



## **ISAM Unit Data Sheet**

**FGLT-B**

**3FE-68954-ABAA-TQZZA**

**Issue: 05**

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# 1 16 ports GPON Line Termination Board

## 1.1 Identification

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## 1.1 Identification

Table 1 provides identification of the FGLT-B:

**Table 1** Identification

Part number	Mnemonic	Description
3FE 68954 AB	FGLT-B	16 ports GPON Line Termination Board with Traffic Manager - version B

## 1.2 Introduction

This document describes the 16 ports Gigabit Passive Optical Network (GPON) Line Termination (LT) board with Traffic Manager (TM)- version B.



**Note** — See the *ISAM Glossary* document included in the documentation set of this release for expansion and elaboration of all acronyms and mnemonics used in this document.

## 1.3 Features and application notes

The FGLT-B:

- Is a line terminating unit for the Intelligent Services Access Manager (ISAM).
- Can be used in the 7302 ISAM, 7330 ISAM FTTN (ETSI) and 7360 ISAM FX subracks.
- Provides 16 GPON ports per board and supports:
  - an aggregate downstream rate of 40 Gbps (16 x 2.488 Gbps) and
  - an aggregate upstream rate of 20 Gbps (16 x 1.244 Gbps)
- Contains a Traffic Manager function that provides flexible scheduling and rate limiting on a per ONT, per UNI and per class of service basis for downstream PON traffic.
- Meets ANSI and ETSI/MII specifications.
- Can be used in Central Office (CO) and remote deployments in ISAM FD or FX equipment.



**Note** — Specific restrictions might apply for specific shelf types, fan types or SFP types.

See the relevant *Product Information* manuals (Table about LT Temperature Range Support) for more details.

- Supports Time of Day (ToD)
- Can be hot inserted or extracted.
- Is compliant to the regulations of Restriction of the use of certain Hazardous Substances (RoHS) and Waste Electrical and Electronic Equipment (WEEE).
- Is compliant to safety standards IEC / EN 60950-1 and AS/NZS 60950-1, provided that it is installed, maintained and used according the relevant installation instructions.

## 1.4 General description

The FGLT-B is a GPON line termination board. This board can be installed in a 7302 ISAM, 7330 ISAM FTTN (ETSI) or 7360 ISAM FX subrack.

The FGLT-B meets ETSI and MII requirements and can be used in CO and remote deployments.

The FGLT-B provides termination of 16 GPON ports (40 Gbps downstream and 20 Gbps upstream).

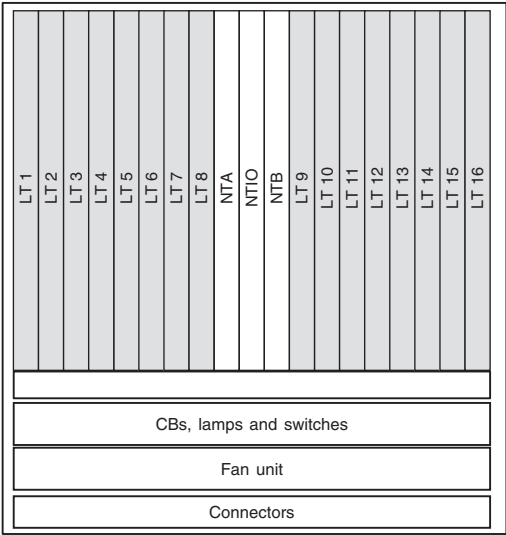
SFP (Small Form Factor Pluggable) GPON optical modules can be plugged in on the FGLT-B board. For an overview of the supported pluggable optical modules, see the *Product Information* manual of your system.

The FGLT-B generates GPON downstream signals synchronized to a timing reference from one of the two NT slots. All other clocks and synchronization signals are derived from on-board oscillators.

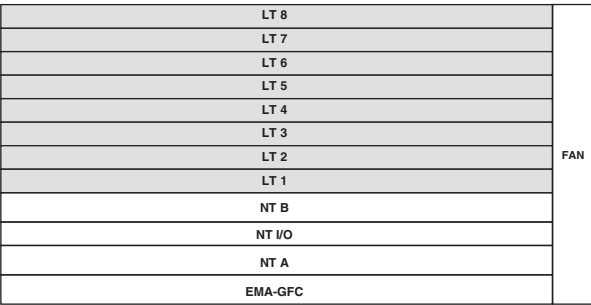
The following figures show the position of the FGLT-B in:

- a 7302 ISAM subrack; see Figure 1.
- a 7330 ISAM FTTN (ETSI) subrack; see Figure 2.
- a 7360 ISAM FX-16 subrack; see Figure 3.
- a 7360 ISAM FX-8 subrack; see Figure 4.
- a 7360 ISAM FX-4 subrack; see Figure 5.

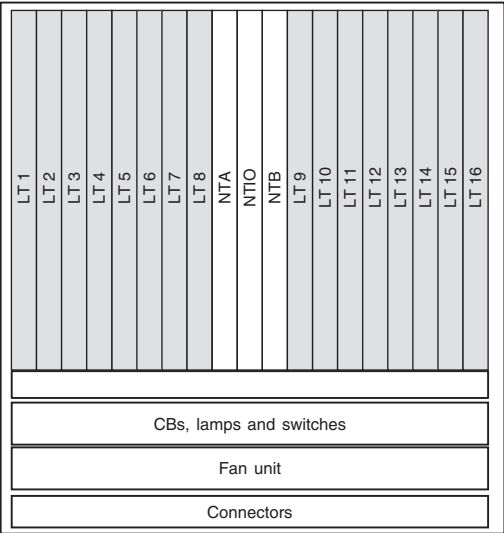
**Figure 1      Position in a 7302 ISAM Subrack**



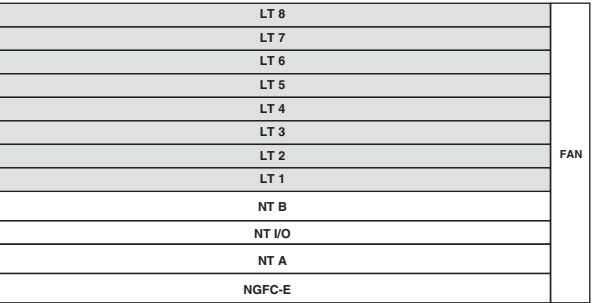
**Figure 2      Position in a 7330 ISAM FTTN Subrack**



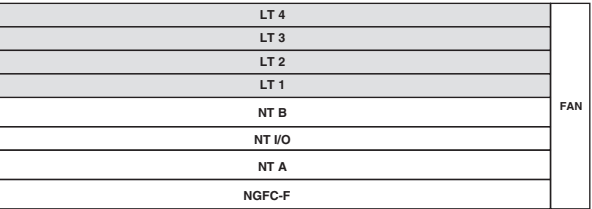
**Figure 3** Position in a 7360 ISAM FX-16 Subrack



**Figure 4** Position in a 7360 ISAM FX-8 Subrack

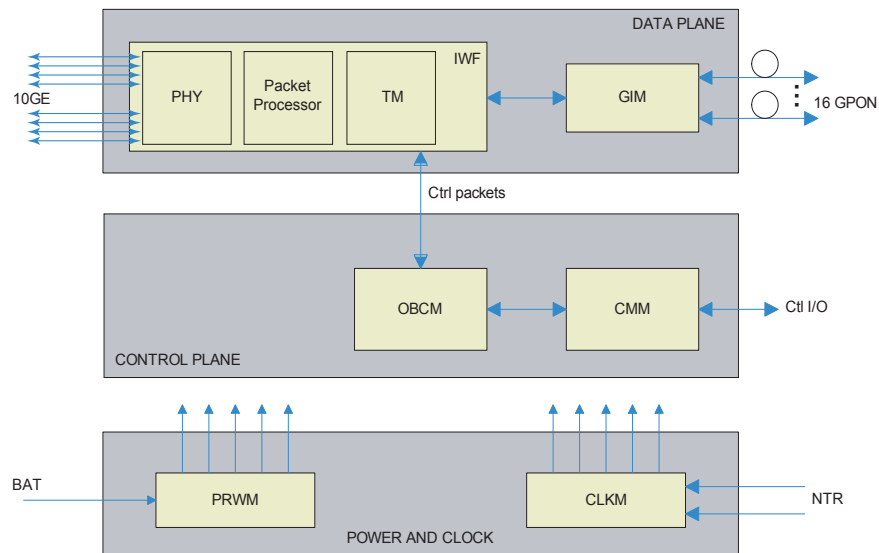


**Figure 5** Position in a 7360 ISAM FX-4 Subrack



# 1.5 Functional blocks

Figure 6 shows the functional blocks of the FGLT-B.

**Figure 6 Functional blocks**

The functions can be subdivided into the following major sections:

- The data plane is responsible for handling traffic between 16 GPON ports and up to four connections to/from the two NT boards (depending on the shelf and the NT board).
- The control plane, which is responsible for the management functions of the assembly.

The FGLT-B hardware architecture consists of the following functional blocks:

- **InterWorking Function (IWF):**
  - The PHY part of the IWF terminates the backplane interfaces. It supports four connections per NT at 10Gb/s rate. This allows to support connection rates between NT and LT of 10Gb/s, 20Gb/s or 40Gb/s depending on the NT/shelf board capabilities and the configured `max_lt_link_speed`.
  - The Packet Processor of the IWF performs packet parsing, classification, editing and forwarding. It inserts and extracts control and management traffic from the NT and PON/ONT for processing by the OBCM. It also collects statistics such as packet, byte, and error counts.
  - The Traffic Manager (TM) is responsible for queuing and scheduling of traffic.
- **GPON Interface Module (GIM):**  
The GPON provides GPON MAC/PHY functions and includes the optical interfaces.
- **On-Board Control Module (OBCM):**  
The OBCM acts as the general CPU for managing the components of the LT. The OBCM also processes control packets.

- Control and Management Module (CMM):  
The CMM contains various control, logic, and interface support functions for the OBCM. Examples include reset control, interrupt handling, device addressing, RSSI logic, and various board monitoring functions.
- PoWeR Module (PWRM):  
The PRWM converts and distributes power on the FGLT-B.
- Clock (CLKM) Module:  
The CLKM generates all system clocks required by the components and interfaces on the board using clock buffers, PLLs and oscillators.

## 1.6 External interfaces

The FGLT-B has the following external interfaces:

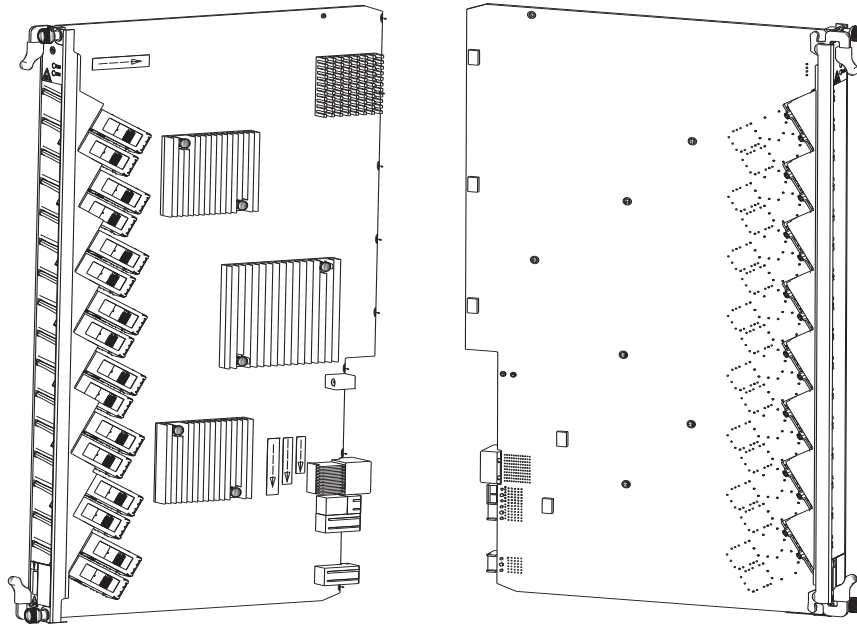
- GPON Interface:  
The FGLT-B downlink interface is a GPON optical interface which supports 2.488 Gbps downstream and 1.244 Gbps upstream.
- Backplane interfaces:  
The backplane interfaces consist of two groups of four SerDes interfaces; one group per NT. Each SerDes interface can auto-negotiate to 10GE. When running at 10GE it is possible to combine multiple interfaces into a Link Aggregation Group resulting in a backplane capacity of 10Gbps, 20Gbps or 40Gbps. Restrictions might apply depending on shelf type, NT redundancy status and configured max\_lt\_link\_speed.
- PSU Interface:  
Power Supply interface.

## 1.7 Physical description

### 1.7.1 View

Figure 7 shows a view of the FGLT-B.



**Figure 7 View of the FGLT-B**

### 1.7.2 Dimensions:

The dimensions of the FGLT-B are:

- height: 405 mm
- width: 225 mm (top) / 205 mm (bottom)
- board to board pitch: 25 mm

The weight of the board is 1.1 kg.

### 1.7.3 Status LEDS

Figure 8 shows the LEDS on the top of the front of the FGLT-B.

**Figure 8 LEDS on the FGLT-B**

Additionally there is one LED per PON port worked in into the side of the SFP socket of each port. Table 2 gives the LED states for all 18 LEDs.

**Table 2 LED states**

LED	Description	Display	Status
PWR	This LED indicates that normal power is being provided to the board.	OFF	Power off
		Blinking (Green)	Initialization Power on state
ALM	This LED indicates that the board has a local hardware failure present.	ON (Red)	Alarm is present on board
		OFF	No alarm is present on board
PON LED <sup>(1)</sup>	This LED indicates the state of the PON.	OFF	The PON is not active. It is safe to remove the fiber and the SFP module.
		ON (Yellow)	The PON is provisioned and one of the provisioned ONU ranges.
		ON (Green)	The PON is active without errors
		ON (Red)	The transmitter has failed or there is no communication to the SFP module

Notes

(1) These LEDs are located on the left of the corresponding PON interface

## 1.8 Power supply

The FGLT-B is compatible with -48 Vdc nominal and -60 Vdc nominal power supply systems.

*Note:* Country dependent tolerances exist regarding the nominal battery voltage values.

## 1.9 Hardware installation

For the hardware installation procedures, see the relevant *Hardware Installation Manual*.

# Customer document and product support



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