

## FlexStream AK5NTE Remote Network Termination Equipment



AK5NTE

Positron's FlexStream AK5NTE Remote Network Termination Equipment is an environmentally hardened self-contained AK525RU. The AK525RU Compact Remote Unit enables the point-to-point transport of high-quality, high bandwidth Carrier Ethernet services over bonded copper pairs. The AK525RU provides 50 Mbps of symmetrical bandwidth capable of delivering carrier-grade services out to 12 Kft/3.7 Km and beyond. The hardened unit can be line powered over the same data pairs without any impact on the performance of the overall system.

### Lightweight Environmentally Hardened Enclosure

The AK5NTE self-contained standalone unit eliminates the need for expensive cabinet enclosures, heat exchangers and site construction, which account for a large portion of the total cost of deployment. The AK5NTE can be deployed in indoor or outside plants. Unlike the competing solutions requiring different enclosures to suit the environment, the AK5NTE is built on a light weight weather proof environmentally hardened enclosure, making it easier for the field professional to install on a pole or wall mount. With the line power feed, the AK5NTE can be deployed in any field cabinet or remote location without requiring a local power source.

### AK525RU Compact Remote Unit

The AK525RU works in conjunction with the Positron AK525CU and AK500S Carrier Ethernet products. Environmentally hardened for both inside and outside plant deployment scenario, the compact unit facilitates deployment in remote locations where space is at a premium.

### Compliant with Industry Standards

The AK525RU is a standards-based multi-pair DMT product that provides superior performance and reliability in comparison to SHDSL multi-pair copper products on the market. Along with meeting copper loop standards such as ANSI T1.417 which enables the AK525RU Ethernet services to co-exist with other services in a binder, it is compliant with IEEE 802.1 and 802.3 LAN standards and Metro Ethernet Forum MEF9/MEF14.

### Metro Ethernet Services

The AK525RU delivers Ethernet services such as Ethernet Private Lines (EPL and EVPL), Ethernet Private LAN services (EP-LAN and EVP-LAN) and Quality of Service including bandwidth profiling in compliance with the Metro Ethernet Forum CE 1.0 (MEF9 and MEF14) specifications.

### MIMO on DMT

Utilizing Positron's breakthrough multi-channel signal processing DMT + MIMO techniques embodied in both the hardware and software, the AK525RU can transport more bandwidth over longer distances on fewer pairs than SHDSL or T1 IMA copper bonding technologies.

### 10X More Bandwidth and Expanded Reach

The AK525RU can transmit ten times more bandwidth than T1 IMA and up to four times more high-quality bandwidth than SHDSL. This huge improvement over other copper bonded technologies is achieved by overcoming traditional copper transmission interferences such as self and alien cross-talk as well as noise. In doing so, the AK525RU enables service providers to offer higher-bandwidth services to up to four times more customers over longer distances without requiring expensive repeaters.

### Multi-Level of Reliability

The AK525RU is designed to dynamically compensate for individual copper pair failures. If a copper pair fails, the AK525RU proactively and automatically adjusts the other copper pair margins to compensate for the loss. This feature allows any pair to protect all the pairs in a bonded group. The result is reliability that matches fiber Service Level Agreements (SLAs).

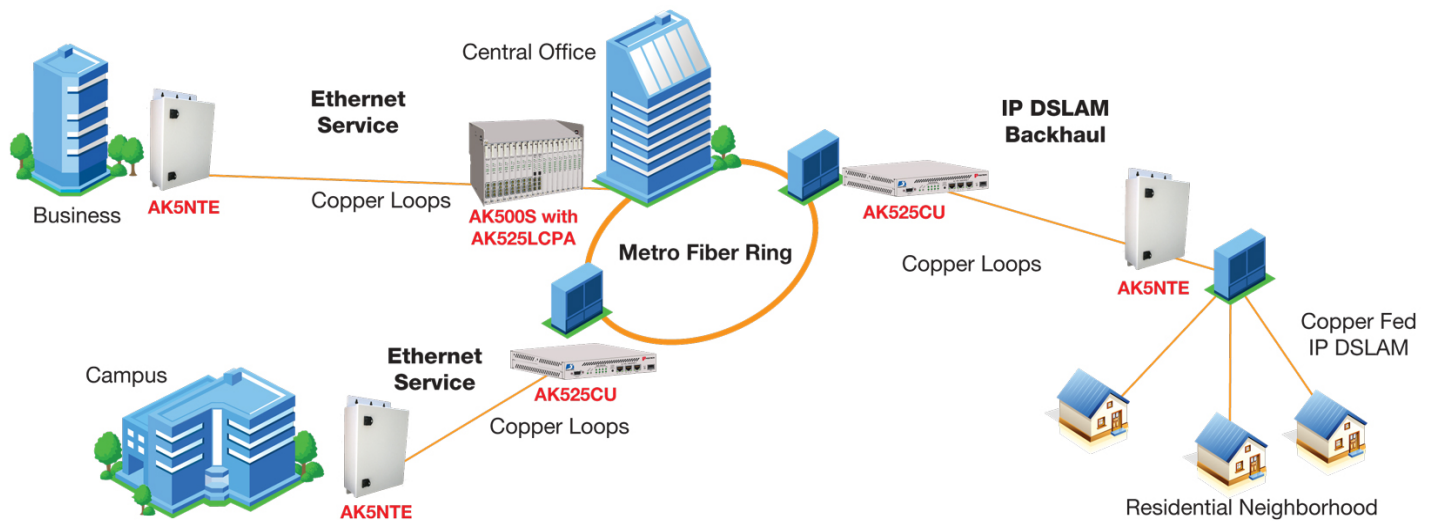
### Dual Powering Options

The AK525RU has the unique capability to be remotely line powered by the AK525CU or AK500S with AK525LCP(A) modules over the same bonded copper pairs that are carrying data. There is no performance impact on the data when the AK525RU is line powered vs. local powered.

### Management Versatility

The AK525RU can be securely managed by Positron's Element Management System (AKEMS), AktinoView (GUI software), a Command Line Interface (CLI) and SNMP. The AK525RU interoperates with industry standard Network Management Systems providing comprehensive performance monitoring for both the transport physical layer and Ethernet.





## TECHNICAL SPECIFICATIONS

### System

- Bandwidth (24 AWG / 0.5mm):
  - 50 Mbps Symmetric up to 4 Kft/1.2 Km
  - 60 Mbps Asymmetric, 25 Mbps Symmetric at 12 Kft/ 3.7 Km with Full Disturbers
  - 100 Mbps Asymmetric at 7.5 Kft/2.25 Km
- System Latency: 3 ms
- Resiliency: Carrier grade automatic pair failure protection
- BER:  $10^{-12}$

### Ethernet Interfaces

- Number of Ports: 4 per unit
- Interfaces: 10/100 BaseT (Auto-negotiating, Auto MDIX) RJ45, 100 BaseFX and 1000 BaseX SFP
- Compliance: IEEE 802.3

### Outside Plant Pairs

- Technology: MIMO on DMT
- Number of Pairs: Up to 8 pairs
- Sealing Current: Meets G.991.2
- Compliance: T1.417 (Spectral)

### Management Port

- 10/100 BaseT RJ45 (Auto-negotiating, Auto MDIX)
- Compliance: IEEE 802.3

### Front Panel Indicators of the AK525RU

- Status, Local Power
- Outside Plant Pair Status
- Ethernet 100 Base-FX, 1000 Base-X, Act, Link

### Layer 2 Features

- VLAN Tagging: IEEE 802.1q Support
- Stacked VLAN Tagging IEEE 802.1ad (IEEE 802.1QinQ)
- Support up to 2036 byte Maximum Transmission Unit (MTUs)
- Priorities: IEEE 802.1p, Port, or DiffServ
- Dynamic bridging: 8K MAC addresses
- Metro Ethernet Forum certified (MEF9, MEF14)

### Electrical Specifications

- Line powered by CO unit
- Local power input: 120 Vac using AKRUPA Remote unit power adapter
- Max heat dissipation: 40 Watts
- Provides 12 Vdc, 12 Watt output

### Environmental Specifications

- Operating Temperature: -40 to +65°C
- Storage Temperature: -40 to +70°C
- Relative Humidity: Up to 95%, non-condensing

### Mechanical Specifications

- Chassis Dimensions: 1.75" (4.5 cm) High x 8.5" (21.6 cm) Wide x 11.2" (28.4 cm) Deep
- Weight: Approximately 3 lbs (1.4 kg)

### Network Management

- Command Line Interface (CLI), SNMP
- Positron Element Management System (AKEMS) or AktinoView GUI
- Inband VLAN Management

### Regulatory Approval

- NEBS Level 3
- UL60950
- FCC Part 15 Class A
- CE Mark



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