CIP-2E1T1

E1/T1 TRANSPORT OVER IP OR ETHERNET

Feature

Transport of full E1/T1 or n x TS links encapsulated in TDM Pseudowire over IP or Ethernet

- **CIP-2E1T1-RJ-C or V**
  2 E1 120ohms or T1 RJ45
- **CIP-2E1T1-MC or MV**
  2 E1 120ohms and 75ohms and T1, RJ45 and BNC
- Eternet: 2 x 10/100Baset port and 1 100FX SFP port
- Selection of Ethernet port: 1 WAN + 2 LAN or en 2 WAN (copper) + 1 LAN

Encapsulation

- Use standard and compatible protocols:
- **CESoPSN** (RFC5086) for framed circuits G704
- **SAToP** (RFC4553) for unframed circuits
- **AAL1** of **TDMoIP** (RFC5087) for framed and unframed circuits G703 and G704
- Support 64 bundles of 64kbps to 2Mbps matching up to 64 directions
- Transport of CAS signalization in the bundle *.
- Standard versions carry TDM traffic

Transport de flux TDM encapsule en TDM over Eth or IP, CESoPSN or SAToP

The CIP-2E1T1 is able to carry E1/T1 or the different group of TS groomed from an E1/T1 over TDM « Pseudowire Emulation End to End » over IP or Ethernet networks named « Packet Pseudowire Network ». This transport carry the service of the full or fractional E1/T1 to interconnect devices like PBX without change compared to the TDM transport. The CIP-2E1 is use in infrastructure to interconnect PBX, TDM equipments over Ethernet network but also by Telco to provide E1/T1 to voice equipment in customer premise and providing together the synchronization of the PBX over IP backhaul.
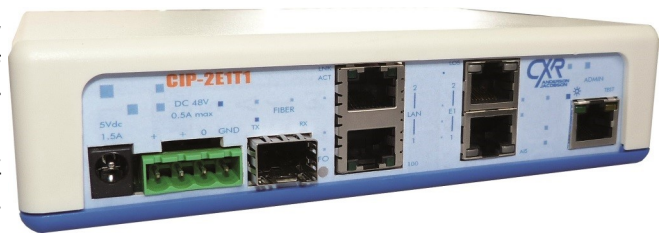
The *CIP-2E1T1* carries E1/T1 or FE1/FT1 in point to point and point to multipoint. The TDM Pseudowire define the service of the circuit, the Bundle specify the address of both end device and the size of the pipe, the type of E1 and the protection of bundle.

In order to establish a point to point circuit between two CIP-2E1 we will set up a bundle of n TS 64kbps from 1 to 31 or maximum a full E1/T1 2Mbps/1,5Mbps. In case of point to multipoint from one E1 to several E1, the CIP-2E1 will groom or cross-connect all TS or group of TS from the central E1 to the different distant E1s. A CIP-2E1 support 2 E1 or 62 TS in TDM side and up to 64 bundles in the IP/Ethernet side. The number of TS can be setup independently per bundle. The CIP-2E1 can manage maximum the access to 62 different sites or less with protected bundle. This function avoids to use a cross-connect in the central site.

The *CIP-2E1T1* use the normalized encapsulation protocols: the CESoPSN based on the encapsulation of x E1/T1 frame of 125µs in IP frame according to the RFC5086 carries only G704 framed circuits, the SAToP according to the RFC4553 transports unframed E1/T1 only, and AAL1 ATM based TDMoIP according to the RFC5087 can carry framed and unframed circuit.

Then the *CIP-2E1* transport without modification or compression the clear channel E1, the G704 channelized data circuit, the voice circuit E1-PRI, E1 –R2, E1-CAS or 2G circuits A-bis or A-Ter or 3G ATM circuits.

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In case of E1-CAS the CIP-2E1 is grooming the TS and together the CAS signalization to the different distant sites then a central site connected to a FXO channel bank will communicate we the FXS locate in small FXS channel bank in the distant sites including all signalization and ringing functions.

The Ethernet switch of the *CIP-2E1T1* support the tagging/un-tagging of C-VLAN and S-VLAN /Q-in-Q and the QoS on the TDM Pseudowires with IP-TOS to manage over the WAN the mix of encapsulated traffic and LAN traffic.

The *CIP-2E1T1* owns three Fast Ethernet interfaces with copper and one SFP fiber ports. They can be setup as one WAN copper or fiber and two LAN. Or they can be set up with 2 WAN copper and one LAN fiber.

The bundle can be protected by another bundle using another Ethernet pass but also by the physical protection 1+1 of the 2 WAN.
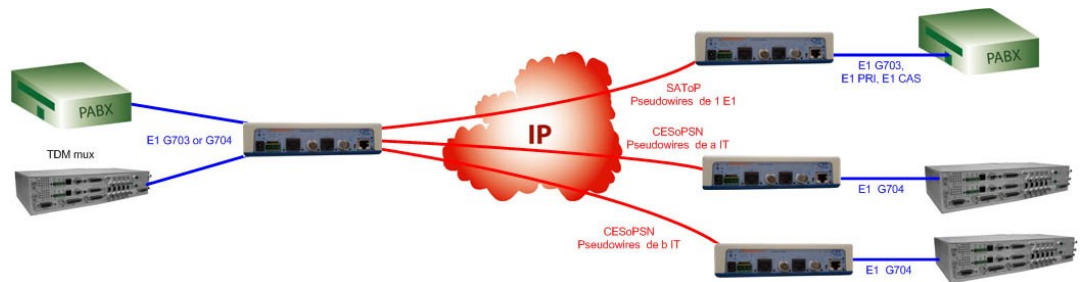
Layer 2 Switch

- VLAN 802.1q,
  16 C-VLAN and Q-in-Q
- QoS for encapsulated link
  and LAN, use TOS tag .

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Management

- Html
- CLI in Telnet or SSH
- SNMP

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Other

- AC or DC versions

CESoPSN/SAToP/AAL1 range

All model of the CXR CESoPSN/SAToP/AAL1 range: *CIP-2E1*, the multiplexer cross-connect QX3440 with *QX3440-TDMoE* card, the *IMX-M16E1T1* concentrator of 16 E1 and the *IMX-MSTMx concentrator* of 32 E1 or 4 STM1/STM4 are compatible together and with equipment from other vendor supporting the same protocols.
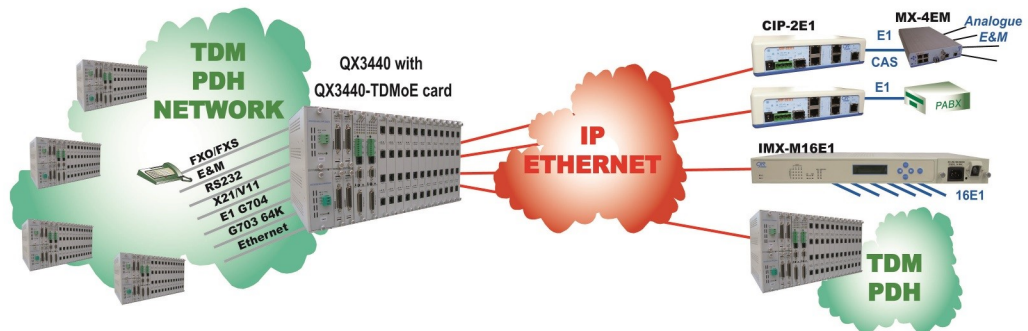
Specifications

E1/T1 interfaces- G703—G704
- 2 interfaces selectable in E1 or T1

E1: G703 , 2.048 Mbps, +/- 50 ppm
- Unframed or framed G704 32 x 64kbps
- Coding HDB3
- Impedance : 75 and 120Ohms, 2 models with 2 RJ45 or 2 RJ45 and 4 BNC

T1: G703 , 1,544 Mbps, +/- 50 ppm
- Unframed or framed G704 24x 64kbps
- Coding : B8ZS or AMI
- Impedance 100Ohms RJ45 F

Ethernet Interfaces
- 2 copper ports 10/100BaseT and one 100FX fiber w SFP. Utilization:
- 1 WAN copper or fiber and 2 LAN or
- 2 WAN copper and 1 LAN fiber

10/100 BaseT Ethernet Interfaces
- 2 x 10/100 BaseT
- Auto rate 10/100 Mbps
- Auto MDI/MDIX
- According to IEEE 802.3 with RJ45
- Statistics: I/E frames counter . Interface diag.

100FX optical Ethernet interfaces
- SFP slot for SFP-100FX/STM1
- Statistics: I/E frames counter . Interface diag.
- CXR SFP modules: dual fiber, single fiber WDM multi-mode or single mode from 2 km to 200 km

Ethernet Switch
- VLAN per port and VLAN 802.1Q
- QoS : priority queuing over VLAN and DSCP, 4 files par Ethernet interface.
- Mac address memory : 1 K
- Frame buffer: 64 KB
- Rate limiting per Ethernet port

Others
- Dimensions DxLxH: 170x120x41mm
- **C/V**: Plastic box : 0.4 kg
- **MC/MV**: Metal box : 0.7 kg
- Working temperature: -10 to+55°C
- CE (EN60950, EN55022, EN55024)
- MTBF : 180.000 hours
- Double power input DC 36-72V or 1 external AC power (adaptor 5VDC/110-230VAC,50-60Hz)

Encapsulation or Pseudowire
- The bundle is defined by the both end addresses and the bandwidth of n 64kbps to 2Mbps.
- The largest bundle include a full E1 or T1.
- Framed G704 circuits will include a group of n TS with n = 1 to 30.
- The encapsulation can be run in: SAT over Packet for unframed G703 CES over PSN for framed G704:
- AAL1 (TDM over IP) for G704 and G703:

Selection:
- Encapsulation over Ethernet or over IP
- CES over packet : rfc 5086
- SAT over packet : rfc 4553
- ALL1 (TDM over IP): rfc 5087
- Support of 1 to 64 bundles including protected bundle.
- Setup of smaller TDM packet size to encapsulate from 125 µS
- Buffer size: minimum 1 mS

Circuit Protection
- Span protection 1+1 with two WAN
- Bundle protection

Administration
- LED : Link/act and 100 Mbps over Ethernet, optical signal over SFP, AIS and LOS over E1, working and test
- Protocols TCP-IP : Telnet, http, ssh, https, and ftp for software upgrade and administration of the configuration
- html menu in French and English
- CLI in Telnet/SSH/ console port
- SNMP v1/v2, with graphic MIB for SNMP-C
- Diagnostics and statistic of transmission over each interface
- Syslog and journal of event
- Alarm relay or output relay controlled by SNMP

Ordering Information

CIP-2E1T1-RJ-C 2 E1 120ohms/T1 RJ45 converter, plastic box, 36-72VDC power supply
CIP-2E1T1-RJ-V 2 E1 120ohms/T1 RJ45 converter, plastic box, AC external power supply
CIP-2E1T1-MC   2 E1/T1 RJ45 and BNC converter, metal box, 36-72VDC power supply
CIP-2E1T1-MV 2 E1/T1 RJ45 and BNC converter, metal box, AC external power supply

Accessories
RACK-2-UNIVERSAL + RACK-2-SHORTSTOP Rackmount kit 19inch, 1U, for 2 CIP devices metal box.
DIN-CPE   Din rail kit mount.