**NetLink™ DSL** Choose from G.SHDSL and IDSL—along with T1/E1 NTUs—and get the right user interface for your network. The NetLink system provides a variety of CPE options—from compact CPE with fixed interfaces to flexible QuikConnect™ interfaces. Central office solutions range from 1U high rack-mount TDM concentration units to 2U one-card-per-subscriber rack solutions with flexible front and rear card swappability. It’s so easy you will wonder how you ever managed without Patton’s NetLink system.

**ForeFront™ DSL** Patton’s ForeFront™ Access Infrastructure Solutions provide DSL solutions in a scalable carrier-class access platform. With a variety of card styles to provide TDM or IP concentration options and their ability to be mixed and matched in any of the cPCI chassis available, the ForeFront DSL platform gives users a solution to answer their DSL needs now and into the future. Harness the explosive growth of DSL with a tightly integrated, cost-effective solution to aggregate high speed traffic while gaining flexibility and protecting your investment.

**VDSL** The low cost solution for truly high bandwidth demands. Patton’s VDSL offers the fastest technology available today over copper twisted-pair. With symmetric data rates up to 16 Mbps, Patton’s VDSL solutions address the bandwidth needs for video-on-demand, broadcast TV, high speed data exchange, and voice services. Available in many versions, the Patton product line includes multi-rate asymmetrical/symmetrical standalone and rack card modems, fixed-rate standalone and rack card modems, and a VDSL access concentrator.
Patton EtherRockets: A New Kind of T1 and E1 Converters

- Uses Remote Router Porting™ to transparently extend Ethernet over T1/E1 lines
- Terminates T1/E1 Services
  - Nx56/64 speeds to 1.554 Mbps and 2.048 Mbps
  - Totally plug-and-play
  - 75-ohm and 120-ohm (E1), 100-ohm (T1) connections

Call today to get your free whitepaper on Remote Router Porting and learn how you can save on your next T1 or E1 deployment.

Channelized Gigabit T1/E1 Router
Patton’s IPLink Model 2004 multimedia routers concentrate up to 124 VLAN connections or bond up to 4 T1/E1s for an 8-Mbps link to serve high-density and bandwidth hungry applications.
### Standalone Functionality

<table>
<thead>
<tr>
<th>DSL Transport</th>
<th>Sync. Serial</th>
<th>T1/E1</th>
<th>Bridged Ethernet</th>
<th>Routed Ethernet</th>
<th>Access Rack</th>
<th>TDM Concentration</th>
<th>IP Concentration</th>
<th>Models</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDSL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1082 Standalone</td>
<td>96</td>
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<tr>
<td>G.SHDSL TDM</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1092 Standalone</td>
<td>95</td>
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<tr>
<td>G.SHDSL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1092 Rack Cards</td>
<td>95</td>
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<tr>
<td>ADSL2+</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
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<td>Yes</td>
<td>3092 IDSL-DACS</td>
<td>94</td>
</tr>
<tr>
<td>VDSL</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
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<td>Yes</td>
<td>3088 Standalone</td>
<td>84</td>
</tr>
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<td>3088RC Standalone</td>
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<td>ForeFront Access System</td>
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<td>3201 G.SHDSL Router</td>
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<td>3086 G.SHDSL</td>
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<td></td>
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<td></td>
<td>3224 G.SHDSL Access Server</td>
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<td>ForeFront DSL Access System</td>
<td>70</td>
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### Central Site Systems

<table>
<thead>
<tr>
<th>Models</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001 Rack</td>
<td>76</td>
</tr>
<tr>
<td>1058 Standalone</td>
<td>91</td>
</tr>
<tr>
<td>3324 Access Concentrator</td>
<td>82</td>
</tr>
</tbody>
</table>

---

Extended Temperature -40 to 85°C allows CPEs to operate in environments that do not have heating or cooling options.

NEMA 4 (IP65) enclosure protects against elements such as dirt, rain, sleet, snow, dust, and the external formation of ice on the enclosure.

**xDSL CPEs**
- IDSL
- G.SHDSL
- VDSL
DSL Concentrator with Routed End-Points for IP Overlay Networks

Patton’s ForeFront system provides high level DSL concentration of IP traffic across SDH, SONET, or ATM networks. Providing routed endpoints and high speed nxT1/E1 and/or STM-1 egress.

DSL Concentration

Concentrate data from many DSL links into a few cost-effective uplinks by mapping the DS0s from multiple G.SHDSL ports into the DS0s of the WAN uplink ports.

Voice/Data DS0 Segmentation

To separate or segment different types of data (to separate voice from data transmission, for example), map DS0s of specific data types to specific WAN.

DSL plus T1/E1 DACS

In addition to DSL, map any of the WAN timeslots back to any other WAN timeslot for flexible T1/E1 cross-connecting.

DACS Pass-Thru

Effectively bypass the cross-connect feature and directly map a single DSL port to a T1/E1 WAN port on a one-to-one basis.

Metro Area Leased Line

Connect two local sites by mapping DS0s (cross-connect) of one G.SHDSL port to another G.SHDSL port at the ForeFront chassis.

DSL Concentrator

Concentrate data from many DSL links into a few cost-effective uplinks by mapping the DS0s from multiple G.SHDSL ports into the DS0s of the WAN uplink ports.

Voice/Data DS0 Segmentation

To separate or segment different types of data (to separate voice from data transmission, for example), map DS0s of specific data types to specific WAN.

In addition to DSL, map any of the WAN timeslots back to any other WAN timeslot for flexible T1/E1 cross-connecting.

DACS Pass-Thru

Effectively bypass the cross-connect feature and directly map a single DSL port to a T1/E1 WAN port on a one-to-one basis.
**ForeFront Solutions for DSL**

**Half-Pipe, Full-Pipe, and Xtreme delivery platforms for DSL**

The ForeFront AIS brings next-generation access to your DSL network.

Patton’s ForeFront Access Solutions for DSL address the new point-of-presence requirements demanded by today’s providers. Using a modular approach, the ForeFront AIS includes all system components needed to provide DSL access. With multiple chassis options, card configurations and the CPE to go with it, the ForeFront AIS is the solution of choice for your next network expansion!

---

**FEATURES & BENEFITS**

- Up to 288 ADSL2+ ports per chassis
- Up to 208 G.SHDSL ports per chassis
- T1/E1, STM-1 WAN egress options
- The ForeFront Full-Pipe — configured with 3096RC T-DACs — provides up to 128 G.SHDSL links in a 4U chassis. E1 or STM-1 interface options make data network integration a snap. Combined with Patton’s 3086 CPE, it provides the complete solution.
- Redundant AC or DC

---

**Major Components**

**Router Cards**

The Model 6081RC EdgeROUTE is an Access Server for the ForeFront AIS that is optimized for IP routing and VLAN aggregation. With ample support for MAC address filtering, VLAN priority, and VLAN tagging of individual streams, the EdgeROUTE is a perfect solution for integrating TDM and IPDSLAM traffic into core and edge MPLS networks.

**G.SHDSL Line Cards**

Patton has combined G.SHDSL ports, DACs, and WAN functions in a single card. The Model 3096RC TDM-Digital Access Concentrator links 16 G.SHDSL circuits to multiple WAN uplink modules and offers completely flexible any-to-any grooming. Each 2.3-Mbps port offers user-selectable nx64 data rates. With its built-in cross-connect, each data channel, or channel group, can be multiplexed onto any uplink or DSL port — even to ports on other 3096RC blades in the same chassis. With an integrated SNMP/HTTP-based NMS, the entire system is easily manageable.

**ADSL Line Cards**

The Patton Model 3101RC provides up to 48 ADSL2/2+ ports of triple-play access, supporting extended reach and higher downstream bandwidth up to 24 Mbps.

The Model 3101RC delivers affordable ADSL/ADSL2/2+ network access for triple-play ready ADSL service. The ADSL2+ IPDSLAM module, together with Patton’s ForeFront Access Platform, is the premier solution for fault tolerant Triple-Play enabled network deployments.

The Model 3101RC offers complete ADSL, ADSL2 and ADSL2+ support including extended range operation and enhanced speeds. Each 3101RC IPDSLAM Module includes all the intelligence necessary to function as a complete single card IPDSLAM thereby providing unparalleled redundancy and fault tolerance in network deployments.

**6511 Matrix Switch**

The Patton Model 6511 Matrix Switch is an integrated multimedia switching engine complete with a digital access cross-connect, high speed STM-1 trunk interface, wire-speed Ethernet packet switch, and GUI management system. The Model 6511’s flexible channel switching fabric allows non-blocking switching from any input to any output. The channelized STM-1 interface integrates into a SDH/SONET network, enabling users to channelize an STM-1 down to 64 kbps timeslots. With full grooming capability the Model 6511 Matrix Switch allows any-to-any TDM mapping and can place any channel from any card onto any port.
ForeFront™ Solutions Center

The ForeFront DSL solutions are made to specifically match the needs of your network. They are easily configurable to meet your uplink needs, your DSL needs, and more. The example systems below show some of the limitless options available with the ForeFront DSL solutions.

The Half-Pipe
If you are ready to start deploying DSL and want to start slow but with a system that will grow as your needs grow, choose the Half-Pipe. This solution is small but powerful—it packs an impressive 64 G.SHDSL modems, DACS, management, supplies, cooling, and 16 T1/E1 WAN ports (upgradable to 64) into a 2U-high chassis. In addition, as your needs grow and you move to a larger system, the cards will move right along with you to either the Full-Pipe or the Xtreme systems. Ensuring that your investment pays dividends well into the future.

The Full-Pipe STM-1
This high density solution gives users 96 G.SHDSL modems and an STM-1 uplink card, along with the integrated features that are standard in the ForeFront solutions, such as built-in DACS, SNMP management, power supplies, alarm cards, and cooling.

The Full-Pipe T1/E1
For those who want a high density solution, but don’t have access to an STM-1 uplink, the Full-Pipe also comes with T1/E1 uplinks. Choose how many you want — from 4 to as many as 96 T1/E1 uplinks can be used in the Full-Pipe. Plus, when you are ready for the STM-1, just add the card — the Full-Pipe is ready to go.

The Xtreme
This example comprises two independent STM-1 uplinks, 208 G.SHDSL modems with built-in SNMP management, power supplies, alarm cards, and cooling. The Xtreme’s specially designed high speed backplane (with integrated H.110 and 2.16 Ethernet buses) allows mapping of any DS0 timeslot to any other DS0 timeslot, whether it is DSL, T1/E1, or STM-1. If this isn’t enough, you can easily upgrade the Xtreme with two redundant STM-1 ports and up to a total of 208 T1/E1 WAN ports.

ForeFront cPCI
Configured chassis systems for ForeFront

FEATURES & BENEFITS
✓ CompactPCI Open System — Flexible, standards-based, rugged design ensures that it will be a reliable viable platform well into the future.
✓ 2U, 4U, 6U Platforms — Get 4, 8, or 17 slots for any system card and scale your deployment.
✓ Universal AC or Telco DC power modules offer high power with full 1+1 or N+1 redundancy
✓ Integrated management module monitors fan tachometers, voltage, and temperature.

ForeFront chassis solutions

ORDERING INFORMATION
ForeFront Chassis Systems: The ForeFront models below are our most popular configurations. Each is loaded with redundant AC, DC, or mixed AC/DC power supplies, fan modules, and alarm cards. Just add your choice of STM-1 and/or DSL modules to complete your system.

Half-pipe 4-slot chassis with fan module, alarm card, redundant power supplies, & H.110 backplane
6276/RUI: Universal AC supplies
6276/R48: Universal DC supplies
6276/U48: Universal AC/DC supplies

Full-pipe 8-slot chassis with fan module, alarm card, redundant power supplies, and 2.16 backplane
6476/RUI: Universal AC supplies
6476/R48: Universal DC supplies
6476/U48: Universal AC/DC supplies

Xtreme 17-slot chassis with fan module, alarm card, redundant power supplies, and 2.16 backplane
6676/RUI: Universal AC supplies
6676/R48: Universal DC supplies
6676/U48: Universal AC/DC supplies

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FAST Delivery From Your AUTHORIZED DISTRIBUTOR!
**ForeSight™ NMS**

**Model 6300 FCAPS EMS**

The ForeSight™ Model 6300 is a scalable Element Management System for full life-cycle network management of user services in TDM and routed networks.

The Model 6300 NMS offers integrated FCAPS element management features on a stable Linux platform for full life-cycle network management. The FS6300 scales from a single local server to a distributed, hierarchical multi-station plan with complete redundancy for fail-safe operation. Full life-cycle network management begins with planning resource provisioning, then the deployment of equipment, and subsequently auto-discovery of installed nodes. Schedule automatic software upgrades at low traffic times for selective sites or network areas without having to reconfigure each card again. Configuration changes can be executed at any authorized network station to upgrade a client’s service or disconnect for clients not maintaining their service contract.

**“FCAPS+” Management**

Accounting/Administration Information is secured in the network database. Resource administration and client accounting can be grouped into domains for ease of management tasks and increasing the security level of protection. A containment tree view enables an operator to quickly browse the entire inventory.

**Features & Benefits**

- **Integrated FCAPS** — By integrating the 5 modular FCAPS management tasks, network management efficiency increases while easily enforcing good network management techniques.
- **Scalable NMS** — The original NMS is built from the basic building blocks of Linux platform for small enterprise network for cost-effective and technically easy NMS growth to large multi-tiered carrier networks.
- **Configuration Management** — Support good network planning techniques and efficient deployment of new sites and client services. Includes resource provisioning, auto-discovery, and scheduled software image upgrades.
- **Alarm Management** — Simplify event and alarm management with alarm correlation, filtering and triggers for specific actions, like sending a page or email.
- **Security Management** — Increase security by dividing the network into mutually exclusive domains assigned to specific operators. Credential-based visual access. Management sessions are secured locally or via remote clients.
- **Administration Management** — Keep client information in a secured database. Manage equipment resources and client services which can be grouped into domains. Backup and restore configurations.
- **Performance Management** — Data collection and presentation is essential for maintaining SLAs and the pre-planning required for future network growth. Print custom reports, save electronic copies of reports, monitor real-time graphical displays of desired network parameters.
**Network Access & Connectivity**

**CATALOG**

---

### 6300 ForeSight Web NMS Editions

<table>
<thead>
<tr>
<th>Size of managed networks</th>
<th>FS6300/LX (Local)</th>
<th>FS6300/DX (Regional)</th>
<th>FS6300/EX (Regional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10,000 managed interfaces</td>
<td>= 100,000 managed interfaces</td>
<td>100,000 managed interfaces</td>
<td></td>
</tr>
<tr>
<td>Maximum number of concurrent clients</td>
<td>5</td>
<td>10 per Front End Server</td>
<td>10 per Front End server</td>
</tr>
<tr>
<td>Supported Databases*</td>
<td>MySQL</td>
<td>MySQL</td>
<td>MySQL</td>
</tr>
</tbody>
</table>

* Contact marketing if other databases must be supported.

---

### Supported Features

<table>
<thead>
<tr>
<th>FS6300/LX</th>
<th>FS6300/DX</th>
<th>FS6300/EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topology maps</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto-discovery</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Configuration Management</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fault (Alarm/Event) Management</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Security Management</td>
<td>Standard (limited)</td>
<td>Full (optional)</td>
</tr>
<tr>
<td>Administration/Accounting Management</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Performance Management</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Reports</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Provisioning</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Fail-over</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Database redundancy</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Distributed Front-End Server/Load Balancing</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Backup &amp; Restore</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SNMP</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CORBA</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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<td>CLI</td>
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### Supported Operating Systems

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<thead>
<tr>
<th>NMS Server</th>
<th>FS6300/LX</th>
<th>FS6300/DX</th>
<th>FS6300/EX</th>
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<tbody>
<tr>
<td>Fedora Core 6,</td>
<td>Fedora Core 6,</td>
<td>Fedora Core 6,</td>
<td></td>
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</tbody>
</table>

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The ForeSight 6300 Network Management System scales from small enterprise networks to large carrier networks. Providing a la carte selection of the NMS components gives the network managing organization the maximum in planning and growing the NMS. As more front-end servers and application clients are added, the NMS can expand from a flat to a multi-tiered hierarchical, mutually exclusive domain-oriented architecture. Distributed and redundant databases implement robustness in operation and also in failure scenarios to avoid the loss of data and management capability.

---

**Ordering Information**

**FS6300/LX:** FS6300 Management Station. Supports up to 10,000 managed interfaces. Includes database commercial license, rackmount workstation, RAM, HD, backup device, 17-in. monitor, and pre-installed FS6300 software per preceding “Supported Feature” table.

**FS6300/DX:** FS6300 Management Station. Supports up to 100,000 managed interfaces. Includes database commercial license, rackmount workstation, RAM, HD, backup device, 17-in. monitor, and pre-installed FS6300 software per preceding “Supported Feature” table.

**FS6300/EX:** FS6300 Management Station. Supports more than 100,000 managed interfaces. Includes database commercial license, rackmount workstation, RAM, HD, backup device, 17-in. monitor, and pre-installed FS6300 software per preceding “Supported Feature” table.

**FS6300/WRAC:** FS6300 Windows Remote Application Client includes Windows-based PC with WRAC software to operate remotely with the FS6300/LX, -/DX, or -/EX Management Stations.

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**G.SHDSL Line Card**

**Model 3096RC 16-Port G.SHDSL TDM Concentrator**

Connect 16 G.SHDSL users and support nx64 kbps access up to 2.3 Mbps.

Patton has combined G.SHDSL ports, DACS, and WAN functions into a powerful system operating on Patton’s ForeFront Access Platform. The Model 3096RC TDM-Digital Access Concentrator, or T-DAC, links 16 G.SHDSL circuits to multiple WAN uplink modules and offers completely flexible any-to-any grooming. Each port offers user-selectable nx64 (to 2.3 Mbps) data rates. With its built-in cross-connect, each data channel, or channel group, can be multiplexed onto any uplink or DSL port—even to ports on other 3096RC blades in the same chassis. The entire system is easily managed through an integrated SNMP/HTTP-based NMS. Use the T-DAC in any Patton 2U, 4U, or 6U ForeFront Access System and scale-up density while reducing costs! Fully redundant power and integrated cooling enable these lightweight chassis to grow while accepting new technologies.

Harness the explosive growth of DSL with a tightly integrated, cost-effective solution to aggregate high speed traffic while gaining flexibility and protecting your investment. Choose the 3096RC for your next network rollout.

**FEATURES & BENEFITS**
- 16 G.SHDSL ports per card
- Standards-based DSL is interoperable with third party G.SHDSL modems
- Speed to 2.3 Mbps on a single twisted pair
- Distance to 32,000 feet (9,754 meters)
- Built-in TimeSlot DACS for any-to-any mapping of DS0 timeslots
- Flexible WAN Egress: 4, 8, 12 or 16 T1/E1 Rear Transition module
- WEB/SMTP manageable from anywhere in the world via the Internet
- Hot-swappable front and rear cards
- Complete alarm facilities
- Uses standard copper twisted pair
- Integrated line protection circuitry on rear transition module protects your investment
- User selectable G.SHDSL (TCPAM line coding) or HDSL (2B1Q line coding)

**ORDERING INFORMATION**

16-port G.SHDSL T-DAC front/rear card sets
- 3096RC/16E: 16 DSL, 4 E1/T1 ports
- 3096RC/16E4: 16 DSL, 4 E1/T1 ports
- 3096RC/16E8: 16 DSL, 8 E1/T1 ports
- 3096RC/16E12: 16 DSL, 12 E1/T1 ports
- 3096RC/16E16: 16 DSL, 16 E1/T1 ports
- 16-port G.SHDSL T-DAC front card
- 3096RC/16E: 16 E1/T1 ports; no rear transition module

T-DAC rear cards
- 3096RCT/0E: 50-pin Telco for 16 G.SHDSL ports (no E1/T1 ports)
- 3096RCT/4E: 50-pin Telco for 16 G.SHDSL ports; 88-pin SCSI for 4 E1/T1 WAN ports.
- 3096RCT/8E: 50-pin Telco for 16 G.SHDSL ports; 88-pin SCSI for 8 E1/T1 WAN ports.
- 3096RCT/12E: 50-pin Telco for 16 G.SHDSL ports; 88-pin SCSI for 12 E1/T1 WAN ports.
- 3096RCT/16E: 50-pin Telco for 16 G.SHDSL ports; 88-pin SCSI for 16 E1/T1 WAN ports.

**Cables**
- 10-3096TM68/64-6 & 10-3096TM64-6: Cable combination for 12 or 16 T1/E1 Rear Transition module
- 10-3096TM50-20: Cable for DSL to punch down block
- 10-3096TM50-20: Cable for DSL to punch down block

**SPECIFICATIONS**

- Standards based G.SHDSL
- nx64 kbps data rates up to 2.3 Mbps (n+1..36)
- over 2 wires, full-duplex, symmetrical TCPAM encoding
- 32,000 feet (9,754 meters) at 1.92 kbps; 18,000 feet (5,486 meters) at 2.384 Mbps

- G.SHDSL Distance: 32,000 feet (9,754 meters) at 1.92 kbps; 18,000 feet (5,486 meters) at 2.384 Mbps
- G.SHDSL connection: 16 ports presented on a 58-pin Telco connector
- Transition modules/circuit options include 4, 8, 12 or 16 T1/E1 ports
- User selectable G.SHDSL (TCPAM line coding) or HDSL (2B1Q line coding)

- Management services: HTTP, SNMP, TELNET, Ethernet, RS-232 Console Port, SYLOG Client, Remote Software Upgrade via FTP
- Alarm Reporting: Configurable alarms; remote SNMP traps, front panel LEDs, 3-contact relay (2-pin terminal block)
- Compliance: CE, UL, CTS, FCC Part 15, CTR12, CTR13
- Environment: 5–90%, non-condensing, 14–140°F (-10–60°C)
- Dimensions: Front panel 16.0 x 6.3 x 0.75 inches (1.36 x 0.16 x 0.19 meters)
- Rear panel 16.0 x 6.3 x 0.75 inches (1.36 x 0.16 x 0.19 meters)
- Op. Temp.: 14–110°F (-10–60°C)
- Humidity: 5–90%, non-condensing
- UL1950 (METS), Canadian cMET and CSAC1950, CSA C22.2 No. 1854
- FCC Part 68, Part 15, CE Mark, CTR12, CTR13
- Environmental: 5–90%, non-condensing, 14–140°F (-10–60°C)
- Dimensions: Front panel 16.0 x 6.3 x 0.75 inches (1.36 x 0.16 x 0.19 meters)
- Rear panel 16.0 x 6.3 x 0.75 inches (1.36 x 0.16 x 0.19 meters)
- Op. Temp.: 14–110°F (-10–60°C)
- Humidity: 5–90%, non-condensing
**IDSL Line Card**

**Model 3196RC 16-Port IDSL TDM Concentrator**

The Patton Model 3196RC IDSL T-DAC connects 16 users and supports data rates of 64, 128, and 144 kbps. This high density offering provides affordable access concentration to speed up first-mile networks.

Patton’s Model 3196RC IDSL TDM-Digital Access Concentrator, or IDSL T-DAC, provides affordable first-mile access concentration for virtually any low speed network application.

Leverage low cost IDSL technology to offer the right service at the right price. Patton has combined IDSL ports, DACS, and WAN up-links and functions into a powerful system operating on Patton’s ForeFront Access Platform.

The Model 3196RC, links up to 16 IDSL circuits to multiple WAN modules and offers complete any-to-any DS0 grooming. Each IDSL port offers user selectable data rates of 64, 128, and 144 kbps. With a built-in cross connect, each data channel or channel group can be multiplexed onto any up-link or other DSL port — even ports on other 3196RC or 3096RC T-DACS in the same chassis. An integrated SNMP/HTTP-based management system allows for easy configuration via any SNMP enabled NMS.

Each 3196RC T-DAC has its own processing capability built in, offering continuous operation even in the presence of multiple network outages. Use the T-DAC in any Patton 2U, 4U or 6U ForeFront Access System and affordably scale up density to network growth requirements.

**SPECIFICATIONS**

- IDSL: 2B1Q modulation per European Telecommunications Standards Institute (ETSI) as ETR-080 and American National Standards Institute (ANSI) as T1.601
- IDSL Distance: 16.4 km/10.1 miles using 10-gauge (AWG/0.9-mm)
- IDSL Connections: Up to 16 ports presented on a 50-pin RJ-21x Telco connector
- Rear Module: Up-link options include 4, 8, 12, or 16 T1/E1 ports
- Ethernet Management: Single 10/100Base-T (RJ-45 connector); simultaneous dual redundant operation over backplane
- IDSL Modem: Use Patton Model 1092 and 1093A IDSL modems
- WAN Clocking: Internal, Network (from T1/E1) or via the system backplane from any other card
- IDSL Clocking: Provides clocking to the remote NTU/Modem
- Front Panel Indicators: LEDs for power, CPU, system, Ethernet, clock, source, alarms, test mode, DSL, and transition module WAN ports
- Management Services: HTTP, SNMP, Telnet, RS-232 Console
- Compliance: Safety: UL 60950, IEC 60950 (CB Scheme); EN 60950 Part 16, Class A; Telecommunications/Telediffusion of IF Equipment (ETSI) as ETR-080 and ANSI T1.601 standards
- Operating temp.: 14 to 140°F (-10 to 60°C)
- Humidity: 5 to 90%, non-condensing
- Dimensions: Front Module: 8.75 H x 10.5 W x 6.3 D in. (1.9 H x 26.7 W x 16.0 D cm)
- Rear Module: 8.75 H x 10.5 W x 3.15 D in. (1.9 H x 26.7 W x 8.0 D cm)

**Features & Benefits**

- Up to 16 IDSL ports per card — Get high density per card and lower your cost per port. Easily scale by adding more cards.
- Speeds of 64, 128, & 144 kbps — Each port is independently selectable for any bandwidth. Distances to 16.4 km/10.1 miles on 0.9 mm/19 gauge copper wire.
- Standards-based line coding — Uses 2B1Q per ETSI ETR-080 and ANSI T1.601 standards.
- Built-in timeslot DACS — Perform any-to-any DS0 mapping between any DSL and WAN port in a ForeFront chassis.
- SNMP/HTTP management — SNMP/HTTP manageable from anywhere in the world including attached CPE units.
- Complete alarm facilities — Configurable alarm reporting with SNMP traps, front panel LEDs, 3-contact relay, and syslog messages.

**ORDERING INFORMATION**

- 3196RC: T-DACS, Front Card, 16 IDSL
- 3196RC/16E: T-DACS, 16 IDSL & 0 T1/E1
- 3196RC/16I8E: T-DACS, 16 IDSL & 8 T1/E1
- 3196RC/16I4E: T-DACS, 16 IDSL & 4 T1/E1
- 3196RC/16I16E: T-DACS, 16 IDSL & 16 T1/E1
- 3196RC/16E: T-DACS, 16 IDSL & 8 T1/E1

**T-DAC rear cards**

- 3196RCT/0E: 50-pin Telco for 16 G.SHDSL ports (no E1/T1 ports)
- 3196RCT/4E: 50-pin Telco for 16 G.SHDSL ports; 68-pin SCSI for 4 E1/T1 WAN ports
- 3196RCT/8E: 50-pin Telco for 16 G.SHDSL ports; 68-pin SCSI for 8 E1/T1 WAN ports.
- 3196RCT/12E: 50-pin Telco for 16 G.SHDSL ports; 68-pin SCSI for 12 E1/T1 WAN ports.
- 3196RCT/16E: 50-pin Telco for 16 G.SHDSL ports; 68-pin SCSI for 16 E1/T1 WAN ports.

**Need Help?**

I'm Ovidio, Patton’s Regional Director of Latin America Operations. If you have any questions about products or applications using DSL technology, please call me at +1 301.975.1000, x118, or send e-mail to ovidio@patton.com.
The Patton Model 3101RC provides up to 48 ADSL2/2+ ports of triple-play access, supporting extended reach and higher downstream bandwidth up to 24 Mbps.

Why use our 3101RC?

The Model 3101RC delivers affordable ADSL/ADSL2/2+ network access for triple-play ready ADSL service. The ADSL2+ IPDSLAM module, together with Patton's ForeFront Access Platform, is the premier solution for fault tolerant triple-play enabled network deployments. The Model 3101RC offers complete ADSL, ADSL2 and ADSL2+ support including extended range operation, and enhance speeds. Each 3101RC IPDSLAM Module includes all the intelligence necessary to function as a complete single card IPDSLAM thereby providing unparalleled redundancy and fault tolerance in network deployments. The Model 3101RC includes redundant 10/100/1000 Ethernet uplink ports as well as redundant mid-plane connections to ensure non-stop operation.

The Model 3101RC is designed for triple-play networks where the reliable delivery of IP based voice, video and data services depends on the QoS metrics that are assigned to the flows. Consequently, the Model 3101RC supports the mapping of ATM CBR/UBR/VBR traffic types and cell rates to IEEE 802.1p/Q VLAN priority classes. VLAN stacking or “Q-in-Q” is likewise supported to ensure transparent extension of subscriber VLAN networks. In order to maximize WAN bandwidth, IGMP Snooping is supported to ensure that IP Multicast traffic is detected and forwarded accordingly.

24-port, 1-slot version available!

24–48 ADSL2/2+ Ports — “Right size” the deployment with the best port-per-card ratio. Easily scale by adding cards.

Per-Port Configuration — To facilitate the provisioning and tailoring of services, ports are independently selectable to the individual DSL standard and required port speeds.

SNMP/HTTP Management — SNMP/HTTP manageable from anywhere in the world including attached CPE units.

Management Features — Configurable alarm reporting with SNMP Traps, RMON for performance monitoring, Dying Gasp support on ADSL ports, L.610 OA&M, F5 loopback support, G.7038, embedded HTTPS web server for easy configuration via a browser.


ADSL2+ Triple-Play Access

Model 3101RC ADSL2/2+ IpDSLAM Module

The Xtreme FullPipe™ — configured with 3101RC cards — provides 336 ADSL2/2+ links in a 9U chassis. Whether delivering triple-play services or Internet access, the 3101RC is interoperable with Patton CPE as well as with third-party solutions.
Network Access & Connectivity

CATALOG

Network Access—Transmission

Integrated DSL Access Infrastructure

Router Line Card

Model 6081RC EdgeROUTE

This feature-rich IP service module for ForeFront AIS addresses the demanding deployment needs of service and enterprise organizations.

The Patton Model 6081RC is a Packet Access Server for ForeFront AIS that is optimized to process IP traffic from multiple access and uplink cards. The Packet Access Server converts any ForeFront AIS chassis into a powerful IpDSLAM or modular Access Router. The 6081RC comes standard with dual 10/100BaseT Ethernet ports, while at the same time, it has access to any port on any card attached to the ForeFront System for uplinking traffic. With its powerful feature set, service providers can deploy new IP services while retaining the ability to support their TDM infrastructure investment.

The 6081RC supports MAC Address filtering, VLAN priority, and VLAN tagging to facilitate the transition from traditional IP router-based networking to modern-day VLAN/MPLS networks. Regardless of whether the customer traffic comes in via DSL or T1/E1, the EdgeROUTE can terminate and tag the stream, making it transparent to core/edge networks.

Easily tailor and manage the level of service to the needs of the subscriber with traffic shaping and policing. Filter by IP address, IP port or by physical port in either ingress or egress directions. The extensive filtering capabilities of the 6081RC turns this access router into a capable edge firewall. NAT is likewise supported for either masquerading applications or for simple address translation. Customize security for each end user or use a standard configuration for all. Use the built-in traffic filtering features of the 6081RC and SSH to secure your management connection.

VPN applications, including access service wholesaling, can be deployed with L2TP providing standards-based tunneling of IP traffic and easy interconnection with existing VPN networks. Use RIPv1 or OSPF to route traffic between any WAN, LAN or DSL port.

FEATURES & BENEFITS

- Dual 10/100 Ethernet easily bridges the gap between the LAN and Access Network with differentiated service offerings
- Built-in IP address, IP port, and MAC address filtering
- Perform IP address and port translation for any ForeFront port
- Extensive IP Routing with RIPv1 and OSPF allows easy interoperability and integration.
- Create layer 2 and layer 3 VPNs with PPTP and IPsec
- SNMP/HTTP manageable from anywhere in the world including attached CPE units.

SPECIFICATIONS

Routing:
- RIPv1 (RFC 1058), RIPv2 (RFC 2453), OSPFv2 (RFC 2328), VLSM (RFC 1878)
- RADIUS client: Authentication (RFC 2865 & 2868), Accounting (RFC 2866 & 2867), AAA (RFC 1542, 1994)

VPN Services:
- L2TP (RFC 2661 with RFC 2662 & 2665) - LAC & LNS, PPTP, IPsec

IP Services:

Ethernet Ports:
- Dual 10/100BaseT (RJ-45 connector); auto-negotiating; half or full duplex operation

Management Service:
- HTTP: SNMP/HTTP manageable from anywhere in the world
- Telnet/SSH: Remote management from anywhere in the world including attached CPE units.

Compliance:
- Op. temp.: -0°C to 40°C (32°F to 104°F)
- Humidity: 5% to 90% non-condensing
- Dimensions: Front Panel: 0.75 H x 10.5 W x 6.3 D in. (1.9 H x 26.7 W x 16.0 D cm)
- Rear Panel: 0.75 H x 10.5 W x 3.15 D in. (1.9 H x 26.7 W x 8.0 D cm)

Ordering Information

6081RC/800H/FE2P: IP Router, 800-MHz with 3 10/100 Front Access Ethernet Ports
6081RC/800H/FE2T: IP Router 800-MHz with 1 front 10/100 Ethernet port & 2 rear 10/100 Ethernet ports
6081RC/800H/GE2P: IP Router, 800-MHz with 1 10/100 & 2 Gigabit Ethernet Ports
6081RC/800H/GE4P: IP Router, 800-MHz with 1 10/100 & 4 Gigabit Ethernet Ports

Special Rates Available Call for Details
Matrix Switch Line Card

Model 6511 Matrix-SW/155

Get non-blocking any-to-any TDM access, packet-switched Ethernet, and high speed trunking—all in a single card.

The Model 6511’s flexible channel switching fabric allows non-blocking switching from any input to any output. The channelized STM-1 interface integrates into a SDH/SONET network, enabling users to channelize an STM-1 down to 64 kbps timeslots. With full grooming capability, the Model 6511 DACS allows any-to-any TDM mapping and can place any channel from any card onto any port.

Combined with the ForeFront architecture, TDM and packet can be used simultaneously and to full capacity. In a system loaded with every slot—at wire-speed—and aggregates traffic from each system card onto dual-switched uplink Ethernet ports. With increased performance and throughput, the packet backplane allows non-blocking access to the Matrix Switch, other system cards, and the uplink ports.

With the ForeFront architecture, TDM and packet can be used simultaneously and to full capacity. In a system loaded with dual Matrix Switches, the high speed channel switching and packet backplane on the Model 6511 offers 1+1 redundancy.

Management is a snap with VT-100, TELNET, SNMP and WEB options. Connect to any card out-of-band or route management traffic through available timeslots in-band. Complete switching database allows easy building of circuits end-to-end.

Master time and space with the Model 6511 Matrix Switch and realize an unequaled level of density and control over the new converged network.

Features & Benefits

- Non-blocking I/O fabric
- Get dedicated connectivity to every input and every output port while grooming TDM or switching packet data
- Use dual 6511s and get 1+1 redundancy
- Hot swappable cards for fast maintenance and quick upgrades
- Integrated STM-1 DACS
- Resolve traffic down to 64 kbps timeslots, with any-to-any mapping
- WEB/SNMP manageable — Use the embedded HTTP/SNMP agent to manage the Model 6511 from anywhere in the world
- Optical or electrical egress: electrical BNC or optical SC connectors
- Redundant packet switching

Specifications

- Mapping: E1–VT1.5 – VS1 SPE, TU-11 – VS1/VC12, TU-11 – TU0, STM/VC12, TU-12 – VS1/VC12, TU-12 – TU0, STM/VC12, TU-12 – TU0
- Egress: STM/VC4, DE1–VS1,-VS3
- VC3 – DE4 – VS1 SPE, STM-1
- Encoding: STS-1 SPE, STM-1
- Alarm Reporting: Configurable alarms: Remote SNMP Traps; Front Panel LEDs
- Temperature: Op. temp.: 14 to 43°F (-10 to 60°C); Humidity: 5–90%, non-condensing
- Dimensions: 14 to 43°F (-10 to 60°C); Humidity: 5–90%, non-condensing

Ordering Information

6511RC/SST/SC20: OC-3/STM-1 TDM and Packet Switch, with SC optical interface

6511RC/SST/EBNC: OC-3/STM-1 TDM and Packet Switch, with BNC electrical interface

visit us online
www.patton.com
Network Access & Connectivity Solutions for Enterprise, Carrier & Industrial Applications

Patton Electronics—a leader in the production of network access and connectivity products—is building on its expertise in integrated network access, transmission, IP and Frame Relay technologies and leading in the development of right-priced products to simplify human and machine access to the global network.

The Patton brothers, Bobby and Burt, founded Patton Electronics in 1984, while students in college. Over the succeeding 20+ years, Patton has taken those simple beginnings and expanded into a multi-national manufacturing company that today employs more than 180 people and provides a product line in excess of 1000 items.

For your next project that needs to meet aggressive price points, while delivering high performance results, call on Patton. We’re ready to deliver!
Patton’s Model 3224 IPDSLAM is a cost-effective solution for dedicated Internet service delivery in situations where the business case does not support the separate deployment of high-density, chassis based solutions, service creation platforms, and routers. With support for 24 ports of up to 4.6 Mbps symmetric G.SHDSL links and numerous uplink options, the 3224’s flexibility is unsurpassed.

The 3224 IPDSLAM routes IP traffic using numerous standard routing protocols while maintaining strict quality of service (QoS) by prioritizing operator configured traffic flows using standard ToS bits. VPN applications can easily be deployed with L2TP or PPTP-based tunneling of IP traffic. Assigning traffic priorities to VPNs guarantees QoS. Extensive IP address and port filtering makes the 3224 an excellent multi-user firewall and service creation platform. Either customize firewall services to the needs of the individual users or provide a standard global firewall service. Use the filters to segregate the traffic and wholesale service to other providers without losing control of your network or the level of service that is offered.

Well thought-out solutions to common networking issues include support for NAT & NAPT for avoiding IPv4 address depletion, DHCP for value added services to SOHOs, DNS caching for quick address look-ups, SNTP for time server synchronization of edge devices, and RADIUS accounting and authentication for validation, verification and accounting of user sessions.

Optional up-link ports provide the flexibility of selecting the up-stream interface that is right for your network deployment needs. Co-locate with a DLC or use it in a building’s wiring closet. Redundant, load sharing, removable power supplies provide maximum power protection. External BITS and alarm ports facilitate the deployment of the 3224 IPDSLAM in traditional central office environments.

Whether you are an ISP, ASP, or Carrier, the IPDSLAM will improve the quality and variety of your service offering while reducing your investment in value added service platforms.
G.SHDSL for IP networks can be deployed in a variety of different ways: 1. In a multi-dwelling unit (MDU) or multi-tenant unit (MTU) utilizing in-building voice-grade wires; 2. In a remote POP connected to residential or community users; 3. In a co-location facility for last-mile access.

**Deployment options**

- **3224/G/RUI:** 24 SHDSL ports; 2 10/100 Ethernet ports; No up-link; redundant AC power; Forest Green
- **3224/G/R48:** 24 SHDSL ports; 2 10/100 Ethernet ports; No up-link; redundant DC power; Forest Green

**G.SHDSL ports:** 24 ports presented on an RJ-21X 50-pin connector, each supporting data rates of Nx64 (up to 4.6 Mbps)

**Egress Modules:**
- Up-link modules include: 4 or 8 T1/E1 ports; Single unchannelized DS3/E3; Single OC-3/STM-1; Single OC-3/STM-1 ATM (Refer to individual modules for specifications)

**Ethernet Ports:**
- Dual 10/100Base-T (RJ-45 connector)

**WAN clocking:** Internal, network receive recover (from WAN port), external BITS via 3-pin terminal block

**Front Panel Indicators:** LEDs for power, CPU, system, Ethernet, External clock, test mode, DSL, and Up-link Egress module

**Power Supplies:** Hot swap, dual-redundant universal AC/DC; AC power: 90-264 VAC (50/60 Hz); DC power: -36 to -72 VDC

**Management Service:** HTTP, SNMP Telnet Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via FTP

**Alarm Reporting:** Configurable alarms; Remote SNMP Traps; Front Panel LEDs; 3-Contact Relay (3-pin terminal block)


**Op. Temp.:** 32–104°F (0–40°C)

**Humidity:** 5–90% non-condensing

**Dimensions:** 19.00W x 12.60D x 1.75H in. (48.25W x 32.00D x 4.44H cm)

**1U high by 19 in. wide**

**G.SHDSL DiamondLink™ Router**

For your most valuable end-point connections, use Patton’s DiamondLink Router. Supporting auto-sensing 10/100 Ethernet with MDI-X switching and web-based management, it’s a real gem!

**SPECIFICATIONS**

**WAN clocking:** Internal, network receive recover (from WAN port), external BITS via 3-pin terminal block

**Front Panel Indicators:** LEDs for power, CPU, system, Ethernet, External clock, test mode, DSL, and Up-link Egress module

**Power Supplies:** Hot swap, dual-redundant universal AC/DC; AC power: 90-264 VAC (50/60 Hz); DC power: -36 to -72 VDC

**Management Service:** HTTP, SNMP Telnet Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via FTP

**Alarm Reporting:** Configurable alarms; Remote SNMP Traps; Front Panel LEDs; 3-Contact Relay (3-pin terminal block)


**Op. Temp.:** 32–104°F (0–40°C)

**Humidity:** 5–90% non-condensing

**Dimensions:** 19.00W x 12.60D x 1.75H in. (48.25W x 32.00D x 4.44H cm)

**1U high by 19 in. wide**

**ORDERING INFORMATION**

3224/G/RUI: 24 SHDSL ports; 2 10/100 Ethernet ports; No up-link; redundant AC power; Forest Green

3224/G/R48: 24 SHDSL ports; 2 10/100 Ethernet ports; No up-link; redundant DC power; Forest Green

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www.patton.com

**I'm Tshaka, one of Patton's Support Engineers. If you're having a problem with a Patton product, I'll find the solution quickly. To buy one of these state-of-the-art ipDSLAMs, call +1 301.975.1000 or send e-mail to sales@patton.com.**
VDSL Access Concentrator/Switch

Model 3324

The Model 3324 provides connectivity for up to 24 users of voice and data services over existing voice-grade twisted-pair wiring.

Patton’s Model 3324 VDSL Access Concentrator provides a simple and efficient method of delivering voice and high speed data services over existing copper infrastructure. The Model 3324 employs VDSL (very high bit-rate DSL), the fastest digital subscriber line technology. This technology enables carriers and service providers to provide broadband services that previously could not be provided using other forms of DSL. Using a Model 3324 VDSL Access Concentrator with Model 1058 CPEs will provide services for up to 24 users.

The Model 3324 is a fully manageable Layer 2/3 switch with 24 independently configurable VDSL ports. This feature allows service providers to differentiate their high speed data services. The Model 3324 comes standard with two auto-sensing RJ-45 100/1000BaseT Ethernet ports or an optional industry standard GBIC (Gig Fiber) uplinks.

The Model 3324DV’s unique 1U chassis design includes onboard POTS/ISDN splitters for all 24 VDSL channels. This feature enables the simultaneous use of voice and data over a single 2-wire twisted pair without the additional cost and space of an external splitter panel.

For larger applications, up to four Model 3324s can be cascaded to provide a scalable VDSL solution (96 ports). The Model 3324 24-Port VDSL Access Concentrator is Patton Electronic’s flagship product and is compatible with the Patton 1058 VDSL CP units.

CPE Compatibility

The Model 3324 interoperates with Patton’s 1058/CP and 1058RC/CP (see page 91).
Using Patton’s VDSL Access Concentrator at a central location, up to 24 full-service links can be routed to various room locations. The CO or ISP would provide the fiber uplink from the network to the Model 3324 location. The POTS lines delivered from the PSTN would be concentrated and delivered to the Model 3324 on an RJ-21 connector. The 3324 combines the POTS and Ethernet signals and sends them over the VDSL links to the individual rooms over existing twisted pair, voice-grade wiring. A 1058CP standalone unit is placed in each room to split the signals back into Ethernet (data) and POTS/ISDN (voice) forms for delivery to the end-user. The Model 3324 allows VDSL services on each channel to be configured at various symmetric and asymmetrical line rates to differentiate services or to increase the distance capabilities.
Low-Cost, High-Speed G.SHDSL Modem

Model 3088 RocketLink™ G.SHDSL NTU

Use Patton’s RocketLink G.SHDSL Modem for fast, dedicated, always-on access. The Model 3088 provides cost, full-duplex network termination or extension at nx64 rates to 4.6 Mbps. The Model 3088 connects routers, switches, and other access devices, and is available in G.703/G.704, co-directional G.703/T1/FT1, X.21, and V.35 interfaces. Plus, it is available in a rack card for the Model 1001 universal access rack.

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

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

**ORDERING INFORMATION**

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

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

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

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

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**FEATURES & BENEFITS**

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

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**SPECIFICATIONS**

DSL: G.991.2 ITU G.SHDSL Annex A and Annex B, 6.04A, 6.04B, 6.04C, 6.04D data rates over 2-wire full-duplex to 2.3/4.6 Mbps, symmetrical, T-PAM encoding. Distance of 32,000 ft (10 km) at 102 kbps to 18,000 ft (5.75 km) at 2,312 kbps.

DSL Connection: Shielded RJ-45 or RJ-11 connection per IEC 605

DTE Interface: G.703/G.704, V.35, X.21/X.11, T1/FT1, G.303 Co-Directional DTE Rates: from 64 kbps to 2.3/4.6 Mbps in user definable increments

Diagnostic: V.54 Loopback, RLS, V.52 compliant ECP pattern generator and detector (G1/G5/G11)

Management: BA-55I RJ-45 RS-232, V.70-150 CLI TELNET, Embedded WEB/HTTP/SNMP

Power Supply: External 230 VAC, Universal 90–260 VAC, or -48 VDC input


Humidity: 5–90%, non-condensing

Dimensions: 4.17W x 1.52H x 5.0L in. (10.6W x 3.9H x 12.7L cm)

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**I’m Sean, Patton’s Director of Sales for North America & Japan. 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.**
The Model 3088FR NTU combines the latest advances in high-speed DSL technology—G.SHDSL—with a potent Frame Relay and ATM core facilitating seamless connection of legacy Frame Relay devices to high-speed ATM networks.

Offering Frame Relay-to-ATM conversion using FRF.5 and FRF.8 internetworking, the 3088FR provides standards-based subscriber interfaces with a choice of synchronous-serial V.35, X.21, or T1/E1 ports. The 3088FR connects seamlessly to any third-party DSLAM, or to another 3088FR for back-to-back operation.

The Patton 3088FR enables interoperable physical access with 2.3 Mbps speeds at nx64 (n=1..36) over a single G.SHDSL G.991.2 pair of wires. The 3088FR—with Annex B support—is based on the ETSI and ITU G.SHDSL G.991.2 standards.

The 3088FR boasts easy installation with console, telnet, and WWW/SNMP management options via its integrated Ethernet port.

Why use our 3088FR?

The 3088FR converts FR from the serial port to ATM over the DSL link making the DSLAM/DLS CPE network transparent to the Frame Relay service being offered. In the scenario below, the 3088FR located at a branch office takes FR traffic, via its serial port and converts it to ATM cells for network transmission. In this case, the conversion is done using FRF.8 for payload mapping and VPI/VCI to DLCI mapping. The Frame Relay traffic is then switched by the ATM network to a separate ATM or Frame Relay termination point.

SPECIFICATIONS

- DSL: G.901.2 ITU G.SHDSL Annex A and Annex B, G.994.1 G.Handshaking, nx64 data rates over 2-wire full-duplex to 2.3 Mbps, symmetrical. 1C-PAM encoding. Distance of 32,000 ft (9.8 km) at 376 Kbps to 18,000 ft (5.6 km) at 2.312 Mbps.
- DSL Connection: Shielded RJ-11F isolation per EC 650, two-wire. 135-Ohm.
- Ethernet Management Connection: 10/100Base-T, autonegotiating, half/full-duplex operation, built-in MDI-X.
- Serial Interface: V.35—M/34E X.21—BD1 (DCE/DTO), T1—RAH, CI and Dual BNC, E1—RAH and Dual BNC.
- Management: EUA-561 4-45 RS-232, VT-100 CLI, Telnet, Embedded Web/HTTP, SNMP, Logging or SMTP on events: POST, POST errors, line & DSL.
- ATM Support: UNI 3.0, 3.1, and 4.0 ATM QoS with UBR/UBR-VC/UBR-BR/UBR-E BR.
- and per-VC queuing and shaping. Peak cell rate shaping on a per-VCC basis up to 32 active VCCs. 1351 DAVM network management including MRD/FCF, loop-back and performance monitoring.
- Frame Relay: FRF.5, FRF.8, ANSI and CCITT LMI with user, network, and both Security—Access list determining up to 5 hosts/networks which are allowed to access management system: SNMP/HTTP/TELNET.
- Indicators: 13 LEDs: Power, DSL, Link, Sync, Serial: T0, H0, CTS, DTR, LAN: TX, RX, 10M Link, Status, MSG, ER, TM.
- Power Supply: Internal universal 50–260 VAC input or 48 VDC input. Optional external power available.
- Environment: Temperature: 32–122°F (0–50°C) Humidity: 5–90%, non-condensing
- Dimensions: 7.3 x 6.6 x 1.62 in. (185 x 168 x 41 mm).

FEATURES & BENEFITS

- Frame Relay to ATM—Connect FRADS, routers or any Frame Relay devices to high-speed ATM networks using inexpensive DSLAM ports.
- Flexible Interfaces—V.35, X.21, or T1/E1 interface options offers flexibility for all interconnection requirements.
- Interoperable with DSLAMs—Take advantage of Patton reliability whether you connect back-to-back or to a third-party DSLAM.
- LEDs & V.52/V.54 Diagnostics—Easy-to-access toggle switches let you test the link with built-in test modes. LEDs provide clear status at-a-glance.
- WWW/SNMP Manageable—Built-in VT-100 console port makes setup a snap, and you can use the embedded HTTP/SNMP agent to manage the Model 3088FR from anywhere in the world.

ORDERING INFORMATION

- 3088FR/RIC/EUI: ATM to Frame Relay NTU with V.35 interface on M/34 connector
- 3088FR/RID/EUI: ATM to Frame Relay NTU with X.21 interface on DB-15 connector
- 3088FR/RIK/EUI: ATM to Frame Relay NTU with T1/E1 interface on both a dual BNC and RJ-48C connector

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Network Access & Connectivity

CATALOG

G.SHDSL FRF.5/FRF.8 over ATM NTU

Model 3088FR ATM NTU

The Model 3088FR NTU combines FRF.5 and FRF.8 Frame Relay/ATM conversion with G.SHDSL technology in a compact, high-performance subscriber unit for multi-service, revenue generating, DSL deployment.
G.SHDSL Integrated Access Device

Model 3086 ipRocketLink™ IAD

Get high speed, 2-wire, standards-based transmission, and simultaneous sync.-serial and Ethernet/IP for fast, dedicated, always-on access.

The Model 3086 redefines access and sets the new standard for customer premise equipment. Based on the ITU G.SHDSL G.991.2 standard, the Model 3086 ipRocketLink enables nx64 (to 4.6 Mbps) over a single pair of wires while combining standards-based transmission with synchronous-serial, Ethernet, and high speed IP routing—all in one compact package.

With Patton’s FlexIP™ architecture, The Model 3086 offers V.35/X21 sync.-serial interfaces and 10/100 Ethernet ports. The sync.-serial port is user configurable for V.35 or X.21. Integrated software-selectable DCE/DTE support eliminates messy crossover cables. The Ethernet port gives access to any IP network via ATM, PPP, or Frame Relay. Both interfaces can be simultaneously selected with user-defined bandwidth for each port. The 3086 boasts easy installation with DIP switch, Telnet, and Web/SNMP management. It provides bridging and routing functionality along with advanced IP features like NAT and firewall, and optional IPSec-based VPN. As part of Patton's family of DSL products, the Model 3086 offers a complete, managed, end-to-end system when used with Patton’s central site access concentrators.

FEATURES & BENEFITS

- Vx64 speeds to 4.6 Mbps
- User selectable DCE/DTE V.35/X.21
- Built-in Ethernet/IP router — standard
- Patton’s FlexIP lets users split the bandwidth to use both the serial and the Ethernet interfaces at the same time!
- Get ATM, PPP, and Frame Relay
- Interoperable with third-party DSLAMS
- LEDs and full V.52/V.54 diagnostics
- Web/SNMP manageable from anywhere in the world via the Internet
- Powerful routing features like NAT/NAPT, firewall, and DHCP

ORDERING INFORMATION

G.SHDSL IAD router
3086/RIC/UX: Ethernet V.35 M34F port, IP Access Feature Set, and internal AC power supply
3086/RICA/X: Ethernet V.35 DB-25 port, IP Access Feature Set, and internal AC power supply
3086/RICD/X: Ethernet X.21 DB-15F port, IP Access Feature Set, and internal AC power supply
3086/RIC/UX: Ethernet Selectable X.21/V.35 on DB-25F port, IP Access Feature Set, and internal AC power supply
3086/RIRK/X: Ethernet T1/E1 D&I port, IP Access Feature Set, and internal AC power supply
3086/RICA/X: Ethernet V.35 DB-25 port, IP Access Feature Set, and internal AC power supply

Specifications:
- DSL: ITU G.SHDSL A and Annex A
- Ethernet: 10/100 Base-T, Auto-Sensing, Full/Half-Duplex
- Management: EIA-561 RJ-45, RS-232, RJ-11, Telnet, Embedded WEB/HTTP, SNMP
- Power: 10/100Base-T, Auto-Sensing, Full/Half-Duplex
- Security: Port/IP redirection and mapping,
- NAT/NAPT with integrated application
- VoIP Support
- Web/SNMP manageable from anywhere in the world via the Internet
- Enhanced ILMI 4.0 for automated dialing, end-to-end system when used with Patton’s central site access concentrators.

I'm Dave, Patton’s Manager of US Technical Support. If you do not find what you need at www.patton.com or in this catalog, or if you have technical questions or comments, please call me at +1 301.975.1007. You can also send e-mail to pucket@patton.com.

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FAST Delivery From Your AUTHORIZED DISTRIBUTOR!
**ipRocketLink Serial G.SHDSL**

**Model 3087 3-Point DSL, Serial, Ethernet Bridge/Router**

The Model 3087 is a low-cost G.SHDSL Serial Bridge/Router supporting speeds up to 2.3 Mbps over two wires. Ethernet port. Integrated software selectable DCE/OTE support eliminates messy crossover cables. The Ethernet port enables access to any IP network via ATM, PPP, or Frame Relay. Both interfaces can be simultaneously selected with user-defined bandwidth for each port. Combining ease-of-use with a full suite of LAN/WAN routing features, the Model 3087 provides selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, DNS relay, and DHCP server and relay. Numerous firewall features include the ability to filter by IP address and by IP port, support for Intrusion Detection (IDS), and the capability of “blacklisting” offending traffic flows likewise come standard with the unit.

**FEATURES & BENEFITS**

- **nx64 Rates to 2.3 Mbps** — With multiple full-duplex symmetric rates available, users select the bandwidth option they need.
- **Low-Cost Fixed Interfaces** — Multiple interface options to choose from: T1/E1 (G.703/G.7104), X.21, and V.35.
- **Firewall Support** — IDS with blacklisting. ACL support for IP and MAC based filtering.
- **Avoid CES** — Route or bridge PPP or Frame Relay traffic
- **Netlink Plug-and-Play** — Just plug them in and the link comes up in seconds. With G.Handshake, the CPE unit auto-bauds to rate set at CO.

**SPECIFICATIONS**

- **DS1**
  - G.950.1 (ITU G.SHDSL, Annex A & Annex B 16, 64, 128, 512, 1024 kbps over 2-wire full-duplex to 2.3 Mbps)
  - Symmetrical, TC-PAM encoding.
  - Distances: 32,700 ft (9.8 km) at 192 Mbps to 18,000 ft (5.6 km) at 2,312 Mbps.
  - G.SHDSL Encapsulation: Shielded RJ-11 11F isolation per EC 950
- **Ethernet Connection**
  - 10/100BaseTX, auto-sensing, full/half-duplex operation, built-in MDI-X
- **Serial Interface**
  - V.35 — M.34 connector
  - X.21 — DB15 connector
  - T1/E1 — RJ48C, dual BNC
- **Power Supply**
  - Internal universal 48-VDC power
- **Dimensions**
  - 11.7 x 6.6 x 2.6 inch

**ORDERING INFORMATION**

**Serial G.SHDSL Bridge/Router**

- 3087/RIC/EUI: V.35 port (M34 connector; external UI power supply)
- 3087/RID/EUI: X.21 port (DB15 connector; external UI power supply)
- 3087/RIC/EUT: G.703/G.704 port (RJ45 & RJ45 connector; external UI power supply)
- 3087/RIC/EU2: V.35 port (M34 connector; external 48-VDC power)
- 3087/RID/EU2: X.21 port (DB15 connector; external 48-VDC power)
- 3087/RIC/EU4: G.703/G.704 port (RJ45 & RJ45 connector; external 48-VDC power)
**G.SHDSL FRF.5/FRF.8 Over ATM IAD**

**Model 3086FR IpRocketLink** ATM IAD

Combines FRF.5 and FRF.8 Frame Relay/ATM conversion with G.SHDSL technology in a compact, high performance subscriber unit for multi-service, revenue generating, DSL deployment.

Based on the ETSI and ITU G.SHDSL G.991.2 standard, the 3086FR enables 2.3 Mbps speeds at 8x64 (11.36) over a single pair of wires. The 3086FR boasts a dual subscriber interface with a standard 10/100 Ethernet and a choice of Synchronous-Serial V.35, X.21 or T1/E1 ports. Together, these interfaces can be concurrently configured for FR-to-ATM conversion using FRF.5 and FRF.8, as well as IP routing or Ethernet switching—all in one compact package.

The 3086FR boasts easy installation with console, Telnet, and WWW/SMNP management. It provides bridging and routing functionality, along with advanced IP features such as DHCP and Firewall (IDS, Filtering, NAT).

**ORDERING INFORMATION**

Model 3086FR G.SHDSL IAD, FRF-5 & FRF-8

3086FR/RIF/48: V.35 (M34) + ETH, 48 VDC

3086FR/RIC/48: V.35 (M34) + ETH, Ext Pwr 120–220 VAC/PS

3086FR/RIT/EUI: V.35/DB25 + ETH, Ext Pwr 120–220 VAC

3086FR/RIT/EUI: T1 + ETH, Ext Pwr, 120–220 VAC

3086FR/RIT/EUI: X.21/BD15 + ETH, Ext Pwr 120–220 VAC

**FEATURES & BENEFITS**

- Frame Relay to ATM Conversion—Connect FRADS, routers or any Frame Relay devices to high speed ATM core networks using inexpensive DSLAM ports
- Built-in Ethernet/IP Router Standard—With Patton’s FlexIP architecture, route from any to any port using FR, PPP, Ethernet, and ATM
- Firewall — The 3086FR comes standard with Intrusion Detection (IDS), Access Control Lists (ACL), IP & port filtering and NAT/PAT
- Interoperable with Third-Party DSLAMs — Take advantage of Patton feature richness to deploy multiple revenue generating services over any third-party DSLAM

**APPLICATION—FR and IP traffic over ATM**

The 3086FR converts Frame Relay traffic from the serial port into ATM format for transmission over the DSL link. This protocol mapping function makes the DSLAM/DSL CPE network transparent to the Frame Relay service connected to the serial port. Simultaneously, the 3086FR provides a full-service routed or bridged connection between the LAN (connected to the 10/100 Ethernet port) and the supporting DSLAM/ATM network (connected via the G.SHDSL interface).

In the scenario illustrated at right, the 3086FR is located at a branch office and encapsulates FR frames received at the serial port into ATM cells for transmission over the G.SHDSL link. In this example, the conversion is done using the procedures specified in the FRF 5 Implementation Agreement. Simultaneously, the 3086FR routes (or bridges) traffic from the Ethernet LAN to the G.SHDSL port, also encapsulated into ATM cells. Traffic from the Serial and Ethernet ports is sent over the DSL link. Traffic from each port is delivered on its own ATM virtual circuit, as defined by a unique VPI/VCI combination. This mapping allows the core ATM network to switch the IP traffic to the Internet via a core router. Since the 3086FR supports PPPoE and PPPoA, the traffic can even pass through an authentication server. Finally, the ATM network switches the frame relay traffic to a separate ATM or Frame Relay termination point.

**SPECIFICATIONS**

- **DSL**
  - Frame Relay: Synchronous -Serial V.35, X.21 or T1/E1 ports. Together, these interfaces can be concurrently configured for FR-to-ATM conversion using FRF.5 and FRF.8, as well as IP routing or Ethernet switching—all in one compact package.

- **Application**
  - Frame Relay to ATM Conversion—Connect FRADS, routers or any Frame Relay devices to high speed ATM core networks using inexpensive DSLAM ports
  - Built-in Ethernet/IP Router Standard—With Patton’s FlexIP architecture, route from any to any port using FR, PPP, Ethernet, and ATM
  - Firewall — The 3086FR comes standard with Intrusion Detection (IDS), Access Control Lists (ACL), IP & port filtering and NAT/PAT
  - Interoperable with Third-Party DSLAMs — Take advantage of Patton feature richness to deploy multiple revenue generating services over any third-party DSLAM

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G.SHDSL High-Speed Routers
Models 3201 & 3241 DiamondLink™

High speed networking to deliver IP access via G.SHDSL technology.

As the cost-per-port for access is collapsing under continuous downward pressure, service providers are looking for proven, flexible, easy-to-use and powerful solutions. Digital subscriber line (DSL) technology transforms traditional inexpensive copper lines into high speed data connections and delivers the access guaranteed.

DSL is particularly valuable as it addresses the immediate needs of business and consumers alike. For high speed Internet access and LAN-to-LAN internetworking, DSL has proven to be cost-effective and quickly provisioned.

The 3201 & 3241 G.SHDSL routers offer standards-based DSL that supports the fundamental and advanced access requirements needed in the market today. These needs are:

- Provide a routed packet-based CPE with IP centric services and functionality.
- Support compatibility with the ability to connect to standard DSLAMs using G.SHDSL.
- Utilize the preferred management method for ISP/CLEC/Carrier environments with the ability to manage devices from any workstation or PC across the Internet.

Typical application

<table>
<thead>
<tr>
<th>Model 3224</th>
<th>Model 3201</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 24</td>
<td></td>
</tr>
<tr>
<td>G.SHDSL Links</td>
<td></td>
</tr>
</tbody>
</table>

FEATURES & BENEFITS

- G.SHDSL speeds to 4.6 Mbps over just a single twisted pair
- Distances up to 31,000 feet (9,449 m)
- G.SHDSL interoperability with third-party DSLAMs
- 10/100 Ethernet port with MDI-X switch to allow easy connection to any computer or LAN
- Web/SNMP manageable from anywhere in the world via the Internet
- Powerful routing features like NAT/NAPT, firewall, and DHCP
- Plug-and-play operation for easy deployment
- VT-100 port provides convenient local management

SPECIFICATIONS

- DSL: G.991.2 ITU G.SHDSL Annex A and Annex B, G.992.1 1.5 km, mode 4 data rates over 2-wire full-duplex to 2.3/4.6 Mbps, symmetrical; ITU PMA encoding, Distance of 32,000 ft (9.8 km) at 10,000 ft (3.0 km) at 2.312 Mbps.
- DSL Connection: Shielded RJ-11F termination per IEC 950
- Ethernet Connection: 10/100Base-T, Auto-Sensing, Full/Half-Duplex operation
- Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP, Logging or SMTP on events: POST, POST errors, line/DSL, PPPoE/IP, AAL5 and Bridged encapsulation RFC 2684 and RFC 1577
- Power Supply: External universal 90–260 VAC input or -48 VDC

I'm Danny, one of Patton’s Support Engineers. If you’re having a problem with a Patton product, I’ll find the solution quickly. To buy one of these G.SHDSL CPEs, call +1 301.975.1000 or send e-mail to sales@patton.com.

visit us online www.patton.com
The IPLink™ G.SHDSL.bis VPN Router is a next generation business-class G.SHDSL router that addresses both the security and the traffic prioritization needs of enterprises while providing complete broadband integration with existing DSLAM networks. VPN routers enable the secure communication between remote offices, home offices, and mobile users across insecure IP networks such as the Internet. The 3210 takes it one step further and integrates quality of service (QoS).

IPLink G.SHDSL.bis VPN Routers implement a comprehensive security environment. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow, DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP fragmentation is configurable to help minimize jitter in traffic flows. NAT, NAPT, DNS relay, dynDNS, and DHCP server further add to the capabilities of the IPLink G.SHDSL VPN Router.

FEATURES & BENEFITS

- **G.SHDSL.bis** — From 192 kbps to 5.7 Mbps over 2-wire, dry copper networks.
- **Versatile ATM configurations** — Support PPPoE, PPPoA as well as RFC 1384/2684.
- **Dual 10/100 Ethernet Ports** — With Dual 10/100 Ethernet, auto-MDI ports easily connect to the LAN and a DMZ.
- **Per Flow QoS** — Traffic rates are set through ACLs that shape and police in ingress and egress directions.
- **Stateful Firewall Inspection** — Stateful firewall inspection is accomplished through ACLs that filter by source and destination IP address, IP port and protocol.
- **VLAN Tagging** — VLAN tagging and processing is configurable on any PVC channel or Ethernet port.
- **Easy Management via an HTTP/web interface, a CLI accessible via the VT100 console or through Telnet/SSH.**

**ORDERING INFORMATION**

3210/EUI: G.SHDSL.bis VPN Router with 2 Ethernet ports, external UI power

**SPECIFICATIONS**

- **G.SHDSL port**: ITU-T G.991.2 including Amendment 2, Annex A, D, E, G, G.994.1 (A.Handshake); Classical Internet Protocol over ATM (RFC 1577/2223); PPPoA over ATM (RFC 2510); Routed IP over ATM (RFC 2041/1463); ATM QoS; UBR, CBR, and VBR-c.i Support; TR-067 and ITU-T I.384 Auto-cardly support
- **LAN Ethernet Ports**: Two 10/100BaseT (RJ-45 connector); auto-negotiating; half or full duplex operation with automatic MDI/MDI-X
- **Management**: CLI via Telnet; TFTP for Software upgrade and configuration upload; SNMPv1, HTTP/web browser
- **Power Supplies**: External universal 90–260 VAC input or 48 VDC input. (Optional internal universal 90–260 VAC input.)

**Environmental** Operating: 0–40°C (32–104°F); Humidity: 5–80% non-condensing

**Dimensions & Weight**

- **7.3W x 1.6H x 6.1D in.** (18.5H x 4.1W x 15.5D cm)
- **30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)
**VDSL Data & Voice Modems**

**Model 1058 Series Standalone & Rack Cards**

Extend the reach of your network up to 4,656 ft (1.42 km) at 12.5 Mbps over a single voice-grade twisted-pair wire.

The Model 1058DV provides high-speed Ethernet and voice connections between LANs or other network enabled devices. The 1058DV's line-sharing capabilities enable users to download files from the Internet, surf the web, and answer e-mail messages while simultaneously talking on the phone or using a fax machine. VDSL's unparalleled performance supports these services at up to 4,656 ft (1.42 km) over a single pair of voice-grade wire—all at 12.5 Mbps!

**FEATURES & BENEFITS**

- **Ethernet Extension**—Overcomes the 328 ft (100 m) limitation of Ethernet with a full-duplex 12.5 Mbps link at distances up to 4,656 ft (1.42 km).
- **Auto Sensing Full-Duplex Ethernet**—Auto 10 or 100 Base-T and full or half-duplex Ethernet operation.
- **Transparent LAN Bridging**—Passes higher layer protocols and supports 802.1Q VLAN tagging.
- **Automatic Learning, Aging, and Filtering**—Only allows packets with addresses outside the LAN to be forwarded.
- **Line Sharing**—Offer POTS/ISDN & Ethernet services over a single pair of voice-grade wire.
- **CP units are compatible with Model 3324 VDSL Access Concentrator/Switch (see page 80)**

**SPECIFICATIONS**

**VDSL line interface:** RJ-45 pin 4 = ring; pin 5 = gnd; optional two-position removable terminal block (supports 19–26 AWG or 0.5–0.4 mm wire)

**Ethernet interface:** 5-position shielded RJ-45; Auto-sensing 10/100Base-T with half or full-duplex operation

**POTS/ISDN interface:** RJ-45 (pin 4 = ring; pin 5 = gnd)

**Protocol:** Transparent to high layer protocol. Supports 802.1Q VLAN tagging

**Modulation:** DAM (Differential Amplitude Modulation)

**Duplexing Method:** FDD (Frequency Division Duplexing)

**Frequency Range:** VDSL: 1–8 MHz; POTS/ISDN: 0–120 kHz

**Transmission/VDSL line rate:** 12.5 Mbps; Data rate: 10 Mbps full-duplex

**Surge suppression:** VDSL line max current surge: 20kA (8/20µs) per side

**Power Supply:** External AC and DC options: 120 VAC, and universal input (UL)—100–240 VAC, or DC-48 VDC, -24 VDC, and -12 VDC


**Environmental:** Temperature: 32–122°F (0–50°C)

**Weight:** Standalone: 4 lbs (1.8 kg) without power supply; Rack card: 0.3 lbs (0.14 kg) with rear card

---

**What is VDSL?**

VDSL (very high bit-rate digital subscriber line) is the fastest DSL technology currently available. Depending on the intended applications, VDSL can be configured for symmetrical or asymmetrical operation. VDSL's high bandwidth allows for applications such as high-definition television, video-on-demand (VOD), high quality video conferencing, medical imaging, fast Internet access, and regular voice telephone services all over a single voice-grade twisted pair. Achievable VDSL distances may vary depending on data rate, gauge/type of wire, and noise/cross-talk environment.

**ORDERING INFORMATION**

**1058 Fixed Rate VDSL Ethernet Extender**

- 1058DV/CD/EUI: CD VDSL Modem; Voice & Data; RJ-45 Line; 100–240 VAC

- 1058DV/CP/EUI: CP VDSL Modem; Voice & Data; RJ-45 Line; 100–240 VAC

**1058 Fixed Rate VDSL Kit**

- 1058DV/EUI-2PK: CD & CP VDSL Modem Kit; RJ-45 Line; 100–240 VAC

**1058 Environmentally Hardened Fixed Rate VDSL Modem**

- ET1058DV/CP/UI: Extended Temp -40 to 85°C CP VDSL Modem; 100–240 VAC

- EC1058DV/CP/UI: Environmentally Controlled 0 to 85°C CP VDSL Modem; 100–240 VAC

- EH1058DV/CP/UI: Environmentally Hardened 0 to 50°C CP VDSL Modem; 100–240 VAC

---

**Symmetric or asymmetric variable-rate VDSL**

Line rates can be altered on the standalone and rack cards to differentiate services and to increase the distance of the individual links (see page 92 for line rates).

---

**ADVANCED FEATURES**

**High-Power Surge Protection**

- Line Sharing—Offer POTS/ISDN & Ethernet services over a single pair of voice-grade wire.

**EFM**

- **24-port VDSL concentrator**

**VDSL CPE**

See Pg 134

![Model 3324DV](image)

**Visit us online**

[www.patton.com](http://www.patton.com)
**Variable-Rate VDSL Modem**

**Model 1068**

The Model 1068 provides variable-rate high speed connectivity of voice and data signals over a single voice-grade twisted pair.

The Patton Model 1068 VDSL Modem provides up to 16 Mbps of high speed Ethernet and voice services between LANs or other network enabled devices over a single twisted-pair. The Model 1068 is the only variable-rate asymmetrical/symmetrical standalone modem solution available today. The ability to select various asymmetrical and symmetrical rates allows the Model 1068 to satisfy a broad range of applications. Popular applications for the Model 1068 in symmetrical mode include video conferencing, interactive video, and telecommuting. The primary use for the Model 1068 in asymmetrical mode is delivering Internet service to residential customers.

The 1068DV features a built-in POTS/ISDN splitter and line sharing capabilities that allow for simultaneous use of voice and data services. This means that end-users can download files from the Internet, surf the WWW, and answer e-mail messages while talking on the phone or faxing documents.

The Model 1068s are sold in pairs and require one unit for the local site, or central office, and one unit for the remote site (customer premise) for proper operation. Model 1068 standalone units are ideal for low density point-to-point applications.

For high density applications, the standalone units can be used with the Model 1068 rack cards and Patton’s 1001 Rack System to provide a concentrated VDSL solution. If you want to take your network and voice connections farther and faster over existing copper and eliminate the expense of fiber, Patton’s Variable Rate VDSL modems are the products for you! Just plug it in, power it on, and play!

**Features & Benefits**

- Low cost plug-and-play solution for campus-wide network extension and delivery of last-mile ISP services over Ethernet
- Extends Ethernet distances up to 1 mile (1.61 km) over 2-wire 24-AWG unconditioned lines
- Switch selectable asymmetrical or symmetrical line rates up to 16.67 Mbps
- Auto-sensing 10Base-T or 100Base-TX
- Supports full- or half-duplex Ethernet
- Transparent LAN bridging (Passes 802.1Q (VLAN) packets)
- Automatic learning, aging, and filtering source address table
- Standalone and rack mounted versions
- CP units are compatible with Model 3324 VDSL Access Concentrator/Switch (see page 80)

**Symmetric or asymmetric variable-rate VDSL**

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

<table>
<thead>
<tr>
<th>Line Rates</th>
<th>Distance in ft (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asymmetric</strong></td>
<td></td>
</tr>
<tr>
<td>Upstream (Mbps)</td>
<td>Downstream (Mbps)</td>
</tr>
<tr>
<td>1.56</td>
<td>4.17</td>
</tr>
<tr>
<td>1.56</td>
<td>9.38</td>
</tr>
<tr>
<td>2.34</td>
<td>16.67</td>
</tr>
<tr>
<td><strong>Symmetric</strong></td>
<td></td>
</tr>
<tr>
<td>Upstream (Mbps)</td>
<td>Downstream (Mbps)</td>
</tr>
<tr>
<td>6.25</td>
<td>6.25</td>
</tr>
<tr>
<td>9.38</td>
<td>9.38</td>
</tr>
<tr>
<td>12.50</td>
<td>12.50</td>
</tr>
<tr>
<td>16.67</td>
<td>16.67</td>
</tr>
</tbody>
</table>

**Specifications**

- **VDSL Line Interface**: RJ-45 or terminal block
- **Ethernet Interface**: Shielded RJ-45
- **POTS-ISDN Interface**: RJ-45 (pin 4 = ring, pin 5 = g)
- **Modulation**: QAM (Quadrature Amplitude Modulation)
- **Frequency Range**: VDSL: 1–8 MHz; POTS/ISDN: 0–120 kHz
- **Transmission**: Switch selectable asymmetric and symmetric line rates up to 16.67 Mbps
- **Surge suppression**: VDSL 20kA (8/20ms) gas tube
- **Power Supply**: External AC: 100–240 VAC; DC: -48,-24, and -12 VDC (DC 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
Using the existing twisted-pair voice-grade copper infrastructure to deliver network connections up to 16 Mbps is now possible using Patton’s Model 1068 Variable Rate VDSL Modems.

In this example, a Gigabit Ethernet Fiber Ring is installed between the main buildings on campus. Ethernet switches transfer data from the fiber ring to Patton 1001 Rack Systems equipped with 1068/CO Variable-Rate Rack Card Modems. Using VDSL, the rack cards transmit the data across the copper wiring infrastructure to remote Model 1068/CP units located within the main and sub buildings. The 1068/CP modems convert the VDSL signals back to Ethernet so they can be delivered to remote users.

Network and POTS/ISDN services can also be delivered over the same twisted-pair copper wiring by using Model 1068DV Variable Rate VDSL Voice & Ethernet modems.

I'm Jose, Patton's Technical Solutions Manager for Latin America. If you have any questions about products or applications using these technologies, please call me at +1 301.975.1000, x142, or send e-mail to jose@patton.com.
IDSL DACS Provides Quad T1/E1 & 24 IDSL Ports

Model 3092

The Patton 3092 IDSL DACS provides 24 IDSL ports, each supporting 64/128/144 kbps dedicated connections.

The Model 3092 IDSL Digital Access and Cross-Connect System (DACS) is the efficient, rack-mountable solution for ILECs/PTTs expanding their access services via IDSL dedicated links. The Model 3092 combines IDSL ports for concentration to multiple TDM WAN ports with total flexibility in mapping the IDSL channels and WAN time slots. The Model 3092 is extremely reliable due to its convection cooling (with no fans or other moving parts to fail) and dual-redundant power supplies.

The Model 3092 IDSL DACS links up 24 IDSL circuits to multiple T1/E1 WAN ports with completely flexible any-to-any nx64 grooming. Each 64/128/144-kbps IDSL port offers user selectable nx4 data rates. User data is then groomed to any channel within the system—including another DSL port! Completely transparent to data, the provider can offer multiple services (ATM/IP/FR) to each user. The entire system is easily managed through its integrated SNMP/HTTP-based network management system (NMS). Using standards-based IDSL, the Model 3092 is compatible with third-party IDSL modems.

With its hassle-free operation, convenient end-to-end setup, high-density and unsurpassed reliability, the Model 3092 IDSL DACS is ready to get your customers up to speed.

FEATURES & BENEFITS

✓ Grooms 24 IDSL connections to any WAN timeslot or other IDSL timeslot
✓ Four T1/E1 WAN uplink ports connect to TDM backbone network connections
✓ Multiple, configurable alarms reporting via remote SNMP traps, front panel LEDs, 3-contact relay, and NMS pages
✓ SNMP/HTTP network management capabilities enable you to configure the Model 3092 and the remote IDSL modems from any location in the world.
✓ Compact 1U chassis’ convection cooled design allows stacking with no fans or other moving parts to fail
✓ Dual-redundant power supplies provide for high reliability with dual load-sharing power supplies.

Refer to page 92 for detailed DISTANCE information and compatible IDSL CPE units.

SPECIFICATIONS

IDSL Ports: 24 ports (RJ-21X 50-pin connector), each port 6/128/144 kbps
WAN Ports: 4 T1/E1 (HDB3/AMI line coding), 4 E1 (HDB3/AMI line coding)
Ethernet Port: One 10/100Base-T (RJ-45 connector)
IDSL Modems: Patton 1092A and 1082, Motorola UTA-220, and Rad ASM-31

Front Panel Indicators: LEDs for power, CPU, system, Ethernet, External clock, test mode, IDSL, and WAN ports frame and error status
WAN Clocking: Internal, Network (from E1/T1 WAN port), External BITS (Building Integrated Timing Supply) Clock Source via 3-pin terminal block
IDSL Clocking: Provides clocking to the remote IDSL DACS
Power Supplies: Dual-redundant universal AC/DC (100–240VAC, 50/60 Hz)
DC power: -40 to -72VDC
Management Services: HTTP, SNMP Telnet, Ethernet, RS-232 Console Port, SYSLOG Client, Remote Software Upgrade via FTP
Alarm Reporting: Configurable alarms: Remote SNMP traps, Front Panel LEDs, 3-Contact Relay (3-pin terminal block)
Environment: Operating temperature: 0–40°C (32–104°F); Humidity: 5–90% non-condensing
Dimensions: 19.00 W x 12.60 D x 1.75 H in. (48.25 W x 32 D x 4.44 H cm)

ORDERING INFORMATION

3092/24/BUI: 24 Port IDSL DACS with 4 T1/E1 WAN ports and Redundant AC supplies, Cobalt Blue color
3092/24/R4U: 24 Port IDSL DACS with 4 T1/E1 WAN ports and Redundant DC supplies, Cobalt Blue color
3092/24/U4B: 24 Port IDSL DACS with 4 T1/E1 WAN ports and one AC and one DC supply, Cobalt Blue color
KiloModem™ 2B1Q Encoding, 2 or 4-wire Baseband Modem

Model 1092A

Make campus LAN and WAN connections using only two wires!

The Model 1092A KiloModem supports point-to-point, sync or async communication over either 2 or 4 twisted-pair (two wires). The Model 1092A is an excellent choice for high speed leased-line Internet links, LAN interconnection, or campus networks. The Model 1092A uses replaceable QuikConnect™ interface modules, which allow connection to a variety of interfaces. Local analog, remote digital loopback test modes, and V.52 BERT pattern generator are built into the Model 1092. Rack cards are also available.

ORDERING INFORMATION

Base units
1092A/A/UI: IDSL Standalone, V.24
1092A/B/UI: IDSL Standalone, RS-422
1092A/C/UI: IDSL Standalone, X.21S
1092A/D/UI: IDSL Standalone, X.21S
1092A/F/UI: IDSL Standalone, 64Kbps G.703

1092A/A/UI: IDSL Standalone, Ethernet
1092A/14/UI: IDSL Standalone, 4 port hub
1092A/JD/UI: IDSL Standalone, FXO Voice/Data module
1092A/JS/UI: IDSL Standalone, FXS Voice/Data module
1092A/UI: IDSL Standalone

Rack cards
1092ARC/A/UI: IDSL Rack Card, V.24
1092ARC/A/UI: IDSL Rack Card, V.35
1092ARC/B/UI: IDSL Rack Card, RS-530
1092ARC/C/UI: IDSL Rack Card, Ethernet
1092ARC/D/UI: IDSL Rack Card, X.21

Note: Model 1092 rack cards plug into the Model 1001 rack system (see page 132)

Typical application

Patton's Model 1092A supports both 2-wire and 4-wire operation. Standalone units can be used back-to-back or with the Model 1001 rack system for long-range point-to-point links. When used with the Model 3092, 64/128/144 kbps IDSL circuits can be concentrated on high speed egress ports.

SPECIFICATIONS

Transmission Format: Synchronous
Clocking: Internal, external or receive
RTS/CTS Delay: no delay, 4–8 ms, or 33–58 ms

Data Rate (kbps)

<table>
<thead>
<tr>
<th>Data Rate (kbps)</th>
<th>19 (.9mm)</th>
<th>22 (.4mm)</th>
<th>24 (.5mm)</th>
<th>26 (.4mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>128</td>
<td>10.8 (17.4)</td>
<td>7.2 (11.6)</td>
<td>5.0 (8.1)</td>
<td>3.4 (5.5)</td>
</tr>
<tr>
<td>64</td>
<td>10.8 (17.4)</td>
<td>7.2 (11.6)</td>
<td>5.0 (8.1)</td>
<td>3.4 (5.5)</td>
</tr>
<tr>
<td>56</td>
<td>10.8 (17.4)</td>
<td>7.2 (11.6)</td>
<td>5.0 (8.1)</td>
<td>3.4 (5.5)</td>
</tr>
<tr>
<td>32</td>
<td>10.8 (17.4)</td>
<td>7.2 (11.6)</td>
<td>5.0 (8.1)</td>
<td>3.4 (5.5)</td>
</tr>
<tr>
<td>0 - 38.4</td>
<td>10.8 (17.4)</td>
<td>7.2 (11.6)</td>
<td>5.0 (8.1)</td>
<td>3.4 (5.5)</td>
</tr>
</tbody>
</table>

LED Status Indicators: TD, RD, CTS, DTR, NS (no signal), IR (error), and TM (test mode)
Isolation: 1500V RMS
DTE Interface: V.24/RS-232, V.28, X.21, G.703, Data+Voice and Ethernet Bridge interface modules

Diagonistics: L4L, BDL, V.52 compliant BERT pattern (511/511 pattern) generator and detector
Power: 100–240 VAC, 50/60 Hz (universal input); 48 VDC (option), 5 watts
IDSL Modems with V.35, X.21, or 10Base-T (Ethernet) Interfaces

Model 1082

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

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

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

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

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

Typical applications

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

SPECIFICATIONS

Transmission Format: Synchronous or asynchronous
Transmission Line: Single unconditioned twisted pair
Clocking: Internal, external, or receive loopback
Distance: Max. 10.1 miles (16.4 km) on 19 AWG (0.8 mm) wire; 7.2 miles (11.5 km) on 22 AWG (0.51 mm) wire; 5.0 (8 km) on 24 AWG (0.35 mm) wire; 3.4 (5.5 km) on 26 AWG (0.20 mm) wire
Data Rates: Synchronous 19.2, 32, 56, 64 & 128 kbps; Asynchronous 0–38.4 kbps
Connectors: RJ-45 on line side; RJ-45, M/34 female or DB-15 female on serial interface side

DIAGNOSTICS: V.52 compliant bit error rate pattern (0111/011 pattern) generator and detector with error injection mode; local Line Loopback and Remote Digital Loopback, activated by front panel switch or via serial interface

Power: 100–253 VAC, 50–60 Hz (universal input option); 48 VDC (option), 5 watts
Temperature Range: 32–122°F (0–50°C)
Humidity: 5–95% non-condensing
Dimensions: 4.7 x 1.52 x 5.0 in. (120 x 18.8 x 12.7 cm)
Weight: 0.5 lbs.
Line Interface: Transformer coupled 1500 VAC isolation

FEATURES & BENEFITS

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

ORDERING INFORMATION

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

I’m Maria, one of Patton’s Sales Coordinators. If you have questions about our products, call +1301.975.1000 or e-mail sales@patton.com.
High-Speed Serial Extender & RS-232 Serial Extender
Models 1053AF & 1052AF

These miniature high-speed digital modems offer multi-rate Async/Sync while transparently passing modem control signals. Both 2-wire full-duplex modems use 2B1Q modulation for superior noise immunity.

The 1053AF and 1052AF are long-range, powered, digital modems that operate synchronously or asynchronously at full duplex over a single twisted pair. The 1053AF operates at multi-rate async/sync speeds up to 115.2/128 kbps; the 1052AF at speeds up to 38.4/128 kbps. Both modems utilize 2B1Q modulation for superior signal strength, even in the noisiest environments. RS-232 serial connections with speeds of 128 kbps can now be extended to distances over 5 miles (8 km) without the use of repeaters! Using ordinary voice-grade wire, the serial extenders provide a cost-effective solution for high speed, dedicated, end-to-end connections with synchronous line rates up to 128 kbps and asynchronous line rates up to 115.2 kbps (1053AF) or 38.4 kbps (1052AF) that include RTS, CTS and DCD modem signals.

The modems' miniature size allow for a direct connection to your transmission device's serial port. Two 8-position DIP switches enable configuration of asynchronous or synchronous line rate settings. Additionally, LEDs are conveniently located on the side of the modems to provide at-a-glance status indication of the unit.

FEATURES & BENEFITS

- Multi-Rate Speeds — 1053AF: Full-duplex synchronous rates to 128 kbps and asynchronous rates to 115.2 kbps
  1052AF: Full-duplex synchronous rates to 128 kbps and asynchronous rates to 38.4 kbps.
- Extends serial devices up to 5 miles (8 km) over ordinary grade twisted pair
- Pass RS-232 Control Signals — Transparently passes CTS, RTS, and DCD over the 2-wire line.
- Miniature size for direct connections to your serial port
- Long Reach — Industry leading distances of over 26,000 feet (8 km) without repeaters.
- Power Options — Universal AC power (90–260 VAC) as well as -12, -24, & -48 VDC.

ORDERING INFORMATION

1052AF/UA: Asyn. 38.4/Sync 128 kbps RS-232 Extender
1053AF/UA: Asyn. 115.2/Sync 128 kbps RS-232 Extender

SPECIFICATIONS

Clocking: Internal, external, or receive
Line Coding: 2B1Q conforming to ANSI T1.601 and ETSI ETR-080 standards.
Line Interface: RJ-45: Two wire twisted-pair using pins 4 & 5; Transformer coupled 1500 VRMS isolation
Maximum Line Distance for All Data Rates: 10.1 miles (16.4 km) on 19 AWG (0.9 mm) wire • 7.2 miles (11.5 km) on 22 AWG (0.64 mm) wire • 5.0 (8 km) on 24 AWG (0.5 mm) wire • 3.4 (5.5 km) on 26 AWG (0.4 mm) wire
Serial Interface: DB-25 Female or DB-9 Female depending on model ordered.
Serial Data Rates:
  1053AF: Synchronous: 2, 56, 64, and 128 kbps • Asynchronous: 38.4, 57.6, 76.8, and 115.2 kbps
  1052AF: Synchronous: 32, 56, 64, and 128 kbps • Asynchronous: 0–38.4 kbps
LED Indicators: TXD, RXD, Link, NS (no signal), ER (CRC error)
Power Supplies: External wall-mount power supply with universal 90–260 VAC input or -12, -24, & -48 VDC input
Dimensions: 5.18L x 1.69W x 0.75H in. (13.16L x 4.29W x 1.91H cm)
Weight: 2.01 lbs. (<1.0 kg)
Compliance: EMC: FCC Part 15, subpart B, Class A (US) • EEC Directive 89/336/EEC (Europe) • R&TTE (Australia) • ICES-003 (Canada) • C-Tick (Australia) • ICPR 60950 (International)
Safety: UL 60950/CAN/CSA-C22.2 60950 (Safety—US/Canada) • EN 60950 (Safety—Europe/International)
Operating temp.: 32–122°F (0–50°C)
Humidity: 5–95% non-condensing
Altitude: 0–15,000 feet (0–4,572 meters)

I'm John, one of Patton's Marketing 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.