# FlexStream AK5RS AIR Carrier Ethernet Regenerator


AK5RS AIR

Positron's FlexStream All Inclusive Regenerator (AIR) series AK5RS Carrier Ethernet Regenerator extends the rate and reach of the AK525 8 pair products from 18 Kft/ 5.5 Km to 50 Kft/ 15.2 Km and beyond. The environmentally hardened industrial grade AIR series regenerator is built on the patented field proven MIMO on DMT technology to guarantee reliable bandwidth over the extended reaches. Positron's AK5RS regenerator is built on a lightweight environmentally hardened enclosure, making it easier for the field professional to install it on a pole or wall. In two span mode, the AK5RS is line powered, which enables it to be deployed in any field cabinet or remote location without requiring a local power source.

**The AK5RS Resilient Reliable Regenerator**
The AK5RS works in conjunction with the AK525 8 pair Carrier Ethernet bonded copper products. The AK5RS supports both symmetric and asymmetric bandwidths and extends the reach of the AK525 product series in Carrier Ethernet mode beyond 50 Kft/15Km. Service providers can deliver 60Mbps business Ethernet services, expand DSL premium services deeper into the network, serve the underserved and unserved communities and satisfy the mobile broadband escalating bandwidth needs over ultra long reach distances by cascading multiple AK5RS regenerators.

**"Think Outside the CSA"**
With the AK5RS, service providers can now provide up to 100 Mbps asymmetric Carrier Ethernet services to all customers up to 50 Kft/ 15.2 Km and beyond using existing copper loops. With unique asymmetric features, the AK5RS is ideal for applications such as DSLAM and Mobile backhaul.

**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.

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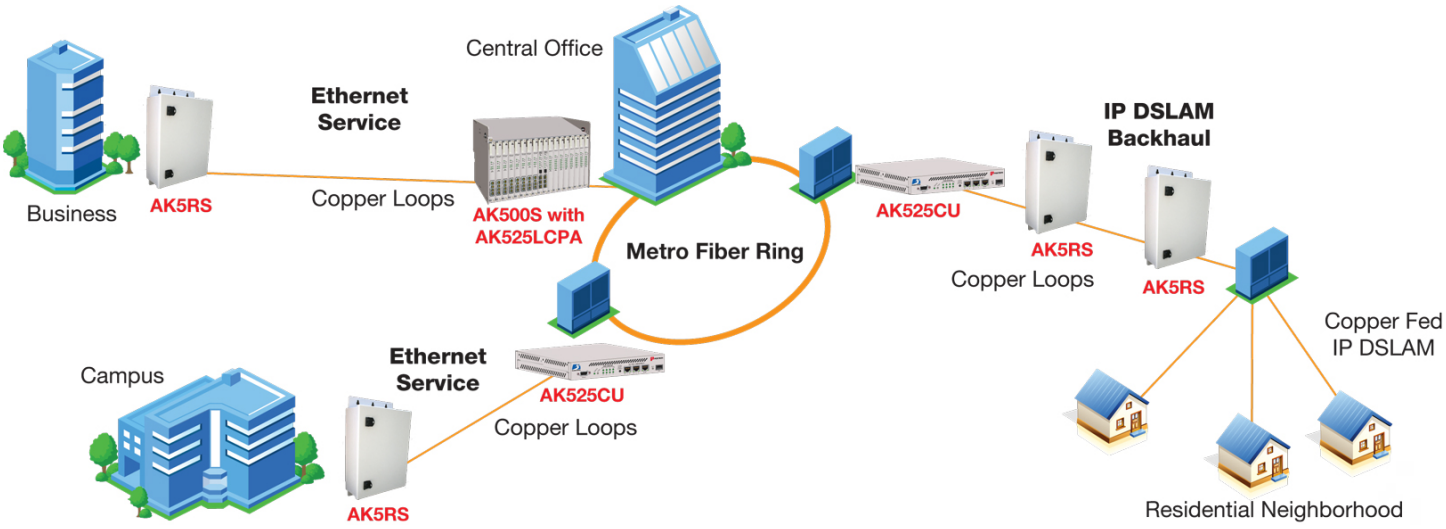


# TECHNICAL SPECIFICATIONS

**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

**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)

**Front Panel Indicators of the AK525 units**
- Status, Local Power
- Outside Plant Pair Status
- Ethernet 100 Base-FX, 1000 Base-X, Act, Link

**Electrical Specifications**
- Line Powered by CO unit
- Local Power Input: -48 Vdc (with optional kit)
- Max Heat Dissipation: 90 Watts

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

**Mechanical Specifications**
- Dimensions: 19” (48.3 cm) High x 15” (38.1 cm) Wide x 6” (15.2 cm) Deep
- Weight: Approximately 20 lbs (9.1 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

CARRIER ETHERNET MEF Certified Compliant

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