FlexStream AK500S Multi-Service Carrier Ethernet Shelf

AK500S with AK590CC Common Controller and AK525LC / AK626LC Line Cards

The FlexStream AK500S point-to-multipoint system enables the transport of high-quality, high-bandwidth Ethernet services over bonded copper pairs. It provides 100 Mbps of high-bandwidth per AK525LC / AK525LCPA line cards and up to 800 Mbps per AK626LC line cards enabling the delivery of carrier-grade service throughout service provider networks (12 Kft/ 3.7 Km) and beyond.

AK500S Delivers Point-to-Multipoint Ethernet Services

The AK500S system consists of the AK500S multi-service shelf, line cards and management/uplink cards. The AK500S can support 16 line cards per shelf and is environmentally hardened for any deployment scenario. The platform adheres to MEF9, MEF14 and CE2.0 recommendations.

Ubiquitous Ethernet

High speed Ethernet services do not have to be limited to customers served by fiber. With the AK500S, service providers can provide high-quality, scalable Ethernet services to all customers throughout their networks using existing copper loops.

Compliant with Industry Standards

The AK500S is a standards-based multi-pair DMT platform with support for MIMO on DMT and VDSL2/ ADSL2+ to provide superior performance and reliability in comparison to SHDSL multi-pair copper products on the market. Along with meeting copper loop standards such as ANSI T1E1.417, which enables the AK5000 Ethernet services to co-exist with other services in a binder, the products are compliant with IEEE 802.3ah EFM, IEEE 802.1 and 802.3 LAN standards and Metro Ethernet Forum MEF9/MEF14.

MIMO on DMT

Utilizing Positron's breakthrough multi-channel signal processing DMT + MIMO techniques embodied in both the hardware and software, the AK525CU can transport more bandwidth over longer distances on fewer pairs than SHDSL or T1 IMA copper bonding technologies.

100+ Mbps Performance with VDSL2 and ADLS2+

When equipped with the 12-pair AK626LC line card, the AK500S delivers up to 100 Mbps per copper pair using VDSL2 with Vectoring and G.INP impulse noise protection. Each AK626LC line card handles 12 copper pairs via up to 4 bonding groups each made up of 2 to 8 pairs. With VDSL2, it is no longer required to rely only on fiber to deliver Business Ethernet services to small and medium businesses looking for up to a few 100 Mbps of bandwidth. Using the existing copper infrastructure yields the best possible Return on Investment over other technologies.

Multi-Level of Reliability

The AK500S and its copper line cards are designed to dynamically compensate for individual copper pair failures. If a copper pair fails, the AK525LC and AK626LC line cards of the AK500S automatically adjust the other copper pair margins to compensate for the loss. This feature allows any pair to protect all the pairs in a bonded group, without the need to double the number of copper pairs used. When equipped with a pair of redundant AK500CC Common Controller module, the AK500S extends the link aggregation capabilities of the AK500CC with active redundancy to preserve the full available upstream bandwidth should there be an issue with any of the upstream links feeding into the AK500S.

Powering Options

The AK525LCP is designed to remotely line power an AK525RU Remote Unit. The power is injected on the same bonded copper pairs that are carrying data. There is no performance impact on the data when the AK525RU is line powered by the AK525LCP.

Management Versatility

The AK500S and its copper modules can be securely managed by Positron`s Element Management Software (AKEMS) and AktinoView (GUI software) or via a Command Line Interface (CLI). The AK590CC module of the AK500S interoperates with industry standard Network Management Systems providing comprehensive performance monitoring for both the transport physical layer and Ethernet.

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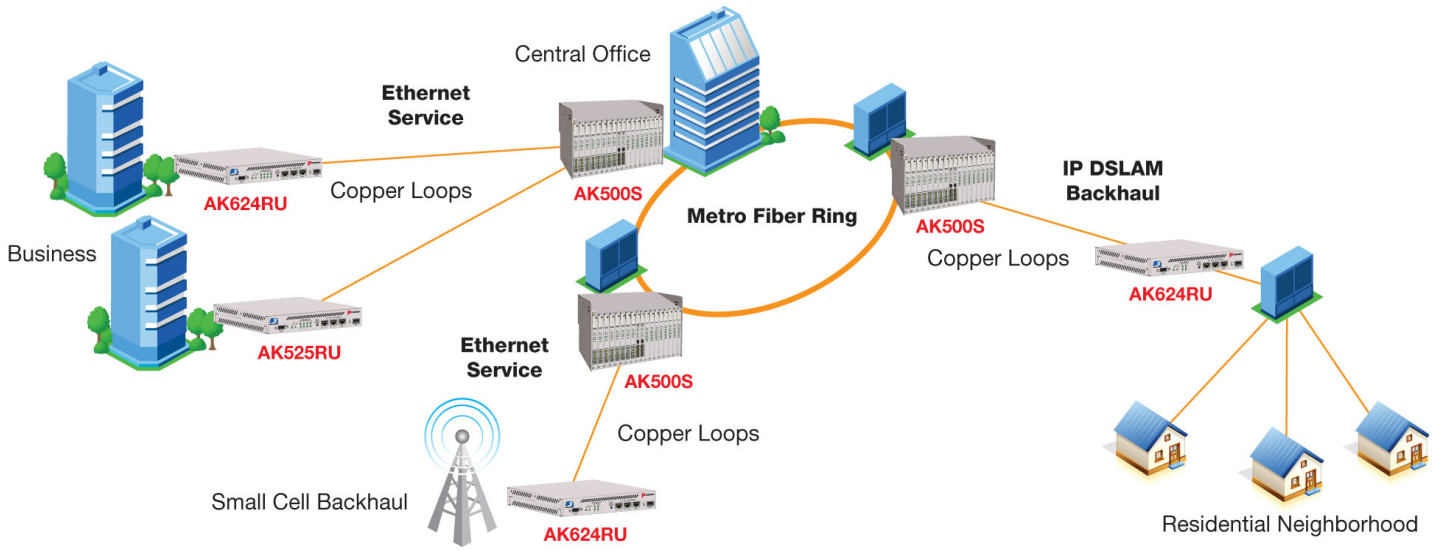

TECHNICAL SPECIFICATIONS

System
- Sixteen line card slots supporting AK525LC/ AK525LCPA and AK626LC line cards
- Two redundant management/uplink slots (a minimum of one AK590CC module is required in an AK500S)
- One Gbps symmetric throughput per shelf

Line Cards
- Bandwidth with AK525LC/ AK525LCPA (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
- Bandwidth with AK626LC
  - 200/300/400 Mbps up to 800 Mbps Asymmetric < 3 Kft/ 1Km
  - 10/20/30/40/50/100 Mbps Symmetric < 3 Kft/ 1Km
  - 50 Mbps Asymmetric at 12 Kft/ 3.7 Km with Full Disturbers
- System Latency: 3 ms
- Resiliency: Carrier grade automatic pair failure protection
- BER: 10^{-12}

Outside Plant Pairs per AK525LC Module
- Technology: MIMO on DMT
- Number of Pairs: 2 to 8 pairs
- Sealing Current: Meets G991.2
- Compliance: T1.417 (Spectral)

Outside Plant Pairs per AK626LC Module
- Technology: VDSL2 with Vectoring and G.INP and ADSL2+
- Up to 4 Bonding Groups: 2 to 8 pairs
- Sealing Current: Meets G993.2
- Compliance: T1.417 (Spectral)

AK590CC Module for Management and Uplink
- Redundant management
- Management interface: Two 10/100 BaseT RJ45
- Link Aggregation and Active Redundancy of Uplink Interfaces
- Uplink interfaces: Two 10/100/1000 BaseT RJ45 & one SFP module connection including 100 BaseFX and 1000 BaseX (GigE)

Front Panel Indicators
- Line Cards: Status, Fuse, Outside Plant Pair Status
- Management/Uplink Cards: Status, Fuse, BAT A/B, Master, SFP

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
- Per AK525LC/ AK525LCP(A) Line Card
  - Power Input: -42 to -56.7 Vdc
  - Max Heat Dissipation: 40 Watts

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: 7RU High x 17.2” (43.7cm) Wide x 12.0” (30.5cm) Deep
- Weight: Approximately 20 lbs (4.5 kg)

Alarm Contacts
- Critical, Major, Minor, SysID
- Visual, Audio, Alarm Cut-Off Pushbutton

Network Management
- Command Line Interface (CLI), SNMP, TL1
- Positron Element Management System (AKEMS) or AktinoView GUI
- Inband Management via Management VLAN and/or dedicated IP address

Regulatory Approval
- NEBS Level 3
- UL60950
- FCC Part 15 Class A

CARRIER ETHERNET MEF Certified Compliant

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