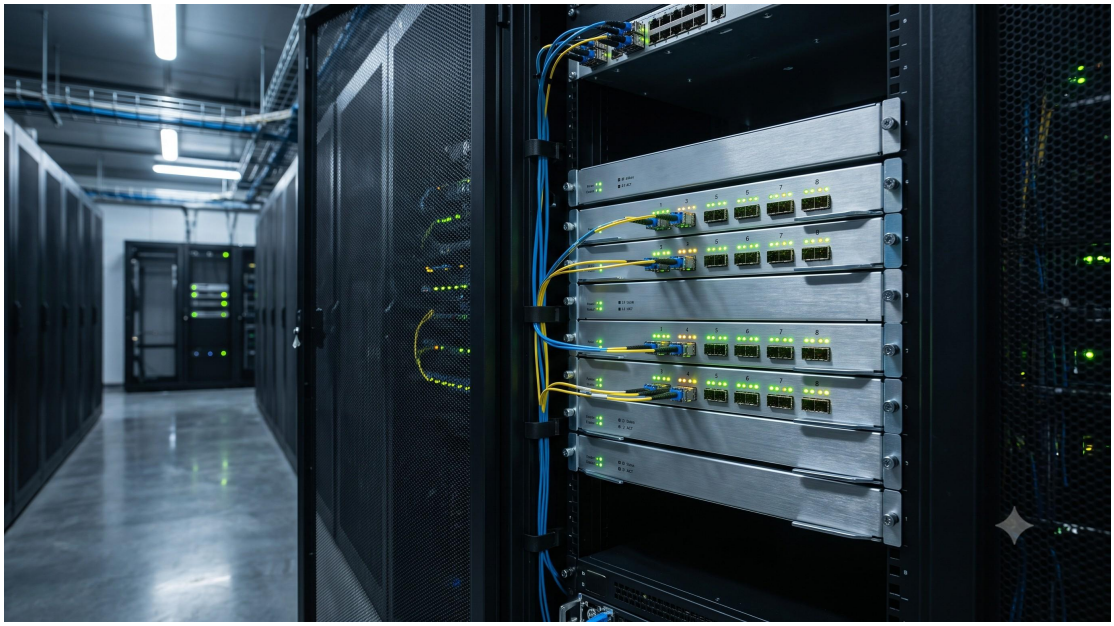
FiberHome GC8B 8-Port GPON Board Diagnostic Registers and Mechanical Layout - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The FiberHome GC8B is a high-density, carrier-grade 8-port GPON Optical Line Terminal (OLT) interface board designed for deployment within the FiberHome AN5516 series OLT chassis. This board serves as a critical component for fiber-to-the-home (FTTH) and fiber-to-the-building (FTTB) access networks, enabling service providers to deliver high-bandwidth triple-play services (data, voice, and IPTV) . The GC8B is engineered to provide robust, reliable, and scalable GPON access, supporting up to 1024 subscriber terminations per card when equipped with Class C+ or C++ optics . This document provides a comprehensive technical overview of the board's hardware architecture, diagnostic register interface, mechanical specifications, and key performance metrics.



HARDWARE ARCHITECTURE & SILICON

The GC8B board is built around a modular architecture that ensures efficient packet processing and service delivery. The primary functional modules include:

- **Management and Control Module:** This module is responsible for the overall control and management of the board. It handles software loading, operational control, and system-level management, allowing for remote and online software upgrades .
- **GPON MAC Module:** The core of the board's functionality, this module implements the full suite of GPON functions as defined by the ITU-T G.984.3 standard. It manages the GPON Transmission Convergence (TC) layer, including the Dynamic Bandwidth Allocation (DBA) and Forward Error Correction (FEC) .
- **Traffic Management (TM) Module:** This module performs advanced traffic

shaping and Quality of Service (QoS) processing. It supports Hierarchical QoS (H-QoS) with up to 1024 queues and 356 schedulers per PON port, ensuring strict Service Level Agreement (SLA) compliance .

- **Interface and Clock Modules:** The interface module converts GPON optical signals to Ethernet frames, while the clock module provides precise timing signals to all other functional blocks .

KEY FEATURES & ROUTING LOGIC

- **High-Density GPON Ports:** Provides 8 GPON interfaces per card, significantly increasing subscriber capacity within a single chassis .

- **High Split Ratios:** Supports a maximum split ratio of 1:128, enabling a single PON port to serve up to 128 end-users over a passive optical distribution network (ODN) .

- **Advanced QoS & DBA:** Features flexible QoS and real-time Dynamic Bandwidth Allocation (DBA) to guarantee latency-sensitive and high-throughput services .

- **Enhanced Diagnostics:** Supports local and remote loopback tests, comprehensive OAM features, and optical module diagnostics including monitoring of transmit/receive optical power, temperature, and bias current .

- **Redundancy and Protection:** Supports optical line protection switching and intra-card PON MAC chip-level protection, enhancing network resilience .

- **Automatic ONU Management:** Facilitates automatic discovery, detection, pre-authorization, and pre-configuration of Optical Network Units (ONUs), simplifying network deployment and maintenance .

COMPLIANCE & STANDARDS

The GC8B board is designed and tested to meet the following critical industry standards:

- **GPON Standards:** Fully compliant with ITU-T G.984 series standards, including G.984.2 for the physical media dependent (PMD) sub-layer and G.984.3 for the TC layer .
- **Optical Interface Standards:** Supports Class B+, C+, and C++ optical SFP modules, providing versatility for various network reach and power budget requirements .
- **Optical Connector:** Utilizes SC/PC connectors for compatibility with standard single-mode fiber (G.652) .
- **Quality of Service:** QoS and traffic management features are compliant with TR-156, ensuring interoperability and service assurance .

TECHNICAL SPECIFICATIONS

- **Form Factor:** Compatible with FiberHome AN5516-01, AN5516-04, AN5516-06, and AN5116-06B chassis .

- **Service Ports:** 8 x GPON interfaces.

- **Forwarding Mode:** Store-and-forward.

- **MAC Address Table:** 32k entries .

- **Maximum Split Ratio:** 1:128 .

- **Maximum ONT/ONU Support:** 1024 (with C+/C++ optics) / 512 (with B+ optics) .

- **Traffic Management:** H-QoS support, up to 1024 queues/PON port, 356 schedulers/PON port .

- **GPON Functions:** DBA, FEC, OAM, ONU auto-discovery and pre-configuration .

- **Diagnostics:** Optical module parameter monitoring (power, temperature, voltage, bias current) .

Parameter	**Specification**
GPON Port Count	8
Form Factor	Compatible with AN5516 series OLT chassis
Supported GPON SFP Classes	Class B+, C+, C++
Maximum Split Ratio	1:128
Maximum Subscribers per Card	1024 (with C+/C++ optics)

Power Consumption	≤ 60 W (typical 55 W)
Dimensions (HxWxD)	366 mm x 22.2 mm x 224.2 mm
Weight	1 kg
MTBF	146,606.07 hours (16.74 years)
Optical Connector Type	SC/PC
Fiber Type	G.652 single-mode fiber
Diagnostic Interface	RJ-45 debugging serial port

