FSP 150-XO106

10G Ethernet demarcation for outdoor applications

Benefits

- **Ruggedized 10G demarcation**
  Carrier Ethernet and Layer 2 demarcation device for environmentally demanding applications

- **Sophisticated synchronization features**
  Featuring SyncE and PTP for very precise, assured distribution of time, phase and frequency

- **Versatile mounting and compact design**
  Unobtrusive, compact and hardened design for a wide range of locations such as walls, poles and street cabinets

- **Service life cycle management**
  Comprehensive set of protocols for fast and efficient service activation, testing and monitoring

- **Secure zero touch provisioning**
  Fully automated activation including upload of latest firmware release, software update, configuration upload and self-start

- **Benefits Headline**
  Open control interfaces for ease of third party NMS integration or management with Ensemble Controller and Packet Director

Overview

Network devices at cell sites, public hotspots or for surveillance applications need to withstand extreme temperatures and harsh environmental conditions. And, as they move to 10Gbit/s backhauling capacity, ruggedized 10Gbit/s demarcation devices are increasingly needed. Our FSP 150-XO106 has been specifically designed for this application, building on our unique experience and technology from our world-leading FSP 150 packet edge portfolio. It covers a wide range of applications and delivers the highest levels of performance even in harsh environmental conditions.

The Adtran FSP 150-XO106 extends the applicability of our market-leading FSP 150 packet edge family with a ruggedized 10Gbit/s demarcation device. Its small size and low power consumption make it easy to install and minimize operational costs. It supports a comprehensive set of Carrier Ethernet and Layer 2 connectivity services, building on our widely deployed MEF 3.0-certified Carrier Ethernet products. Automated testing and in-service monitoring protocols simplify every phase of the service lifecycle. What's more, our FSP 150-XO106 also provides comprehensive synchronization features, making it ideal for timing-critical applications.

FSP 150-XO106

High-level technical specifications

Ruggedized outdoor housing
- Extended temperature range without fans
- Sealed housing for harsh environments
- Wall, pole and cabinet mounting

Interfaces
- Client/network interfaces
  - 2x 1G/10G SFP+ network
  - 2x 1G/10G SFP+ client
  - 2x 1G SFP client

Ethernet and layer 2
- Ethernet switching and Layer 2 demarcation
- Port and service shaping
- EoMPLS encapsulation
- Multicast/broadcast rate limiting

Vairants
- AC and DC variants
- Redundant power supply
- Timing-aware variant featuring BITS, prepared for PTP and SyncE

Management
- Automated service activation and testing (SAT)
- MEF CE3.0 (Layer 2)
- RJ45 RS-232 serial console
- RJ45 10/100M LAN DCN port
- 2x power input inlets

Environmental
- Fanless operation
- Operating temp.: -40 to +65ºC (hardened environment)
- IP67
- NEBS Level 3

Applications in your network
- Ruggedized cell site demarcation device for deployment on walls, poles and street cabinets
- Our FSP150-XO106 supports 10Gbit/s MEF 3.0 Carrier Ethernet in a wide range of locations
- It operates in harsh environmental conditions for outdoor deployment such as cell sites to the tower connectivity
- The device supports advanced OAM capabilities, delivers precise synchronization, and fully integrates with Ensemble Controller and Packet Director
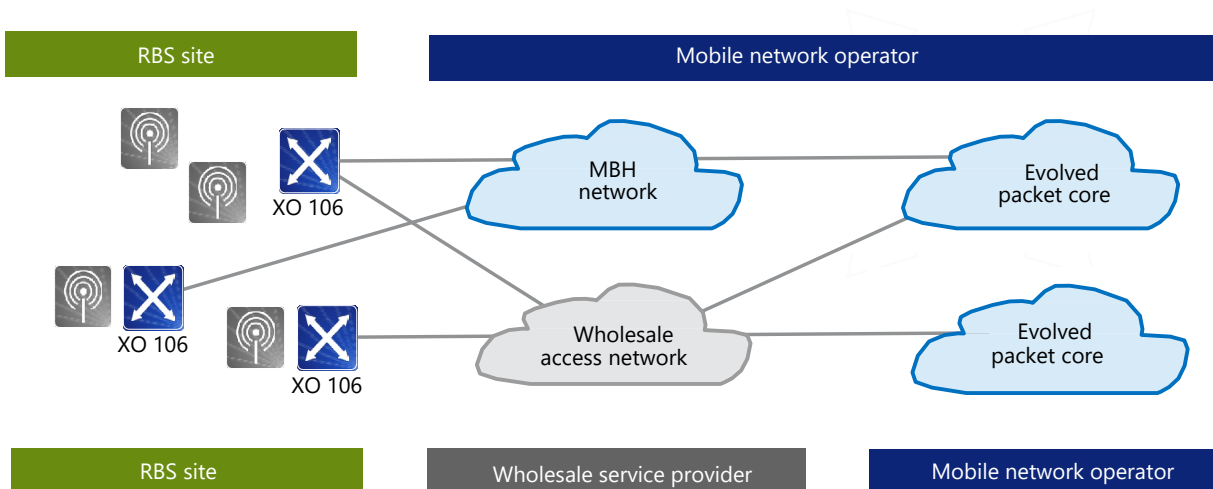
Product specifications

Access interface
- 2x 10GbE SFP+ ports – dual-rate, 1G or 10G capable
- 2x 1GbE SFP ports

Network interface
- 2x 10GbE (SFP+) ports – dual-rate, 1G or 10G capable

Network interface redundancy
- IEEE 802.3ad link aggregation – active/standby mode with optional load balancing
- ITU-T G.8032 Ethernet ring protection switching

Synchronization
- TU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all interfaces
- Sync status message support
- IEEE 1588v2 Precision Time Protocol
- ITU-T G.8265.1 and 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

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 multi- point 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

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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

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, ETS 300-019, ETS 300-019-2-[1,2,3], ETS 300-753
- NEBS Level 3 compliant
- Telcordia GR-499, GR-63-CORE, SR-332
- Safety IEC / UL / EN 60950, EN 60825, EN 50371, EN 300-386, EN 50160,
- EMI EN 300-386, GR-1089-CORE, ETS 300-132,
- 47 CFR Part 15 subpart B
- EN 55032:2015 (class B)
- EN 55035:2017

Environmental
- Dimensions (W x H x D): 332mm x 84mm x 377mm
- Operating temperature: -40 to +65ºC (hardened environment)
- Storage temperature: -40 to +70ºC (GR-63-CORE)
- Humidity: 5 to 95%, B1 (non-condensing)
- Power supply: Redundant modular hot-swappable PSU 110/240VAC or -48 to -72VDC
- Power consumption: Typical 35W, max 45W

TL9000
TL19.1270

ADTRAN
Certified
Supplier
ISO 9001
ISO 14001
TL 9000