

# FSP 150-XJ128 (SH)

10G/25G Carrier Ethernet demarcation and synchronization delivery

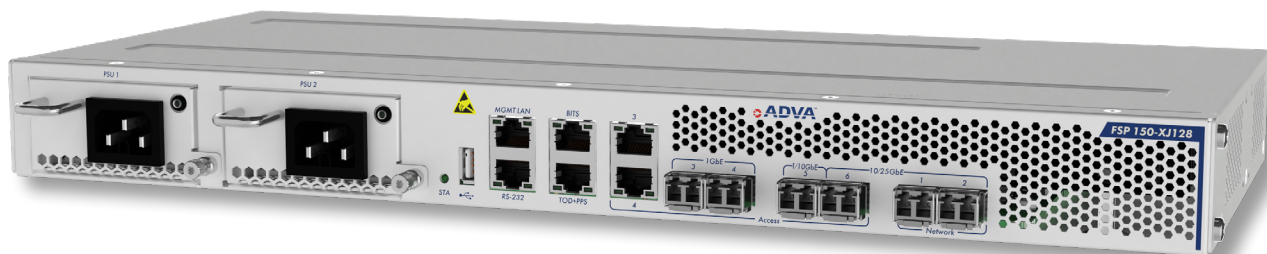
## Benefits

- **1G/10/25G Ethernet service demarcation**  
Seamlessly moving from 1Gbit/s to 25Gbit/s services, supported by powerful 78Gbit/s architecture
- **MEF 3.0 compliant CE services**  
Well established interfaces and protocols for ease of network integration and operation
- **Synchronization**  
Well prepared for emerging timing needs with BITS, SyncE and IEEE-1588 PTP
- **Compact design**  
No need to compromise on performance even for space-restricted applications
- **Automated activation**  
Zero-touch provisioning for fast and easy service activation without the need for onsite visits
- **Fanless operation at high temperature**  
Temperature-hardened design eliminates the need for expensive air conditioning

## Overview

**Demand for high-speed connectivity is exploding, and 1Gbit/s to 10Gbit/s service offerings are no longer sufficient.** Yet, in many cases, 100Gbit/s is too expensive. Until now, businesses had no choice but to live with their 10Gbit/s solutions or make the costly leap to 100Gbit/s. And what about the need for synchronization capabilities? With our new FSP 150-XJ128 device, we're giving enterprises room to grow in a simple and cost-effective way. It's the demarcation device that businesses have been waiting for and signals the start of a new era of 25Gbit/s connectivity and synchronization services.

Our FSP 150-XJ128 is a low-power 1/10/25GbE demarcation solution for fast and seamless mass deployment of high-bandwidth Carrier Ethernet services with precise synchronization. With zero-touch provisioning, services are activated without the need for onsite visits of technically trained staff. MEF 3.0 compliant CE services using established OAM procedures simplify operations, while the fanless design in combination with low power consumption further minimizes operational costs. The Adtran FSP 150-XJ128 is a perfect fit for space-restricted applications, and redundant power supplies are ideal for high service availability. It's the key to the commoditization of high-bandwidth Ethernet services to meet the fast-growing demand of private as well as public enterprises. Leveraging the latest technology, this demarcation solution is the benchmark for Ethernet and synchronization service delivery in terms of cost-efficiency and operational ease.



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## High-level technical specifications

### Interfaces

- 3x SFP28/SFP+, 10G/25G capable
- 1x SFP+/SFP, 10G/1G
- 2x dual-media
  - 10/100/1000Base-T
  - SFP 1G
- G.8262 SyncE capable
- BITS/ToD input/output

### Ethernet services

- Up to 512 EVCs
- L2-L4 access control lists
- Hierarchical COS shaping
- Port mirroring
- Port and service shaping
- Split-horizon (E-tree)
- Multicast/broadcast rate limiting
- Elephant-flow policing
- EoMPLS encapsulation

### Resilience

- LAG port protection and aggregation on client ports
- LAG port protection and aggregation as well as G.8032 on network ports
- Redundant power supply

### Management

- MEF-compliant SOAM and SAT
- Zero-touch/low-touch provisioning
- Fully integrated into Ensemble Controller
- Secure management access featuring RADIUS/TACACS

### Timing/synchronization

- G.8275.1 T-BC/TC
- SyncE copper SFP support on all SFP and SFP+

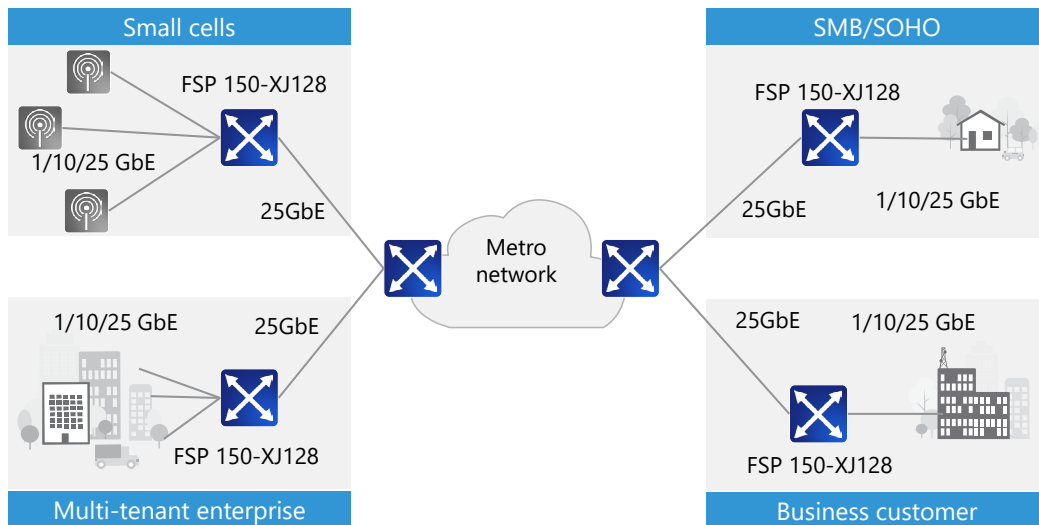
### Environmental

- 1RU chassis, ETSI compliant
- Fanless operation
- Operating temp.: -40 to +65°C (hardened environment)

## Applications in your network

### Easy migration from 1G to 10G and 25G Carrier Ethernet services

- Compact MEF 3.0 CE demarcation featuring automated service activation
- Seamless migration from 1G to 10G and 25G services using proven and established operational processes
- Offering higher-bandwidth services without the need for more space or more power



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## Product specifications

### Traffic ports

- 3x SFP28/SFP+, 10G/25G capable
- 1x SFP+/SFP, 10G/1G
- 2x dual-media
  - 10/100/1000Base-T
  - SFP 1G

### Traffic capacity

- 78Gbit/s full-duplex, non-blocking

### Traffic protection

- IEEE 802.1AX link aggregation – active/standby or load balancing
- ITU-T G.8032 Ethernet ring protection
- ITU-T G.8031 Ethernet linear protection switching

### Synchronization

- ITU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all interfaces
- Sync status message support
- IEEE 1588v2 Precision Time Protocol
- ITU-T G.8275.1 PTP telecom profile
- BITS-in and BITS-out
- BITS sync status messaging
  - 1 PPS in/out
  - 10MHz

### VLAN support

- 4096 VLANs (IEEE 802.1Q customer-tagged) and stacked VLANs (Q-in-Q service provider tagged)
- 2-tag management (push/pop/swap) for c-tag and s-tag
- IEEE 802.1ad provider bridging (c-tag, s-tag)
- Ethertype translation
- 512 Ethernet virtual circuits (EVC)
- 9612 byte per frame MTU transparency

### Layer 2 traffic management

- Acceptable client frame policy: tagged or untagged
- Service classification based on 802.1p, 802.1Q and IP-TOS/DSCP
- MEF-compliant token-share policing (CIR / CBS / EIR / EBS) with three-color marking and eight classes of service
- Hierarchical queuing and shaping
- Rate shaping on transmit for both client and network ports
- Broadcast/multicast rate limiting
- MEF 10.3 hierarchical policing with token-share envelopes
- DiffServ supporting WFQ/SP mix

### Ethernet OAM

- IEEE 802.3ah EFM-OAM link management
- IEEE 802.1ag connectivity fault management (CFM) with hardware assistance
- ITU-T Y.1731 performance monitoring
- ITU-T Y.1564 service activation testing compliant with MEF 48/49
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Embedded RFC 2544 test generator and analyzer
- MEF-compliant Layer 2 control protocol disposition
- Link loss forwarding to signal local link and network path failures
- Dying gasp message for power failure alarming (EFM-OAM and SNMP trap option)
- Port mirroring low-touch provisioning
- DHCP/BOOTP auto-configuration
- Text-based configuration files
- TFTP/SCP for software image upgrade and configuration file copy

### Low-touch provisioning

- Text-based configuration files
- TFTP / SCP for software image upgrade and configuration file copy

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## Performance monitoring

- RFC 2819 RMON Etherstats on a per-port and per-service basis
- 15-minute and 1-day performance data bins
- IEEE 802.3ah / ITU-T G.8021 PHY level monitoring
- ITU-T Y.1731 single- and dual-ended frame loss measurement
- Synthetic frame loss and delay measurement for multipoint service monitoring
- Multi-CoS monitoring on EVCs scaling up to 512 simultaneous SOAM flows
- TWAMP sender/reflector
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for SFP+ optics, including TCAs
- Temperature monitoring and thermal alarms
- MEF-35/36 SOAM PM collection

## Management and security

### Local management

- Serial connector (RJ45) using CLI
- Local LAN port (RJ45) using CLI, SNMP and Web GUI interfaces

### Remote management

- Maintains in-band VLAN and MAC-based management tunnels

### Management protocols

- IPv4 and IPv6 DCN protocol stacks, including dual-stack operation and 6-over-4 tunnels
- Telnet, SSH (v1 / v2), HTTP / HTTPS, SNMP (v1 / v2c / v3)
- NETCONF/YANG

### Secure administration

- Configuration database backup and restore
- System software download via FTP, HTTPS, SFTP or SCP (dual flash banks)
- Remote authentication via RADIUS / TACACS
- SNMPv3 with authentication and encryption
- Access control list (ACL)

## DCN IP routing

- DHCP, RIPv2 and static routes, ARP cache access control

## System logging

- Alarm log, audit log and security log

## Environmental

- Dimensions (W x H x D): 443mm x 44mm x 215mm
- Operating temperature: -40 to +65°C
- Storage temperature: -40 to +65°C (GR-63-CORE)
- Humidity: 5 to 95%, B1 (non-condensing)
- Power consumption: 65W max

## Regulatory and standards compliance

- MEF 3.0 compliant, certification pending
- IEEE 802.1Q (VLAN), 802.1p (Priority), 802.1ag (CFM), 802.3ah (EFM), 802.1x
- ITU-T Y.1731, G.8010/Y.1306, G.8011.1+2, G.8012, G.8031 (APS)
- IETF RFC 2544 (frame tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 2819 (RMON), RFC 5357 (TWAMP)
- MEF 48/49 compliant ITU-T Y.1564 service activation testing
- ANSI C84.1-1989
- ETSI 300 132-2, BTNR2511, ETS 300-019, ETS 300-019-2
- [1,2,3], ETS 300-753
- ETSI 300 132-2, ETS 300-019-2
- NEBS Level 3 compliant
- Telcordia GR-499, GR-63-CORE, SR-332
- Safety IEC / UL / EN 60950, 21CFR1040.10, EN 60825, EN 50371, EN 300-386, EN 50160,
- IEC 60320 / C16
- EMI EN 300-386, GR-1089-CORE, ETS 300-132,
- FCC Part 15, Class A3-10, Class B 1,2, Industry Canada



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