SSH Console Serial Switch with Environmental Monitoring

SERIMUX®

Securely control up to 32 RS232 devices via the Internet

- Operates on a hardened Linux system.
- Connects up to 32 devices with different baud rates, parity, and character length. Each switch also has one RJ45 connector for a local terminal.
- Elminates the need to connect each device to an ASCII terminal or PC.
- Provides out-of-band access to network devices (servers, routers, network switches, and any other network devices allowing console operation using RS232).
- Connects to console serial ports using standard CAT5/5e/6 cables and cable adapters.
  - Maximum cable length is 1000 feet (305 meters).
- Dual Ethernet and optional dual power provide redundant connectivity and power.
  - Dual power option creates a redundant power system protecting the console switch from any power failure issues.
- USB port provides expanded logging storage, configuration export and additional functionality.
- High quality, rugged steel construction with durable powder coat finish.
- Gain access to servers without interrupting service to end-users; maintain optimal up-time.
- Monitor environmental conditions.
  - Supports two sensors, including: temperature/humidity and water detection.
  - When a sensor goes out of range of a configurable threshold, the system will notify you via email, LEDs, web page, and network management (SNMP).
- Power cycle without halting SUN host computer.
  - No inadvertent “break” signals are generated to cause unintentional rebooting of SUN computers.
- Powerful diagnostic and event management features (data capture, notification and scripting) assist in the quick location of the source of equipment failures and minimize downtime.
- Enhanced security features to protect the system - Secure Shell (SSH v2), individual port authentication, HTTPS.
- Switching is simplified with programmable device names and menu-driven device selection.
  - All configuration parameters are stored in non-volatile memory.
  - Configuration parameters can be imported from USB Flash drive.
- Firmware upgradeable “in-field” through console port, Ethernet, or an attached USB Flash drive.
- 1RU case is standard. Includes rack mounting kit.

Specifications

**Compatibility**
- Supports most devices with an RS232 serial port
- Supports VT terminals

**Network Interface**
- Two 10/100 Base-T Ethernet ports with RJ45 Ethernet connector
- Supports both static and dynamic IP addresses

**RJ45 Sensor Ports**
- Two RJ45 modular jacks for connecting NTI temperature/humidity and liquid detection sensors.

**Serial Interface**
- 8/16/24/32 RJ45 EIA-232 serial port connectors
- One RJ45 EIA-232 console port connector
- Each individual serial port is fully configurable-
  - All industry-standard baud rates ranging from 50 up to 115.2kbps
  - RTS/CTS, Xon/Xoff or both handshaking schemes
  - Variable character widths- 5, 6, 7, or 8 bits
  - Stop bits - 1 or 2, as well as Parity- Odd, Even and None
- Flow Control:
  - Hardware RTS/CTS
  - Software XON/XOFF
- Signals: RS232 CTS, DSR, RXD, GND, DCD, TXD, DTR, RTS
- Modem control: DTR/DSR and RTS/CTS
- Data transfer rate: up to 115.2K baud between two ports
  - Two ports can be at different baud rates

**Control Methods**
- HTTP/HTTPS Web Interface, Telnet/SSH, System console.
- Supports up to 32 users.
- Two user levers: User and Administrator.

**LED Indicators**
- Full featured status display via LED indicators:
  - CPU – power.
  - Console – device activity.
  - Ethernet – connection/speed/activity.
  - Each Serial Port – device activity.
  - "INT ALERT" – internal sensor goes out of range of a configurable threshold.
  - "EXT ALERT" – external sensor goes out of range of a configurable threshold.

**Security**
- Local DB authentication
- TLS/SSL secure communications
- SSH v1, SSH v2, SSL
- AES, 3DES/DES, Blowfish, Twofish, RSA, EDH-RSA, Arfcour Encryptions

**Encryptions**
- IPV6 Compatible
- Linux Inside

The SERIMUX® Secure SSH Console Serial Switch delivers secure management of up to 32 serial devices via the internet, TCP/IP network, or dial-up modem connections. It combines the advanced security of Secure Shell v2 with unlimited access to remote network management.
Power

- Input Voltage: AC 100 to 240 V, 50 to 60 Hz (Country-specific power supply cable included.)
- Optional dual AC power available on all models.

<table>
<thead>
<tr>
<th>Power Consumption</th>
</tr>
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<tbody>
<tr>
<td>NTI Part #</td>
</tr>
<tr>
<td>SERIMUX-S-8</td>
</tr>
<tr>
<td>SERIMUX-S-16</td>
</tr>
</tbody>
</table>

Adapters

- Four cable adapters are included with the SERIMUX
  - Male DB-25F to female RJ45
  - Female DB-9F to female RJ45
  - Female DB-25M to female RJ45
  - Male DB-25M to female RJ45
- Additional adapters can be purchased.

Protocols

- SSH V2, Telnet
- IPV4, IPV6
- TCP/IP, TFTP, DHCP, ICMP, UDP, ARP
- HTTP, HTTPS, SMTP, SNMP V1/V2c, Syslog, SNTP
- IPMI v2, RMCP
- Alerts are sent using email, and/or SNMP traps when any monitored environmental condition exceeds a user-specified range.
  - Alerts are posted in message log, which is accessible through Web user interface.
  - Sends notifications of alerts to a maximum of 17 email addresses, and/or SNMP addresses. The users can configure the schedule when they will be alerted.

Internal Sensors

- Temperature:
  - Applications from 32 to 104°F (0 to 40°C).
  - Accurate to within ±1.35°F (±0.75°C).
- Fan:
  - Ability to monitor internal fan speed (24- and 32-port models only)

Memory

- 32 MB Flash memory
- Female USB 2.0 Type A connector for storage devices

Logging & Buffering

- System log, event-log of user activity and on-line data buffering
- Data-logging with date and time-stamp, locally
- The log can be downloaded as a tab-delimited plain text file and/or sent to an external syslog server.

Dimensions:

- 8- and 16-port switches WxDxH (in):
  - 16.20x9.00x1.75 (without supplied rack ears kit)
  - 19x9.00x1.75 (with supplied rack ears kit)
- 24- and 32-port switches WxDxH (in):
  - 17.40x10.00x1.75 (without supplied rack ears kit)
  - 19x10.00x1.75 (with supplied rack ears kit)

Regulatory Approvals

- CE, RoHS

Environmental

- Operating temperature: 32 to 104°F (0 to 40°C)
- Storage temperature: -20 to 140°F (-30 to 60°C)
- Operating and Storage Relative Humidity: 5 to 90% non-condensing RH

Warranty

- Two years

MTBF

<table>
<thead>
<tr>
<th>NTI Part #</th>
<th>Hours</th>
<th>NTI Part #</th>
<th>Hours</th>
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<td>SERIMUX-S-8</td>
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<td>SERIMUX-32DP</td>
<td>87,420</td>
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</table>
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Configuration and Cable Illustration

**Sensors**

**Temperature, Humidity & Combination Sensor**

- **Temperature Sensor (E-STS)**
  - Applications from 32°F to 122°F (0°C to 50°C).
  - Accurate to within ±0.9°F (±0.5°C).
- **Temperature/Humidity Sensor (E-STHSB)**
  - Applications from -4 to 185°F (-20 to 85°C) and 0 to 90% relative humidity.
  - Temperature accuracy:
    - ±0.90°F (±0.50°C) for -4 to 14°F (-20 to -10°C).
    - ±0.72°F (±0.40°C) for 14 to 185°F (-10 to 85°C).
  - Humidity accuracy:
    - 0 to 80% relative humidity, ±3%
    - 80 to 90% relative humidity, ±4%
- **Temperature/Wide Range Humidity Sensor (E-STHS-99)**
  - Applications from 32 to 176°F (0 to 80°C)
  - Accurate to within ±2°F (0 to 50°C, ±1°C)
  - 20 to 80% relative humidity, ±3%
  - 10 to 90% relative humidity, ±4%
  - 0 to 99% relative humidity, ±5%

**Liquid Detection Sensor**

- For warning of flooding.
- Detects liquid depth >0.1”.
- Minimum puddle: 0.6” diameter.
- 100% waterproof electronics.
- Detects any liquid, except deionized water.
- Supports CAT5/5e/6 cable up to 1,000 ft. (not included).
- Available water sensor cable (x) lengths: 1/10/50/100/200/400/600/800/1000 feet.
- Available 2-wire cable (y) lengths: 5/10/20/50/100 feet.
- Regulatory approvals: CE, RoHS

**RJ45 connector**

- Supports CAT5/5e/6 cable up to 1,000 ft (not included).
- Regulatory approvals: CE, RoHS
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Adapters

- **DB9F-RJ45F**: Adapter to connect DB-9M serial ports to the SERIMUX.
- **DB25F-RJ45F**: Adapter to connect DB-25M serial ports to the SERIMUX.
- **DB25M-RJ45F-C**: Adapter to connect a modem to the SERIMUX.
- **DB25M-RJ45F-T**: Adapter to connect DB-25F serial ports to the SERIMUX.
- **RJ45MF-RS232-CO**: Serial RS232 Crossover using RJ45 connectors (Male to Female)
- **DB9F-RJ45F**: Adapter to connect DB-9M serial ports to the SERIMUX.

Cables

- Use CAT5, CAT5e or CAT6 UTP straight through cable for TIA/EIA-568B wiring terminated with standard RJ45 connectors.
- One 6-foot CAT5 cable included.

Ordering Specifications

This example explains the SERIMUX switch part number by breaking it down into the available options. When ordering, choose the options that you require.

```
SERIMUX - S - x - DP
```

<table>
<thead>
<tr>
<th>Secure</th>
<th>Number of Ports</th>
<th>Optional Dual Power</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Blank = AC power</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NTI Part#</th>
<th># of Ports</th>
<th>Desktop Size (WxDxH)</th>
<th>Rack Units</th>
<th>Rack Size (WxDxH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIMUX-S-8</td>
<td>8</td>
<td>16.2x9x1.75 (without supplied rackmount kit)</td>
<td>1RU</td>
<td>19x9x1.75 (with supplied rackmount kit)</td>
</tr>
<tr>
<td>SERIMUX-S-16</td>
<td>16</td>
<td>16.2x9x1.75 (without supplied rackmount kit)</td>
<td>1RU</td>
<td>19x9x1.75 (with supplied rackmount kit)</td>
</tr>
<tr>
<td>SERIMUX-S-24</td>
<td>24</td>
<td>17x10.1x1.75 (without supplied rackmount kit)</td>
<td>1RU</td>
<td>19x10.1x1.75 (with supplied rackmount kit)</td>
</tr>
<tr>
<td>SERIMUX-S-32</td>
<td>32</td>
<td>17x10.1x1.75 (without supplied rackmount kit)</td>
<td>1RU</td>
<td>19x10.1x1.75 (with supplied rackmount kit)</td>
</tr>
</tbody>
</table>