Next-Generation

Leverage Both – Patton Has the Know-How!

### ✓ Get Patton's Proven R & D Expertise

20-Year Track Record of Data/Telecom Innovations

### ✓ Engineering & Manufacturing Under One Roof

One-Stop Shop Means Quick-Response Turn-Around

### ✓ Stable, Brick & Mortar Company 20 Years & Counting ...

Thru Economic Ups & Downs Patton is At Your Service

## Setting Sail with Patton

A world-class switch deserves a world-class balun panel. And this multi-service optical switch needed an ultra-high-density, rack-mountable interface conversion platform. So Patton created a customized ultra-high density G.703 balun panel. Delivering 42 channels of E1 75-ohm to 120-ohm conversion in a compact rack-mountable chassis, Patton's custom balun panel also provides grounding and cable management features.



## Selected Industry-Leading Balun Products from patton

### Model 450RC24

Ultra-High-Density 24-Port G.703 Balun Panel

### Model 464RC

High-Density 16-Port E1/G.703 Balun Panel (BNC Connectors)

### Model 460RC TeleMatch™

Modular 16-port G.703 Balun Panel (75-Ohm to 120-Ohm)

### Model 466RC

16-Port E1/G.703 Balun Panel (1.6/5.6 Connectors)

### Model 460

MicroPak G.703 Balun - 2 Mbps (75-Ohm to 120-Ohm)

## Balun Technology

### Unbalanced Transmission

*Coaxial cable* transmits data by means of an unbalanced signal, i.e. voltage amplitudes on the two conductors are unequal with respect to ground. A conductive core carries signal voltage, while a surrounding metallic shield serves as signal ground. Carrier and ground are separated by a non-conductive material, and the entire cable is covered by an insulating jacket. Coaxial cables typically terminate with BNC – a.k.a. “barrel” – connectors.

### Balanced Transmission

*Twisted pair* cable transmits data by means of a balanced signal, i.e. voltage amplitudes on the two conductors are *equal* with respect to ground. One wire transmits a positive signal voltage while the other wire simultaneously transmits a negative signal voltage. To decode the signal pair, a processor measures the received voltage on each wire and computes the difference to determine the transmitted binary value (zero or one). Balanced transmission offers a measure of protection against data errors arising from signal noise. Because noise tends to affect the voltage on each wire equally, the voltage differential remains relatively stable. Twisted pair cables typically terminate on Telco punch-down blocks, RJ-48C, or Telco (48- or 96-pin) connectors.

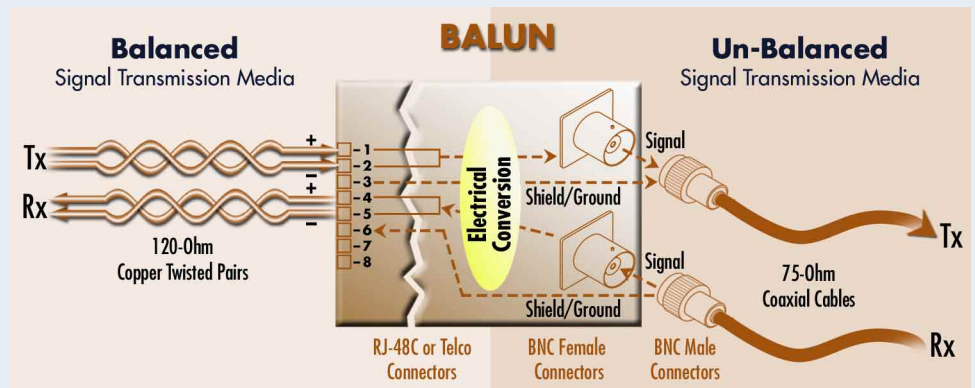
### Impedance

Whereas copper wire offers a characteristic impedance (resistance to electrical alternating current) of

120 Ohms, the characteristic impedance of coaxial cable is 75 Ohms. When making a connection between the differing cable types, the interface converter must also provide impedance transformation between the two signals.

### Balun

The word “balun” is a contraction of the term “Balanced-Unbalanced.” A balun provides interface conversion between balanced and unbalanced signal transmission media, (most often between 120-Ohm copper twisted pair and 75-Ohm coaxial cable). Beyond the basic physical connection between different cables and connectors, baluns provide conversion between differing electrical signals, including the required impedance transformation.



## About Patton

Patton Electronics Company is a US manufacturer and marketer of data communications products, including IP telephony (VoIP) gateways and routers, Remote Access Products (V.92, V.90, K56Flex, V.34+, and ISDN dial-in), Last Mile/Local Loop Access Products (T1, E1, and xDSL modems, DACS, NTUs and CSU/DSUs), Multi-Service Access Products (Voice, Intranet, Extranet, and Frame Relay access), and Connectivity Products (interface converters, short range modems, multiplexers, and data line surge protectors). Patton Electronics is an ISO 9001 certified and BABT approved manufacturer. Patton products are CE marked.



Extending, Converting & Converging

For more information or to request a free datacom catalog, please contact:

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