

# Gigabit Ethernet to STM-4 Converter

Model: BD-EOS-GE-STM4



## Overview

BD-EOS-GE-STM4 is the compact and high-performance Gigabit Ethernet to STM-4 converter with VLAN TAG function, which provides three gigabit Ethernet interfaces (2 copper and 1 fiber Ethernet interfaces) and 2 STM-4 interfaces. By adopting ITU-T G.7041 and G.7042-compliant EoSDH (Ethernet over SDH) technology, BD-EOS-GE-STM4 provides one VCG whose bandwidth can be flexibly configured from 1~8 VC4, under 2+0 mode (when the two STM-4 interfaces are independent), the 3 Gigabit Ethernet interfaces share up to 1112Mb/s (8 VC4).

With low power consumption, high integration and well stability, BD-EOS-GE-STM4 supports point-to-point application, it is a cost-competitive solution for the application such as network access, transparent LAN service and LAN extension.

## Features

- Standard 19 Inch Rack with 1U height
- Optical interface
  - Two STM-4 optical interfaces, LC type SFP module and hot-pluggable
  - The line bit rate is 622Mb/s, transmission distance is optional (depend on the SFP optical module)
  - SFP MSA(INF-8074i), ITU-T G.695, FC-PI V2.0 standards
  - Supports Automatic Laser Shutdown(ALS) to protect operators from hurt
  - Supports Remote Power down Detect (RPD) function
- Ethernet interface
  - One fiber Gigabit Ethernet interface and two copper Gigabit Ethernet interfaces compliant with IEEE802.3 serial standard
  - The copper gigabit Ethernet interfaces adopt RJ45 connector, support auto-negotiation, which can work in 1000M full-duplex, 100M full/half-duplex, 10M full/half-duplex mode
  - The fiber gigabit Ethernet interface adopts 1.25G SFP module, which can work in 1000M full-duplex mode, transmission distance is optional (depend on the SFP optical module)
  - Proprietary technique adopted to prevent Ethernet frames from looping back in case of unexpected transmission line loopback
  - Supports unicast, multicast and broadcast frame
  - Supports 802.3x flow control and back pressure flow control

- Supports broadcast storm filtering control.
- 4K MAC address table, with optional 12s / 300s ageing time configurable, the default is 300s
- Supports MAC address dynamic learning function
- Accepts frames with length between 64 and 1518/2000/9720 bytes (otherwise filtering)
- Supports port-based VLAN and IEEE802.1Q tag-based VLAN
- VLAN table can be 4K (from 1 to 4094)
- Supports QinQ(Double Tag VLAN)
- Supports Port Mirroring
- Supports Link Aggregation
- Supports QoS
- Supports port rate control
- Provides performance statistic for each Ethernet interface
- Timing mode
  - Tracing from internal timing source, complies with ITU-T G.813 standard
  - Tracing from STM-4 optical line timing source (T11, T12)
  - Timing sources can be switched over according to alarms, SSM values, frequency offset, and the preset priority of the sources, or can be switched over by force directly
- Path Protection
  - Supports 1+1 path protection and 2+0 non-protection mode
  - Supports 1+1 path protection with the recovering time less than 50ms
  - Supports automatic protection switch and manually protection switch
- Virtual concatenation
  - Supports 1~8 VC4 virtual concatenation
  - The maximum tolerated differential delay is 252ms
  - Provides both LCAS and Non-LCAS modes
- Compliant to ITU-T standards
  - GFP-F encapsulation , compatible with ITU-T G.7041 recommendation
  - Virtual concatenation (VCAT) and Link Capacity Adjustment Scheme (LCAS) recommendation G.7042
- NE Management
  - Provides serial management interface(CONSOLE) and Ethernet management interface (EMU) for CLI management
  - Supports SNMP\_V1 and SNMP\_V2 protocol.
  - Supports local and remote firmware online update without disturbing existing traffic
  - Supports in-band management for local and remote
  - Monitoring the alarms and status in real-time
- Redundant power supply
  - -48V DC single power access
  - -48V DC double power access
  - 220V AC single power access
  - 220V AC double power access
  - -48V DC+220V AC double power access

## Application

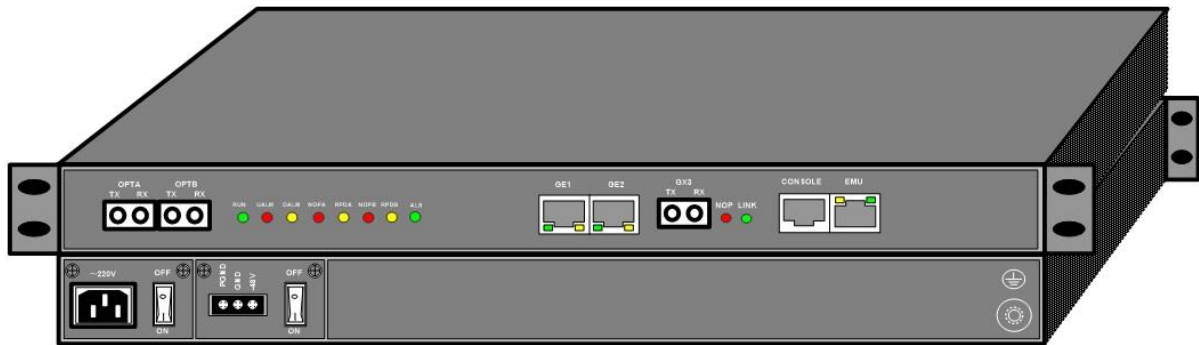
BD-EOS-GE-STM4 supports point-to-point application, supports in-band management for local and remote. As Figure 3-1 shows, both the remote management and Ethernet data are transmitted to local side over SDH network, by VLAN classifying, all the management information can be controlled by the NMS of local center. Note: each NE needs one IP.



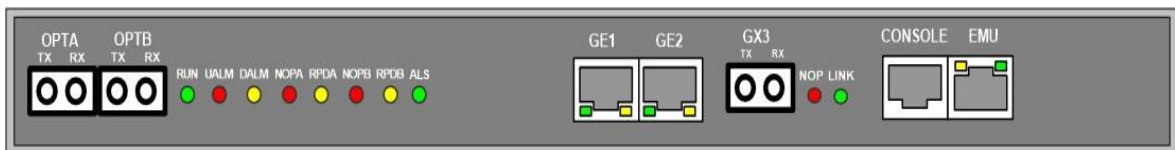
Point-to-point Application

## Equipment View

The BD-EOS-GE-STM4 equipment is of compact structure, with 19 inch and 1U height subrack. It provides two STM-4 optical interfaces, two GE port and one GX port, as well as one CONSOLE interface and one EMU interface in front panel. In rear panel, it provides 2 power input interfaces, the power access can be single 220VAC, single -48VDC, -48V DC +-48V DC double power, 220V AC +220V AC double power and 220V AC&-48V DC double power.



Equipment 3D View



Front Panel



Rear Panel

## Technical Specification

Parameters specified for STM-4 optical interfaces

Subject		Unit	Values			
Digital signal Nominal bit rate		kbit/s	STM-4 622080			
Application code		-	L-4.1	L-4.2		Single fiber
Operating wavelength range		nm	1300-1325 1296-1300	1480-1580	1480-1580	1310/1550 1550/1310
Distance (km)		Km	40	80	120	20
DDM		-	Available	Available	Available	Available
Type of interface		-	LC	LC	LC	LC
Fiber type		G.652	G.652	G.652	G.652	G.652
Transmitter at reference point S	Source type	MLM	SLM	SLM	SLM	MLM
	Spectral characteristics -maximum RMS width ( $\sigma$ )	nm	2.0/1.7	-	-	4/2.5
	Spectral characteristics -maximum 20 dB width	nm	-	<1	-	-
	Spectral characteristics -minimum side mode	dB	-	30	30	-
	Mean launched power– maximum	dBm	2	2	5	-8
	Mean launched power– minimum	dBm	-3	-3	0	-15
	Minimum extinction ratio	dB	10	10	10	8.2
Optical path between S and R	Attenuation range	dB	10-24	10-24	10-24	0-12
	Maximum dispersion	ps/nm	92/109	2400	NA	46/74
	Minimum optical return loss of cable plant at S, including any connectors	dB	20	24	24	NA
	Maximum discrete reflectance between S and R	dB	-25	-27	-25	NA
Receiver at reference point R	Minimum sensitivity	dBm	-28	-28	-31	-28
	Minimum overload	dBm	-8	-8	-8	-8
	Maximum optical path penalty	dB	1	1	1	1
	Maximum reflectance of receiver, measured at R	dB	-14	-27	NA	NA