# TDMoEA INTERFACE CARD FOR QX3440 SERIES

## Features

- Hot pluggable interface card for QX3440 series
- Four Ethernet ports for WAN or LAN connection
  - Two combo Gigabit Ethernet (GbE) with 2 RJ45 and 2 SFP housing
  - Two 10/100/1000 BaseT Ethernet
  - IEEE 802.3ad Ethernet Link Aggregation

- Support MEF-8, CESoPSN and SAToP encapsulation format for TDM circuit emulation
  - Up to 4 x 2 M TDM bandwidth
  - Support N x DS0 circuit emulation
  - Up to 64 pseudowires per card
  - Packet Delay Variation compensation depth up to 256 ms
  - Support VLAN tag adding and removing on Pseudowires
  - User configurable ToS for each Pseudowire

- L2 switching
  - Maximum 16 VLAN Groups
  - Support 802.1q Port-Based VLAN on Ethernet Port
  - Support Q-in-Q
  - Support 802.1D STP, 802.1s MSTP*, 802.1w RSTP
  - Jumbo Frame reaches up to 10K bytes
  - Support 802.1d MAC learning

- QoS
  - Ingress Rate Limiting per Ethernet port with 64kbps/1Mbps/10Mbps granularity
  - Ethernet Network Level:
    - 3-bit Priority Code Point – PCP field within 802.1P/802.1Q Ethernet frame – CoS
    - 4 priority queues per port
  - IP Network Level:
    - 6-bit DiffServ Code Point -DSCP field – ToS
    - Scheduling Algorithm
    - Strict Priority (SP)
    - Weighted Round Robin (WRR)
- Timing
  - QX3440 system clock (Internal, external, line interfaces)
  - Adaptive Clock Recovery (ACR) for TDM Pseudowires
  - SyncE

- Protection
  - Support protection between two TDMoEA cards for E1/T1 port pseudowire protection
  - Support protection between E1/T1 pseudowires on TDMoEA and E1/T1 ports on QE1/QT1 cards
  - Support Heart Beating Protection

- Jitter & Wander
  - PPM per G.823 Traffic
- Port transmission delay measurement
- RoHS compliant

# Description

The TDMoEA plug-in card is designed for the QX3440 series. This card is used to transport TDM (time division multiplexed) traffic over the IP network in addition to normal Ethernet traffic. As the communications network migrates from TDM to IP, the TDMoEA card provides a flexible and cost effective choice for the transport of legacy TDM signals. Furthermore, the TDMoEA card of the QX3440 can work with CIP TDMoE product family and with TDMoEA card of HX9500R.

# TDMoEA for QX3440 Series Product Specifications

### *SFP Optical Module Characteristics (Please refer to SFP optical module brochure for details)*

### *Combo Gigabit Ethernet (GbE) Interface*

| | |
|---|---|
| Number of Ports | 2 |
| Speed | 10/100/1000M bps |
| Connector | RJ45 for twisted pair GbE, LC for optical GbE, auto detection |

### *Gigabit Ethernet (GbE) Interface*

| | |
|---|---|
| Number of Port | 2 |
| Speed | 10/100/1000 BaseT |
| Connector | RJ45 |

### *Ethernet Function*

| | |
|---|---|
| Basic Features | MDI/MDIX for 10/100/1000M BaseT auto-sensing |
| | Ping function contained ARP |
| Packet Transparency | Packet transparency support for all types of packet types including IEEE 802.1q VLAN and 802.1ad (Q-in-Q) |
| QoS | User configurable 802.1p CoS, ToS in out going IP frame |
| Traffic Control | Ingress packet Rate limiting buckets per port for Ethernet port |
| | Supporting Rate-based and Priority-based rate limiting for LAN port |
| | Granularity: |
| |     a. From 64 Kbps to 1 Mbps in increments of 64 Kbps |
| |     b. From 1 Mbps to 100 Mbps in increments of 1 Mbps |
| |     c. From 100 Mbps to 1000 Mbps in increments of 10Mbps |
| | |
| | Pause frame issued when the traffic exceeding the limited rate before packet dropped following IEEE802.3X |
| Link Aggregation | WAN supports Link Aggregation |

### *Jitter & Wander*
PPM: per G.823 Traffic

### *Standards Compliance*

| IEEE | | | IETF | |
|---|---|---|---|---|
| 802.1d | MAC Table Learning and STP | | RFC2236 | IGMP Snooping v2* |
| 802.1p | Priority Code Point | | | |
| 802.1q | VLAN | | RFC2495 | E1/T1 OAM |
| 802.1s | MSTP* | | | |
| 802.1w | RSTP | | RFC 4553 | SAToP |
| 802.1ad | Tag Stacking (Q-in-Q) | | RFC 5086 | CESoPSN |
| 802.3ad | Link Aggregation | | | |
| | | | ITU | |
| MEF | | | G.823/G.824 | Traffic Interface |
| 8 | CESoETH | | | |

### *Certifications*

| | |
|---|---|
| EMC | EN55022 Class A, EN50024, FCC Part 15 Subpart B Class A |
| Safety | EN60950-1(CE) |

<span style="color:red">* Future option</span>

# Ordering Information

| Model (RoHS compliant) | Description | Notes |
|---|---|---|
| QX3440-TDMoEA | TDMoEA card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module<br>Support G.823 Traffic<br>SFP optical module is not included. | |