# XM-SW16E1-4TTX

## INVERSE MULTIPLEXER 16E1. CONCENTRATOR OF 16 E1 EoPDH

### Features

Support 1 to 16 E1 G703/G704

**Functions EoPDH:**
Point-to-Point inverse mux
Ring inverse mux*
16 E1 EoPDH switch of
1, 2 , 4 or 8E1
E-Tree, E-LAN and EPV-LAN switch

**Layer transport on E1:**
HDLC for 1 to xE1
PPP-BCP RFC3585 for 1 E1
GFP-F for x E1 comply with IUT-I
G.7041, G.7042, G.7043

**Ethernet side:**
4 x10/100Baset
Switch layer 2  with 10Gb fabric
Tagging  per port 802.1p or 802.1q
Double Tagging. Q-in-Q
2KBytes frames transparent transport soon 10KB
30 WANs with maximum 4 per E1

**Protection:**
Ring protection proprietary adapted to E1 1s maxi*
STP/RSTP, MSTP *

**Management:**
Over consol port or an Ethernet port
In band over a VLAN
By CLI command, https, SSH, SNMP V1, V2c
Management of distant device over VLAN and E1

**Models**
1 U  - 19''
Dual AC/DC 230vac/48vdc
120ohms version w 16RJ45
75ohms version w 32 BNC

## Point-to-Point or Multipoint/Ring EoPDH

The **XM-SW16E1-4TTX is an Ethernet inverse multiplexer provides connectivity from 10/100BaseT LAN to LAN over multiple E1 links up to 16.**

**XM-SW16E1-4TTX can be used with jumps of multiple E1 in ring to distribute Ethernet with a fast protection based on E1 events. This jumps of parallel E1's are generally microwave radio or  G.SHDSL in parallel.**

**The XM-SW16E1-24TTX is also a switch of EoPDH, a solution to concentrate Ethernet links of single E1, in HDLC or PPP or GFP/VCAT, or 4/8 E1, in HDLC or GFP/VCAT with LCAS protocol. This configuration is particularly used to deploy Ethernet distribution networks, with Q-in-Q services, for Telco's or large organization witch own of TDM/E1 infrastructure.**

## Point-to-Point Inverse Multiplexer EoPDH

The **XM-SW16E1-4TTX** as a **point to point inverse multiplexer** use the HDLC encapsulation for Ethernet transmission over E1 TDM links in parallel. The new software will use the GFP with VCAT encapsulation modes and the LCAS protocol really performing bounding with automatic E1 channel failure detection and re-assigning the number of E1 channels for transport of Ethernet traffic. The system is full compliant with the ITU-T G.7041, G.7042, G.7043 and G.8040 standards.

The **XM-SW16E1-4TTX** use system accept a dalais of 220ms between E1 and can use E1 of SDH network or of Microwave Radio. The delay due to the bounding mode is very low,

**XM-SW16E1-4TTX** support DB9S console port, Ethernet SNMP port which allows users to manage the local or distant device in CLI command or in SNMP.

# Ring of Inverse Multiplexers EoPDH
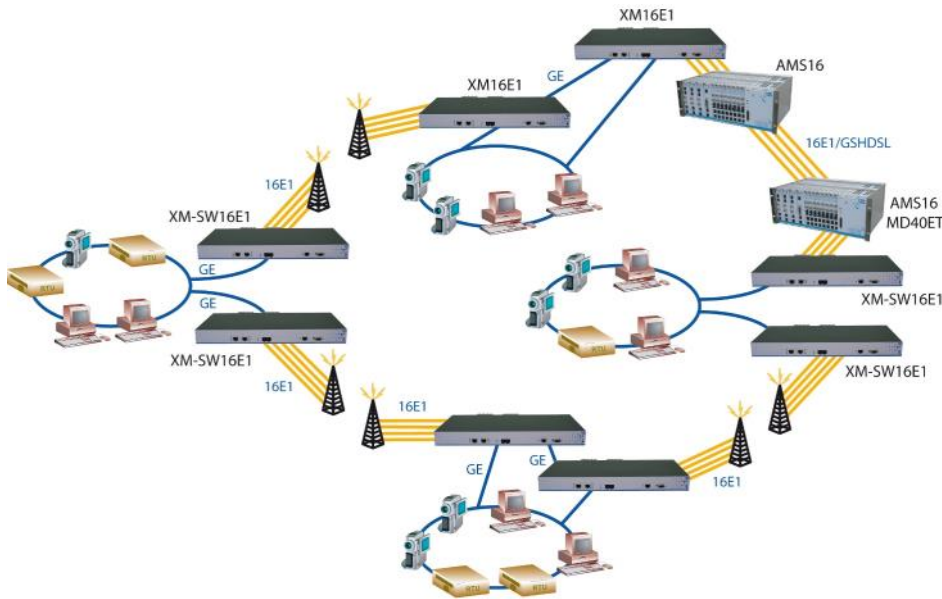


The **XM-SW16E1-4TTX** is particularly interesting to deploy a Ethernet ring over E1 microwave radio, DSL coppers. Typically the transport domain must deploy secure Ethernet infrastructure over existing E1 infrastructure.

The **XM-SW16E1-4TTX** is supporting a ring protection proprietary adapted to the E1 evens with a recovery delay of less than 5s.It support also IEEE Spanning Tree Protocol.

The system working in HDLC or GPP/ VCAT with LCAS is managing the loss or recovery of E1 links without interruption of service.

# Gigabit Ethernet Switch of 16 E1 EoPDH
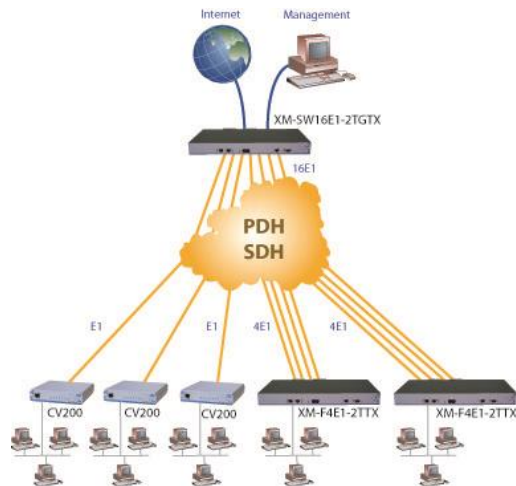


The **XM-SW16E1-4TTX** is a switch of E1 carrying Ethernet over TDM EoPDH.

This application mainly used by Telco or large organization with E1 infrastructure to support an Ethernet network of transport.

The **XM-SW16E1-4TTX** support the concentration up to 16 **CV200-TTX** working in HDLC or BCP-PPP, or 4 inverses multiplexers **XM-F4E1-2TTX** or 2 **XM-F8E1-2TTX** in GFP/VCAT.

This switch can concentrate a mix of E1 links from **CV200-TTX** in HDLC or PPP-BCP and 4/8 E1 links connected to **XM-F4E1-2TTX/ XM-F8E1-2TTX** in GFP.

All of these equipments are supporting the 802.1q simple or double VLAN tagging or Q-in-Q. For strategic raison the tagging can be done in the CPE side or in the CO side **XM-SW16E1-4TTX.**

The **XM-SW16E1-4TTX** is a Layer 2 switch with warranties of access security between E1 links. The management of all devices CPE+CO can be integrate in one GE uplink port within the same C-VLAN or S-VLAN to simplified the administration of the equipment's.

# Product specification

**Line Interfaces:**

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|---|---|
| Line Rate | 16 E1 at 2.048 Mbps ± 50 ppm |
| Electric | 75 ohm or 120 ohm twisted pair |
| Connector | RJ48C (120 ohms) version **XM-SW16E1-4TTX-R** |
| | BNC (75 ohms) version **XM-SW16E1-4TTX-B** |
| Output signal | ITU G.703 |
| Line Code | HDB3 |
| Input Signal | ITU G.703 |
| Jitter | ITU G.823 |

**Diagnostics Test:**

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|---|---|
| Loopbacks | Line Loopback, Payload Loopback, and Local Loopback |
| Remote Loopbacks | Line Loopback, and Payload Loopback |

**Ethernet over PDH:**

| | |
|---|---|
| Inverse multiplexer | HDLC Protocol G704 or GFP/VCAT with or without LCAS |
| Concentrator E1 | HDLC Protocol over single E1 G703/G704 or PPP-BCP RFC3516 |
| Concentrator n E1 | HDLC Protocol single E1 G704 only, GFP/VCAT w or w/o LCAS |
| Delays between E1 | 220ms maximum |
| Bounding | Selection of maximum 16 VC Virtual Channel of 0,1 or 4 E1, and 8 E1 |
| Switch of EoPDH | E-Tree, E-LAN and EPV-LAN between E1 ports and GE ports |
| | Support up to 4 WAN per ports and 30 WAN per chassis |

**Ethernet:**

| | |
|---|---|
| Interfaces | 4 x 10/100Baset,  IEEE802.3ab standard |
| Connector | 4 RJ45 |
| Switch | Layer 2 Switch layer 2  with 10Gb fabric |
| VLAN | 802.1p and q, tagging/untagging simple and double, Q-in-Q |
| Maximum frame | 2000 bytes |
| Broadcast | filtering |
| Ring protection | Propriety ring protection based on E1 events with recovery time < 2s*, Spanning Tree Protocol. |
| IGMP | Support IGMP snooping V1 and V2. |

**Management :**

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|---|---|
| Connector | DB9 and  SNMP using one of the Ethernet up-link |
| Protocol | CLI, https, SSH V2 and embedded SNMP V1,V2c |

**Physical:**

| | |
|---|---|
| Dimensions | 1U, 19" ETSI Chassis |
| | 432 x 44 x 300 mm (WxHxD) |
| Power | Dual AC/DC        AC:100-240Vac, 50/60 Hz |
| | DC: 48Vdc, 0.355A |
| | Consumption 17 watts |
| Temperature | 0 -50°C |
| Humidity | 0-95% RH (NON-CONDENSING) |
| Mounting | Desk-top stackable, wall mount |

# Ordering Information

**XM-SW16E1-4TTX-B**

Inverse multiplexer 16E1 G703 75ohms BNC, switch 16 E1 HDLC/BCP-PPP/GFP,  4 ports 10/100BaseT, 19" 1U, dual AC/DC power supplies.

**XM-SW16E1-4TTX-R**

Inverse multiplexer 16E1 G703 120ohms RJ45, switch 16 E1 HDLC/BCP-PPP/GFP,  4 ports 10/100BaseT,  19" 1U, dual AC/DC power supplies.

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