

High Quality 4-Port T1/E1 over Diverse Packet Networks



Introduction

GDC's GenPORT 3000 series of T1/E1 multiplexers is a comprehensive range of highly-featured TDM over Ethernet/IP devices that deliver very high quality, completely transparent T1/E1 circuits across different types of packet networks. These networks are typically referred to as TDM over Ethernet, TDMoIP, CESoPSN or PWE3.

The GenPORT 3004 model provides a standard feature set in a robust four-port device that supplies clock-locked clear channel or structured E1/T1 circuits over Ethernet, IP or MPLS networks. It supports up to four E1/T1s and can be used in pairs. The GenPORT 3004 interworks with other GenPORT devices and is ideal in delivering stable and accurately clocked E1/T1 leased lines over packet networks.

Supported Interfaces

- Configurable 1-, 2- or 4-port TDM over Ethernet E1/T1 in any combination
- Configurable R-J45 120 Ohm or 75 Ohm via converter cable. Full E1/T1 or a fractional G.704
- 10/100/1GE UTP (Unshielded Twisted Pair RJ45) interface to the WAN
- Local 10/100/1GE UTP Ethernet port
- Optional SFP cage for interface to a fiber network with the appropriate SFP module
- Management via RJ-12 console port or across the packet network
- IEC connector to quality internal AC power supply. (DC power options available)

Features

- Highly-accurate and stable clock recovery processes
- Clock frequency stability performance can exceed standards for Traffic and Synchronization requirements
- On high quality networks clock recovery as close as 10ppb can be achieved
- "Tuneable" to different network types
- Robust, reliable and professional quality
- Excellent management, statistics and diagnostics
- Various clocking options for different network types and clock recovery requirements

Clocking

Clock recovery, accuracy and stability is key to TDM applications where clock recovery performance must be maintained when migrating to an unclocked TDM over Ethernet packet network solution. Many applications require very accurate synchronization (e.g., mobile backhaul). Other applications have multiple clock sources within the network, all of which require accurate alignment to ensure error-free and reliable services.

The GenPORT 3000 series of devices is optimized for use in high-quality networks and designed to meet and exceed AT&T TR-62411, T1.403, G.824 and G.823 standards for both Traffic requirements and the more demanding Synchronization requirements.

The GenPORT 3004 devices utilize clock recovery methods that employ three advanced algorithms, allowing users to "tune" performance to extract the best possible TDM over Ethernet service for any given network:

- for high quality managed networks with low jitter (PDV) and packet loss
- for networks with lower performance characteristics

Timing Specifications

Clock Recovery

Advanced algorithms tunable for different network characteristics as standard. Capable of meeting and exceeding AT&T TR-62411, T1.403, G.824 and G.823 standards for Traffic and Synchronization requirements (subject to network performance).

Oscillator Performance*

Hold-over 24hrs 0.5ppm
Aging per day 20ppb
Temperature Stability 0.600ppm

Figures based on typical parts and performances. Individual oscillators may vary slightly either way.

Temperature Stability range -5 deg C. to +70 deg C. assumes 20 minutes from power on. Aging and holdover at constant temperature

Interfaces

TDM port (E1)

Four user-switchable (E1/T1) ports
RJ45 connector
Presents as DCE (crossed cable for DTE)
120 Ohm or 75 Ohm user-selectable via converter cable
G.703 unstructured
G.704 channelized
ITU G.706
Selectable CRC4/non-CRC4
HDB3
Transparent to user signaling

TDM port (T1)

4 user switchable (T1/E1)
RJ45 connector
Presents as DCE (crossed cable for DTE)
100 Ohm
Unframed 1.544Mbps
Framed 1.536Mbps (robbed-bit)
ESF or D4 selectable
B8ZS or AMI selectable
Transparent to user signaling

Ethernet Interfaces

2 x RJ45 UTP
10/100/1GE
Auto-sensing or manual
Optional SFP cage (module not supplied) for various fiber modes
1 network and 1 or 2 user ports
(2nd port using SFP)

Local Management (Terminal) Port

RJ12
Asynchronous
Auto-sensing to 115kbps
Also remote access via packet network
Dry contact alarm relay pins 4, 5, 6



Rear Panel

Operational Specifications

IP & MAC Address

Single MAC address, IP address, subnet mask and default gateway
Support for DHCP

Configuration

Held in non-volatile memory

Real-time Clock

For time-stamping Events and Alarms

Power Specifications

AC Power:
Internal via IEC connector
Auto-sensing 96VAC-240VAC
Max consumption 0.2Amps RMS @230VAC
MTBF 400,000hrs

DC Power:

1. Nominal -48VDC
4mm terminal block
-33VDC to -75VDC
0.35A max
MTBF 1,790,000hrs
2. Nominal -24VDC
4mm terminal block
-18VDC to -75VDC
0.55A max
MTBF 800,000hrs

Dimensions & Environment

Metal chassis and front/rear panels
Width: 225mm; Depth: 200mm; Height: 44mm
Weight: 0.9Kg (2lb)

Optional 19" 1RU rack-mount kit; 1 unit or 2 units side-by-side

Operating Temperature -20 deg. C. to +55 deg C.
Humidity 10-90% non-condensing

Maintenance

There are no serviceable parts or maintenance required.
Real-time battery-backed clock life in excess of 7 years.

Approvals

EMC
EN55022:1988
EN55014:1988
EN61000-3-2/3:1995
AS/NZ CISPR22:2000
FCC Part 15(B)
RoSH Compliant without the use of exceptions

Safety

EC EN60950-1:2002
ACA TS001:1997
ACS/NZ60950:2000
AS/NZS3260:1993
IEC950
P. Telecomms (optional)
TBR12/TBR13
TBR4/TBR3
TIA/E1A-1S/968
TNA117
AS-ACIF S006/S016