

MOVE FORWARD

LEAVE NOTHING BEHIND

Allowing utilities to move forward in modernizing substations without the worry of future integration or legacy applications.





The eXmux 4500 Multi-Service Access & Transport (MSAT) platform is designed and engineered to address the challenges of network migration and infrastructure upgrades for power utilities. The solution provides utilities with the confidence to move forward and leave nothing behind. Whether it's reliability and security, IT/OT convergence, or "drag and drop" configuration, the eXmux 4500 delivers a solution to an industry-wide dilemma, and addresses the various technology, knowledge and IT/OT convergence gaps.

Key Advantages:

RELIABILITY without compromise

- Dependable communications that offer network resiliency and data survivability
- Security that ensures data availability, integrity and confidentiality

EASY-TO-USE straightforward management platform

- Fast network provisioning - from staging to deployment-in minimal time
- System-wide configuration, status and monitoring for increased efficiency

ELIMINATE MIGRATION GAPS and leave nothing behind

- Reduce network complexity and bridge knowledge gaps
- Assure technological cooperation for IT/OT convergence

FUTURE-PROOF your infrastructure

- Extensible platform that eliminates the vicious cycle of "vintage vs. modern"
- Single integrated network solution to deliver power safely, reliably and securely

Key Features:

- **10-Gig Carrier Ethernet** Access and Transport Communications Platform
- **Redundant controller** & network multiple points of failure protection
- **G.8032 Ethernet ring** protection with sub 50ms switch-over time
- **"Hitless Switching"** functionality with zero-data-loss to protect mission-critical TDM data
- **Low latency** with < 3ms circuit propagation delay for real-time mission-critical applications
- **TDM legacy interfaces** including DACS functionality
- **Encryption** - Data and Management
- **"Secure Lockdown"** (Patented) - two-factor authentication for increased security
- **"Zero Data Outage Upgrade"** - when upgrading controller system software.

Key Technical Specifications:

Main Cards:

Controller (Redundant Option)

- Processor
- Switch Fabric
- Pseudo-Wire Engine

Power Supply (Redundant Option)

- 38-150Vdc/88-130Vac
- 200-300Vdc/200-275Vac *
- 19-32Vdc *

Core I/O-A [Ethernet Ports]

- [2] 10GigE SFP Ports
- [2] GigE SFP Ports
- [2] GigE RJ-45 Port

Core I/O-B [Ethernet Ports]

- [2] 10GigE SFP Ports
- [2] GigE SFP Ports
- [2] GigE RJ-45 Port

System I/O

- [2] T1/E1 Ports
- GPS Input
- IRIG-B input/output
- 1PPS Input
- IEEE 1588v2 PTP
- Alarms Contacts [Minor & Major]
- Contact Status Inputs [2 Inputs]

SFP Options:

- RJ-45 10/100/1000 Base TX
- 1000 Base-FX [550m (0.34mi), 10km (6.2mi), 30km (18.4mi), 60km (37.3mi), 80km (49.7mi), 120km (74.5mi)]
- 10000 Base-FX [400m (0.25mi), 10km (6.2mi), 40k(24.9mi), 80km (49.7mi), 120km (74.5mi)]

Interoperability:

- Interoperate with eXmux 3501
- TDM circuit interoperability with IMUX 2000 DSO via T1/E1 interface

Interface Units (IU) Payloads:

- 2 Port Sync. Interface
- 4 Port Async. RS-232/485 Interface
- 4 Port Serial Server RS-232/485 Interface
- 4 Port C37.94MM Sync. Interface
- 4 Port C37.94SM Sync. Interface
- 4 Port G.703 Co-directional Sync. Interface
- 4 Port 4-Wire E&M Audio Interface
- 4 Port 2-Wire E&M Audio Interface
- 4 Port 2-Wire FXO Interface
- 4 Port 2-Wire FXS Interface
- 4 Port T1/E1 Interface
- 4/8 Function Teleprotection Interface*
- 8 Input/Output Contact Status Interface*
- 6 Port RJ-45 10/100 BaseTx interface*
- 1 Port GigE SFP*

Mechanical:

- 19" Rack Mount (5RU)
H: 8.75" (222mm) W: 19" (483mm) D: 11" (279mm)
- 19" Rack Mount (3RU)
H: 5.25" (144mm) W: 19" (483mm) D: 11" (279mm)

Environmental:

- Convection cooling (No Fans)
- Operating temperature: -30C to +65C (-22F to +149F)
- ANSI/IEC SWC, ESD, RFI compliant
- IEEE1613, IEC61850-3 compliant

User Interface:

- USB Port on Active Controller for Management IP address setup
- MGMT Port on front unit for Visual NMS GUI
- Management of multiple eXmux networks up to 1000 nodes

Security:

- Management - SNMP v3
- Payload Data - MACsec AES 128/256-bit encryption
- Management - Two-Factor Authentication - "Secure Lockdown*" (Patented)

Carrier Ethernet (CE) 2.0 Ready:

- E-Line, E-LAN, E-Tree*

Warranty:

- 36 months

* Future Release



**1/10Gbps Substation
Communications Network**

Control Center

**10Gbps WAN IT/OT
Communications Backbone**



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