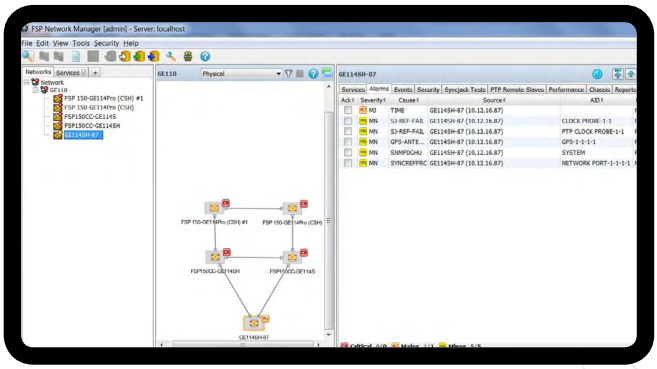
FSP 150-GO102Pro Series

Outdoor Carrier Ethernet and IP demarcation

Public outdoor small cells, Wi-Fi and closed circuit TV (CCTV) require connectivity services which end outside a controlled environment. But service providers don't want to invest in expensive and unsightly cabinets. That's why small environmentally sealed network demarcation devices are a game changer.

Communication service providers (CSPs) struggle to cope with a high number of specialized boxes. They need a single demarcation product that can cover a wide range of applications and be effective even under harsh environmental conditions. Our FSP 150-GO102Pro, a member of the market-leading FSP 150 family, makes a real difference. Its small size and low power consumption make it easy to install and simple to configure. It supports a comprehensive set of Carrier Ethernet and IP connectivity services. Automated testing and in-service monitoring protocols simplify any phase of the service lifecycle. What's more, our FSP 150-GO102Pro also provides precise synchronization. Such a unique combination of features makes it the perfect solution for connecting small cell sites.



Your benefits

- **Universal demarcation**
  Multi-layer Carrier Ethernet and IP integration for a single demarcation device
- **Synchronizing any cell site**
  Highly precise, assured distribution of time and frequency meeting LTE and emerging 5G requirements
- **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
- **Operational convenience**
  Simple reset button enables ZTP process to be reinitialized without the need for local debugging
- **Open programmability**
  Open programming interfaces supporting bandwidth slicing and auto-provisioned bandwidth services

High-level specifications

Ruggedized outdoor housing

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

Interfaces

- Client: two multi-rate FE/GbE ports
- Network: one multi-rate FE/GbE port
- Optical and electrical client interfaces

Ethernet and IP

- Ethernet switching and IP forwarding
- Access control lists for L2-L4
- VRFs to isolate IP address spaces
- DHCP relay with static routes

Synchronization

- Synchronous Ethernet on all interfaces
- IEEE 1588v2 Precision Time Protocol
- Boundary clock, slave clock and transparent clock

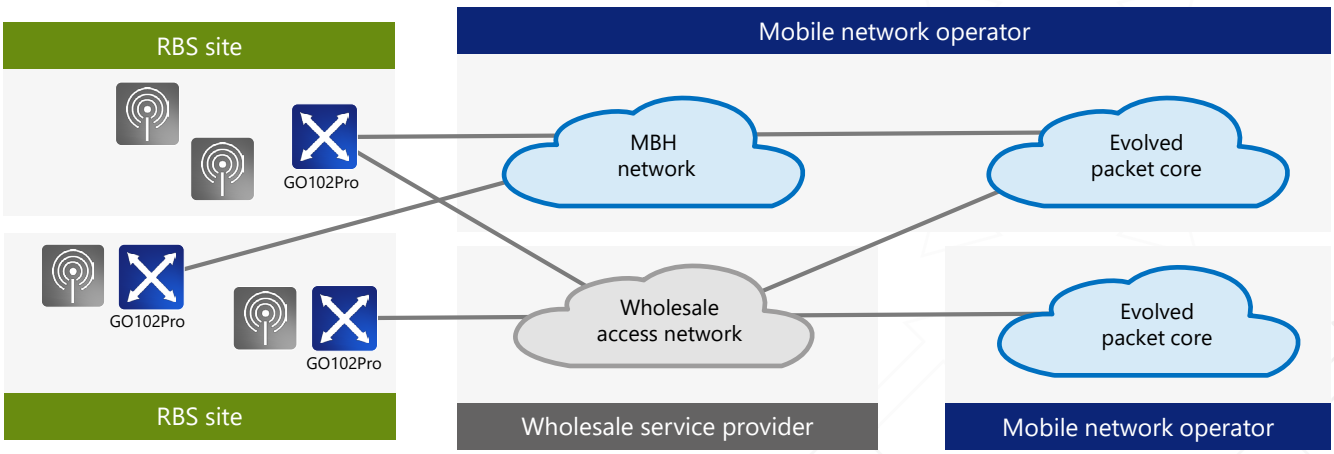
Service activation and monitoring

- Automated service activation and testing (SAT)
- MEF CE 2.0 compliant OAM and configuration management
- Zero touch provisioning

Management and programmability

- Local management and comprehensive Ensemble management and control
- Wide range of physical interfaces and protocols
- Open programming using NETCONF /YANG or OpenFlow

Applications in your network



Ruggedized cell site demarcation device for deployment on walls, poles and street cabinets

- Unique combination of Carrier Ethernet and IP features with synchronization capabilities
- Optional power-over-Ethernet (PoE) power sourcing equipment (PSE) on access ports for CCTV, Wi-Fi or any connected device
- Optional PoE-powered device (PD) on access ports for powering the device from subtended equipment
- Choice of variants to fit wide range of deployments from fully outdoors to tight spaces inside street furniture
- Integrates with ADVA optical access layer for efficient use of the fiber network; for instance using CWDM BiDi interfaces in a single-fiber working architecture

For more information please visit us at www.adva.com

FSP 150-GO102 Series overview

	Access ports	Network ports	Sync.	Power supply	PoE output	Power consumption (maximum)	Size	Operating temperature
[1]FSP 150-GO102Pro (S)	2	1	SyncE, PTP	Integrated AC, DC or PoE PD	–	12.95W	Compact Outdoor	-40°C to +70°C
[2]FSP 150-GO102Pro (SP)	2	1	SyncE, PTP	Integrated AC or DC	2x access ports	80W including PoE subtended devices	Compact Outdoor	-40°C to +65°C
[3]FSP 150-GO102Pro (Sm)	2	1	SyncE, PTP	External AC	–	12.95W	Ultra compact Outdoor	-40°C to +65°C

Access capacity
- Two 10/100/1000BaseT or 100/1000BaseX (SFP) port[1,2]
- Two 10/100/1000BaseT ports[3]
- One access port can be reassigned to be network port[1,2]

Network interface
- One 100/1000BaseX (SFP) port

Synchronization
- ITU-T G.8261 / G.8262 / G.8264 Synchronous Ethernet on all interfaces
- Sync status message support
- IEEE 1588v2 precision time protocol (PTP)
- ITU-T G.8265.1 and G.8275.1 PTP Telecom Profile
- G.8271 Annex A.1 1 PPS / TOD out

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
- Eight 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 IEEE 802.1p, 802.1Q and IP-TOS/DSCP
- VLAN tag priority mapping (IEEE 802.1ad PCP encoding)
- MEF-compliant policing (CIR/CBS/EIR/EBS) with three-color marking and eight classes of service
- Port shaping on transmit for both client and network ports
- MEF 10.3 hierarchical policing with token-share envelopes
- DiffServ supporting WFQ/SP mix

Layer 3 traffic management
- L2-L4 Access control lists (ACL) for classification
- VRF-lite virtual routing and forwarding supporting IPv4 and IPv6
- BGP and OSPF dynamic routing
- DHCP relay agent
- DSCP remarking

Operation, administration and maintenance (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
- Terminal and facility loopbacks on port- and EVC-level for all interfaces
- Cable diagnostics with benchmarks (electrical interfaces only)
- Embedded RFC 2544 test generator and analyzer (ECPA)
- MEF-compliant Layer 2 control protocol disposition and extensive filter options for Layer 2 packet types
- Link loss forwarding to signal local link and network path failures
- Dying gasp message for power-failure alarming (EFM-OAM and SNMP trap option)

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
- TWAMP sender/reflectors for L3 based service assurance
- Multi-CoS monitoring on EVCs scaling up to 32 simultaneous SOAM flows
- Threshold-setting and threshold-crossing alerts
- Physical parameter monitoring for SFP optics, including TCAs
- Temperature monitoring and thermal alarms

Zero-touch provisioning

- DHCP/BOOTP auto-configuration
- IEEE 802.1x port authentication (supplicant and authenticator)
- Text-based configuration files
- TFTP/SCP for software image upgrade and configuration file copy

Management and security

Local management

- USB connector using CLI
- Reset button [1,2]

Remote management

- In-band VLAN and MAC-based management tunnels
- Fully interoperable with other FSP 150 products

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, OpenFlow

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
- IPsec on management traffic
- Access control list (ACL)

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 CE 2.0 compliant
- 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
- MEF-6.1, -9, -10.3, -11, -14, -20, -21, -22.1, -23.1, -25, -26.1, -30, -33, -35, -36
- IETF RFC 2544 (frame tests), RFC 2863 (IF-MIB), RFC 2865 (RADIUS), RFC 2819 (RMON), RFC 5357 (TWAMP)
- MEF-compliant ITU-T Y.1564 service activation testing
- IEEE 802.3at Type 1 Powered Device [1] (DC variant only)
- IEEE 802.3at Type 2 Power Sourcing Equipment [2]
- ANSI C84.1-1989
- ETSI 300 132-2, BTNR2511, ETS 300-019, ETS 300-019-2-[1,2,3,4], ETS 300-753
- Telcordia GR-499 [1,2], GR-63-CORE [1,2], GR-3108-CORE [1,2], SR-332 [1,2]
- Safety IEC/UL/EN 60950, 21CFR1040.10, EN 60825, EN 50371, EN 300-386, EN 50160, IEC 60320/C14
- EMI EN 300-386[1,2], EN 61000-4-5[3], GR-1089-CORE [1,2], ETS 300-132, FCC Part 15, Class A[1,2] B[3], Industry Canada

Product legend

[1] FSP 150-GO102Pro (S)
[2] FSP 150-GO102Pro (SP)
[3] FSP 150-GO102Pro (Sm)

Environmental

- Dimensions (W x H x D):
  - 160mm x 240mm x 67mm / 6.3" x 9.4" x 2.6" [1,2]
  - 100mm x 145mm x 52.3mm / 3.9" x 5.7" x 2.1" [3]
- Operating temperature:
  - FSP 150-GO102Pro (S): -40 to 70°C
  - FSP 150-GO102Pro (SP): -40 to 65°C
  - FSP 150-GO102Pro (Sm): -40 to 65°C
  - GR-3108-CORE Class 1, 2, 3[1], 4, ETSI EN300 019-1-3.1, 3.2, 3.3[(**)], 3.4[1], 3.5, 3.6, 4.1, 4.1E[(***)],4.2H[1,2]
- Storage temperature:
  - -40 to +70°C (GR-63-CORE, ETS 300 019-1-1)
- Humidity:
  - 5 to 100% condensing (GR-3108-CORE Class 1, 2, 3[1], 4, ETSI EN300 019-1-3.1, 3.2, 3.3[(**)], 3.4[1], 3.5, 3.6, 4.1, 4.1E, 4.2H[1,2])
- Enclosure sealing: IEC 60529 IP65[3] / IP67[1,2]
- Climatic, biological, chemical, mechanical substances, mechanical, EMC, electrical, fire, acoustic and earthquake conditions conform to GR-3108-CORE 6, ETSI EN300 019-1-3-5, 1-4-5
- Integrated PSU[1,2]:
  - 110/240 VAC,
  - -48 to -72VDC
  - PoE-powered device[1], 802.3at type 1
- External PSU[3] : 110/240 VAC
- Power consumption:
  - Minimum: 8.0W;
  - Nominal: 10.6W[1,3] / 87.4W[2];
  - Maximum: 12.9W[1,3] / 94.7W[2] (including power supplied to 2xPoE devices, 30W each)

(**) Excluding solar load for FSP 150-GO102Pro (Sm)
(***) Minimum operating temperature restricted to -40°C