ALBEDO Telecom

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GPD Cube is a dual GPON and XGS-PON protocol analyser that captures upstream and downstream bit-level data and interprets PLOAM and OMCI control information.

Datasheet

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GPD Cube – Autonomous PON Analyzer

GPD Cube allows operators to move the equipment instead of moving expert personnel.

Unlike traditional portable analysers, GPD Cube introduces a new operational paradigm by integrating processing, connectivity, and automation into a single autonomous platform. With embedded computing and native 5G connectivity, it enables remote troubleshooting, automated data collection, and cloud-based analysis without requiring on-site expert intervention or IT integration.

A non-specialized operator can deploy the unit, while engineers remotely access captures, control test scenarios, and perform advanced diagnostics. GPD Cube is designed for operators, laboratories, and vendors seeking efficient, scalable, and remote PON network analysis.

1. General

- GPON and XGS-PON protocol analysis
- Troubleshooting of interoperability issues
- Multi-vendor environment validation
- Network state visibility (OLT / ONTs)
- Detection and analysis of events and deviations
- User traffic extraction and monitoring
- Automatic calibration and adaptive synchronization

Autonomous Operation

- Capture
- Analysis
- Evaluation
- Reporting

2. Operation

2.1 Real Time Captures

- Inference of PON topology: ONU IDs, GEM ports
- Real-time detection of activity on GEM ports
- Capture and interpretation (C & I) of PLOAM messages
- C & I of OMCI messages
- C & I of Bandwidth Maps for ONT discovery
- C & I of Bandwidth Maps for bandwidth allocation on operation
- Real time capture mode
- Background capture mode
- Scheduled capture mode
- Messages color scheme
- Visualization and analysis of the capture
- Capture exportable to CBIN5 format (GPON)
- Capture exportable to CBIN6 format (XGSPON)
- Capture exportable to XML format
- Powerful filtering system

2.2 Analysis engine

PON characterization

- Topology
- PON parameters

ONU status

- ID, timing parameters
- Keys negotiated
- Operation status
- Alloc-IDs and GEM ports

Features

- List of discovered OMCI entities
- Interpretation of their attributes and values
- Generation of accurate E/R diagrams
- TU-T G.988 reference integrated
- Quick access to the entity's definition
- Compliance evaluation with ITU-T G.984, ITU-T G.988, ITU-T G.9807
- Reporting of violations of ITU-T G.984, ITU-T G.988, ITU-T G.9807
- Characterization of type and level of violations discovered
- Direct access to the messages of the entities
- Presentation of non-conformities
- Exportable analysis in HTML format

3. User traffic extraction

- Extraction of user traffic
- Up to six simultaneous GPON streams
- Virtual Ethernet interface over USB 3.0
- XGSPON user traffic through virtual Ethernet interface over USB 3.0

3.1 Bandwidth monitor

- Bandwidth used per port
- Bandwidth assigned per Alloc-ID
- Bandwidth utilized per ONU
- Real-time graphical visualization
- Exportable to CSV

3.2 Link integrity monitor

- Upstream FEC errors monitor
- Downstream FEC errors monitor
- Downstream HEC errors in SFC, OC, HLend, BWMap and XGEM header
- Upstream HEC errors in Fixed FS Header and XGEM header
- BIP errors
- Real-time graphical visualization
- Exportable to CSV

3.3 Automation

- Integrated CLI for remote operation
- Integration into automated certification
- Verification workflows
- Remote access via Telnet
- Configurable port

4. Remote Operation

GPD Cube is designed for remote and autonomous operation:

- Integrated 5G connectivity for direct cloud access
- Remote desktop access without VPN or firewall configuration
- Automatic capture upload without user intervention
- Remote CLI for automation and scripting
- Centralized analysis independent of physical location

This enables a "deploy and operate" model, where the equipment is deployed locally and operated remotely by expert teams.

5. Interfaces

- Embedded CPU – no external laptop required
- SFP GPON ONT SC/PC TX 1310 nm / RX 1490 nm B+ (2.5Gbps)
- SFP GPON OLT SC/UPC TX 1490 nm / RX1310 nm (1.25Gbps)
- SFP+ XGSPON ONT SC/UPC TX 1270 nm / RX1577 nm (9.953Gbps)
- SFP+ XGSPON OLT SC/UPC TX 1577 nm / RX1270 nm (9.953Gbps)
- 4x optical switch to remotely force uplink synchronization
- 4x power management switch to force resets on ONTs or other devices
- 5G connectivity with remote desktop access

6. Platform embedded

- Embedded INTEL-i7 architecture
- Windows 11 Operating System

Accessories included

- Extraction splitter
- Optical modules
- Attenuators 4, 8 and 15 dB
- SC/UPC-SCAPC patch cords

7. Ergonomics

- Carrying case (for lab version) and rugged case with accessories

Dimensions

- 260mm x 260mm x 300mm without SFP's
- 260mm x 260mm x 330mm with SFP's
- Weight

Weight

- <6 kg (lab version)
- <8 kg (rugged carrying embedded case)

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