



TDMoE Card for Loop-AM3440 series

Features:

- Hot pluggable interface card for AM3440-A/B/C series
- Four Ethernet Ports for WAN or LAN port assignment
 - Bandwidth up to 4 x 2 M and support N x 64K bps
 - Two combo Gigabit Ethernet(GbE) with 2 RJ45 and 2 SFP housing
 - Two 10/100/1000 BaseT Ethernet
- VLAN support:
 - Jumbo Frame reach up to 10K bytes
 - Max. 255 VLAN of 4094
 - Q-in-Q
 - User configurable CoS
 - User configurable ToS in outgoing IP frame
- MAC learning (max. MAC table 8192 (8k) entry)
- Max. 340ms Packet Delay Variation
- L2 switch protocol: RSTP, STP, VLAN, QoS
- Jitter & Wander
 - PPM: per G.823 Traffic
 - PPB: per G.823 Synchronous
- Link Aggregation
- IETF TDMoIP (RFC5087), SAToP (RFC4553), and CESoPSN (RFC5086) complied
- RoHS Compliant



Description:

Loop Telecom's TDMoE plug-in card is designed for the Loop-AM3440-A/B/C. TDMoE card is used to transport TDM traffic over IP network, in addition to Ethernet traffic. As the communications network migrates from TDM to IP, the TDMoE card provides a flexible and cost effective choice for the transport of legacy TDM signals.

It provides four Ethernet ports with no limitation for WAN or LAN port assignment. The TDMoE card supports point-to-point and point-to-multi-point voice and data applications.

For transport of TDM signals E1, T1, Jitter and Wander adheres to G.823 Traffic and G.823 Synchronous.

Ordering Information

To specify options, choose from the list below:

Note: RoHS compliant units are identified by the letter **G** appearing immediately at the end of the ordering code.

Model (RoHS compliant)	Description	Note
Loop-AM3440-TDMoE-PPM- G	TDMoE card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Traffic	For AM3440-CHA, AM3440-CHB and AM3440-CHC only
Loop-AM3440-TDMoE-PPB- G*	TDMoE card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Synchronization	For AM3440-CHA, AM3440-CHB and AM3440-CHC only

*Future Option

Accessories

User's Manual

Loop-AM3440-TDMoE-UM	User's Manual (paper copy). Note: A CD version of the manual is already included as standard package.
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SFP Optical Modules

Please place your order by using 5 letters in the SFP optical module table below.

SFP Optical/Electrical Module Plug-in Tables

1.25G (mini GBIC) Dual Fiber Commercial (0 to 70°C)	MTAFW	Multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, 550m, LC connector w/o DDM, 1000Base-SX	<ul style="list-style-type: none"> Use 2 fibers for all SFP optical modules All 1.25G optical modules downgrading to 622Mbps data rate will be workable
	MTAFD	Single-mode optical module with dual uni-directional fiber, 1.25G, 850nm, 550m, LC connector with DDM, 1000Base-SX	
	MTBTD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 2Km, LC connector with DDM, 1000Base-SX+	
	MTBTW	Multi-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 2Km, LC connector w/o DDM, 1000Base-SX+	
	PTB2W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 20Km, LC connector w/o DDM, 1000Base-LX	
	PTB4W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 40Km, LC connector w/o DDM, 1000Base-LHX	
	PTC5W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 50Km, LC connector w/o DDM, 1000Base-XD	
	PTC6W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 60Km, LC connector w/o DDM, 1000Base-XD	
	PTC8W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 80Km, LC connector w/o DDM, 1000Base-ZX	
	PTC9W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 90Km, LC connector w/o DDM, 1000Base-ZY	
	PTCVW	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 110Km, LC connector w/o DDM, 1000Base-APD	
	PTCXW	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 120Km, LC connector w/o DDM, 1000Base-APD	
	PTB1D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 10Km, LC connector with DDM, 1000Base-LX	
	PTB3D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 30Km, LC connector with DDM, 1000Base-LHX	
	PTB4D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 40Km, LC connector with DDM, 1000Base-LHX	
	PTC5D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 50Km, LC connector with DDM, 1000Base-XD	
	PTC6D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 60Km, LC connector with DDM, 1000Base-XD	
	PTC8D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 80Km, LC connector with DDM, 1000Base-ZX	
	PTC9D	Single-mode optical module, with dual unidirectional fiber, 1.25G, 1550nm, 90Km, LC connector with DDM	

	PTCVD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 110Km, LC connector with DDM, 1000Base-APD	
	PTCXD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 120Km, LC connector with DDM, DDM1000Base-APD	
622M-1.25G (mini GBIC) Dual Fiber Commercial (0 to 70°C)	PKB1W	Single-mode optical module with dual uni-directional fiber, 622Mbps~1.25G, 1310nm, 10Km, LC connector w/o DDM, 1000Base-LX	

1.25G (mini GBIC) Bi-directional Single Fiber Commercial (0 to 70°C)	PTD1W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 10Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD1W to use with PTE1W ▪ Use 1 fiber
	PTE1W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 10Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE1W to use with PTD1W ▪ Use 1 fiber
	PTD2W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 20Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD2W to use with PTE2W ▪ Use 1 fiber
	PTE2W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 20Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE2W to use with PTD2W ▪ Use 1 fiber
	PTD4W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 40Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD4W to use with PTE4W ▪ Use 1 fiber
	PTE4W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 40Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE4W to use with PTD4W ▪ Use 1 fiber
	PTD6W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 60Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD6W to use with PTE6W ▪ Use 1 fiber
	PTE6W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 60Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE6W to use with PTD6W ▪ Use 1 fiber
	PTD1D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 10Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD1D to use with PTE1D ▪ Use 1 fiber
	PTE1D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 10Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE1D to use with PTD1D ▪ Use 1 fiber
	PTD2D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 20Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD2D to use with PTE2D ▪ Use 1 fiber

	PTE2D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 20Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1550 nm from slave to master Order PTE2D to use with PTD2D Use 1 fiber
	PTD4D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 40Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1310 nm from master to slave Order PTD4D to use with PTE4D Use 1 fiber
	PTE4D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 40Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1550 nm from slave to master Order PTE4D to use with PTD4D Use 1 fiber
	PTD6D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 60Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1310 nm from master to slave Order PTD6D to use with PTE6D Use 1 fiber
	PTE6D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 60Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1550 nm from slave to master Order PTE6D to use with PTD6D Use 1 fiber
	PTD8D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 80Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1310 nm from master to slave Order PTD8D to use with PTE8D Use 1 fiber
	PTE8D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 80Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> 1550 nm from slave to master Order PTE8D to use with PTD8D Use 1 fiber

TDMoE for Loop-AM3440 Series Product Specifications

Optical SFP Module Characteristic for Gigabit Ethernet(GbE)

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
MTAFW	dual uni-directional fiber	1.25G	850	LC without M	550 m
MTAFD	dual uni-directional fiber	1.25G	850	LC with DDM	550 M
MTBTD	dual uni-directional fiber	1.25G	1310	LC with DDM	2 km
MTBTW	dual uni-directional fiber	1.25G	1310	LC without DDM	2 km
PTB2W	dual uni-directional fiber	1.25G	1310	LC without DDM	20 km
PTB4W	dual uni-directional fiber	1.25G	1310	LC without DDM	40 km
PTC5W	dual uni-directional fiber	1.25G	1550	LC without DDM	50 km
PTC6W	dual uni-directional fiber	1.25G	1550	LC without DDM	60 km
PTC8W	dual uni-directional fiber	1.25G	1550	LC without DDM	80 km
PTC9W	dual uni-directional fiber	1.25G	1550	LC without DDM	90 km
PTCVW	dual uni-directional fiber	1.25G	1550	LC without DDM	110 km
PTCXW	dual uni-directional fiber	1.25G	1550	LC without DDM	120 km
PTB1D	dual uni-directional fiber	1.25G	1310	LC with DDM	10 km
PTB3D	dual uni-directional fiber	1.25G	1310	LC with DDM	30 km
PTB4D	dual uni-directional fiber	1.25G	1310	LC with DDM	40 km
PTC5D	dual uni-directional fiber	1.25G	1550	LC with DDM	50 km
PTC6D	dual uni-directional fiber	1.25G	1550	LC with DDM	60 km
PTC8D	dual uni-directional fiber	1.25G	1550	LC with DDM	80 km
PTC9D	dual uni-directional fiber	1.25G	1550	LC with DDM	90 km
PTCVD	dual uni-directional fiber	1.25G	1550	LC with DDM	110 km
PTCXD	dual uni-directional fiber	1.25G	1550	LC with DDM	120 km
PKB1W	dual uni-directional fiber	622Mbps~1.25G	1310	LC with DDM	10 km

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
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PTD1W	Single bi-directional fiber	1.25G	1310nm	LC without DDM	10 Km
PTE1W	Single bi-directional fiber	1.25G	1550nm	LC without DDM	10 Km
PTD2W	Single bi-directional fiber	1.25G	1310nm	LC without DDM	20 Km
PTE2W	Single bi-directional fiber	1.25G	1550nm	LC without DDM	20 Km
PTD4W	Single bi-directional fiber	1.25G	1310nm	LC without DDM	40 Km
PTE4W	Single bi-directional fiber	1.25G	1550nm	LC without DDM	40 Km
PTD6W	Single bi-directional fiber	1.25G	1310nm	LC without DDM	60 Km
PTE6W	Single bi-directional fiber	1.25G	1310nm	LC without DDM	60 Km
PTD1D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	10 Km
PTE1D	Single bi-directional fiber	1.25G	1550nm	LC with DDM	10 Km
PTD2D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	20 Km
PTE2D	Single bi-directional fiber	1.25G	1550nm	LC with DDM	20 Km
PTD4D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	40 Km
PTE4D	Single bi-directional fiber	1.25G	1550nm	LC with DDM	40 Km
PTD6D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	60 Km
PTE6D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	60 Km
PTD8D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	80 Km
PTE8D	Single bi-directional fiber	1.25G	1310nm	LC with DDM	80 Km

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
Per port, programmable MAC hardware address learn limiting (max. MAC table 8192 (8k) entry)
Packet Delay Variation:
- Unframed T1: Up to 340 ms
- Framed T1: Up to 256 ms
- E1: up to 256 ms
- Framed T1 with CAS: Up to 192 ms

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
PPB: per G.823 Synchronous*

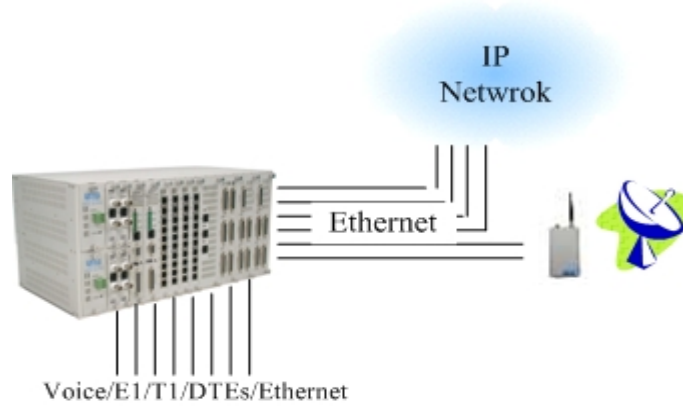
Standard Compliance

IETF TDMoIP (RFC5087), SAToP (RFC4553), CESoPSN (RFC5086)
IEEE 802.1q, 802.1p, 802.1d, 802.3, 802.3u, 802.3x, 802.3z, 802.1s, 802.1w, 802.1AX

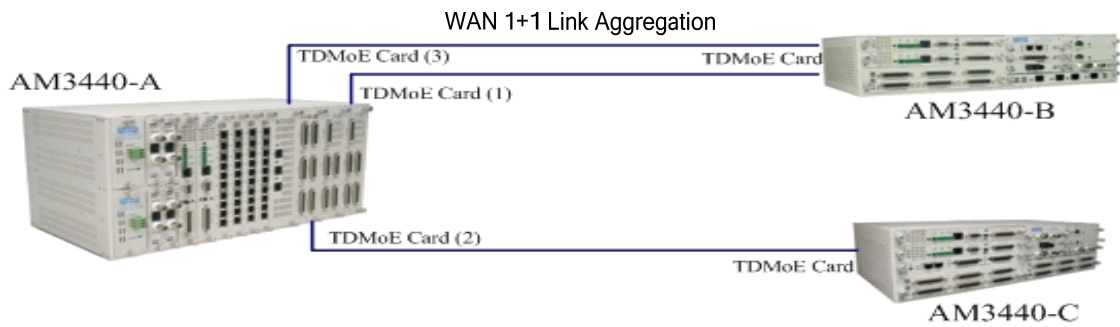
*Future Option

Application Illustrations

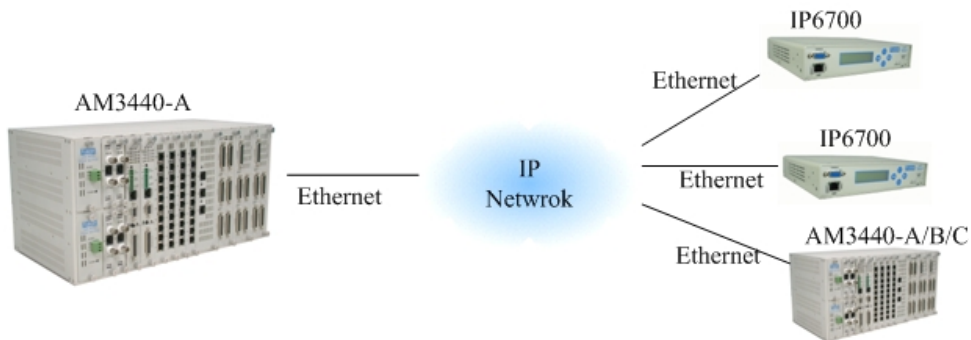
TDMoE plug-in card in AM3440 series is to transport TDM traffic (voice signals/E1/ T1/ DTEs/ Ethernet) into IP Traffic.



Point to Point Application



Point to Multi-Point Application



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