

HX9170-1U

Characteristics

- SDH STM-1 ADM and TM with PDH voice and Data Interface.
- Compact 1U height ETSI Standalone, wall mount, and rack mount

Aggregate port

- 2 SFP optical housing
- MSP 1+1 and SNCP protection

On-board tributaries on fixed slot

- 8-port E1 ports with 1 DB37* or 6 E1 ports with RJ48 connectors
- 4 ports 10/100 (FE) Ethernet for E-Line

On-board tributary on TG3 slot (manufacture option)

- 4-port RS232 and 4-port FXS
- 4-port RS485 and 4-port FXS
- 4-port RS232 and 4-port RS485
- 8-port FXS*
- 8-port FXO*

Optional modules on TG4 slots (manufacture option)

- 4-port E&M
- 4-port RS232 and 4-port RS485
- 8-port FXS*
- 8-port FXO*
- 8-port RS232*
- 8-port RS485*

Optional modules on TG5 slots (manufacture option)

- 4-port E&M
- 8-port FXS*
- 8-port FXO*
- 8-port RS232*
- 8-port RS485*
- 4-port E1*

(* Future Option)

DS0 cross-connect fabric with TG3, TG4, TG5 modules and SNMP

Networking protection

- MSP (1+1) and SNCP protection
- Support External/Internal/Line/E1 clock

Supports VCAT, GFP, and LCAS for Ethernet

Performance monitoring

Alarm suppression, masking, and reporting

Management:

- Console port
- SNMP port
- Centralized management with CXRview GUI EMS over DCC channel

Power Modules

- Dual Hot swappable DC power - 48 Vdc



SMALL SDH NODE WITH VOICE, DATA INTERFACE



The HX9170-1U is an economical, cost-effective SDH STM-1 Multiplexer with 2 interfaces to support ADM and TM modes. This hybrid device combine the tributaries with E1 TDM, Ethernet interfaces, analogue voice and low rate data asynchronous interfaces.

The HX9170-1U is a SDH STM-1 multiplexer platform for Telco business but also for infrastructure of Utilities, Transportation or Defense to carry traditional telecom businesses and application service like Audio, NTU/RTU communication, SCADA, industrial process, video information... over Metropolitan Area Network or Private Networks.

The HX9170-1U provides two optical aggregate lines STM-1 with MSP(1+1) bus protection and SNCP protection for ring and linear network topologies.

The Ethernet traffic is carry through STM-1 uplink with n VC12 and support VCAT, GFP, modes and LCAS protocols.

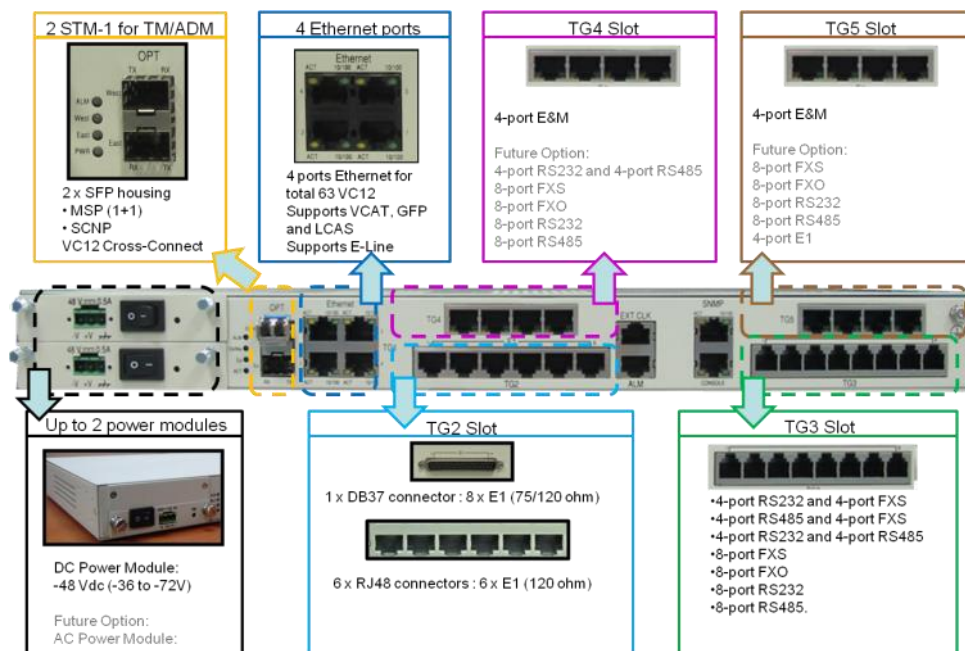
The HX9170-1U distribute locally in addition to E1 and Ethernet interfaces the following PDH interface:

- Voice 4 or 8 FXO and FXS
- Voice 4 E&M 2 wires or 4 wires
- 4 or 8 DTE asynchronous RS232 or RS485

This is a factory modular system. This means that all requested interfaces are mounted in factory. They cannot removed or added by the user it-self.

All interfaces are fully compliant with CXR CV, QX and HX PDH/SDH ranges and conform to the ITU recommendations.

The HX9170-1U provides fault management, performance monitoring, configuration management, and network security management. Through console port, LAN port and DCC channel, in SNMP or by menu-driven interfaces. The HX9170 supports the CXRview GUI EMS.



HX9170-1U PRODUCT SPECIFICATIONS

Aggregate Lines

Two slot for SFP-STM1-xx are locate on the front of equipment.

The both interfaces support:

The TM Terminal Multiplexing mode with 1+1 protection

The ADM Add and Drop Multiplexing mode with SNCP-SDH protection

Standard SFP MM Multimode or SM Single Mode with 2 core fiber, or WDM with single core fiber or CWDM SFP are supported.

E1 Interface

Number of E1	DB37 connector: 8 E1/per port RJ48C connector: 6 E1		
Line Rate	2.048 M bps \pm 50 ppm	Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703
Line Code	HDB3	Jitter	ITU G.823
Input Code	ITU G.703	Framing	unframed
Output Code	ITU G.703	Impedance	75 ohm coax/120 ohm twisted pair
Connector	1. DB37 (75ohm) male with conversion connector 2. DB37 (120ohm) male 3. RJ48C		

Fast Ethernet (FE) Interface

Number of Port	4		
Line Rate	10/100M bps	Mapping	n x VC12
Process Protocol	VCAT, GFP(G.7041), and LCAS (G.7042)	Connector	RJ45
Standard	IEEE 802.3x (flow control)		

RS232/RS485 Interface

Number of Port	4 or 8		
ASYNCR Data Rate	200,300, 600, 1200, 2400, 4800, 9600, 19.2K		
SYNC	not supported		
Connector	RJ11	Interface	DCE only

FXS/FXO Voice Interface

FXS/FXO Connector	4 or 8 RJ11		
Encoding	A-law or m-law, user selectable together for all		
AC Impedance	Balanced 600ohms		
Longitudinal Conversion Loss	> 46dB		
Cross talk measure	Max -70dBm0		
Gain Adjustment	0 dB step transmit & receive		
Signal/ Distortion	> 25dB with 1004 Hz, 0dBm input		
Frequency Response	- 0.25 to -1 dB from 300 to 3400 Hz, coincide with ITU-T G.712		
Idle Channel Noise	Max. -65 dBm0p		
FXO	Ringin REN	0.5B (AC)	
	Detectable Ringing	25 Vrms	
	Loop Resistance	≤ 1800 W	
	DC Impedance (ON-HOOK)	> 1M W	
	DC Impedance (OFF-HOOK)	235 W @ 25mA feed 90 W @ 100mA feed	
FXS Loop Feed	-48Vdc or -24Vdc with 25mA current limit per port Jumper Selectable: 25mA(default=25mA), 30mA, or 35mA(sn=S1)		
FXS Signalling	Normal / PLAR: Private Line Auto Ring down		
FXS Ringing	1 REN at 5K meters per port		
	16.7Hz, 20Hz, 25Hz, 50Hz, user selectable for all ports		
	2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR ON		
FXS Tone	Alarm Tone: 480Hz/620Hz/-24dBm Ring Back Tone: 440Hz/480Hz/-19dBm		
FXS functions	Basic functions: PLAR Optional functions: PLAR ON/PLAR bit programmable.		
Signaling Bit A,B,C,D	Programable bit		

All in-band signaling tones are carried transparently by the digitizing process.

Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch.



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E&M Interface

Connector	4 RJ45
Encoding	A-law or m-law, user selectable together for all
Impedance	Balanced 600 ohms
Gain Adjustment (Per-port setting)	0dB step for transmit (D/A) gain 0dB step for receive (A/D) gain
I/O Power Range	A/D Analog input level: -66 dBm (0.00039 Vrms) ~ + 3 dBm (1.09 Vrms) D/A Analog output level: -66 dBm (0.00039 Vrms) ~ + 4 dBm (1.22 Vrms)
Frequency Response	± 0.5 dB at 0 dBm0 input
Longitudinal Conversion Loss	> 46dB
Total Distortion	> 35 dB at 0 dBm0 input
Idle Noise	< -65 dBm0p
Carrier Connection	Side A (exchange side) and Side B (carrier side) setup by side switch
Idle Channel Noise	Max. -65 dBm0p
Wire Mode	2 wire and 4 wire
Signaling	Type 1, Type 2, Type 3, Type 4, and Type 5, Transmit only
Modems	Full compatibility with V.90 modems
All in-band signaling tones are carried transparently by the digitizing process.	
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System Clock

Clock Source	Internal Cock
	Two Line Clocks: East STM1 line, West STM1 line
	Dedicated External clock and tributary line

Management

LEDs	Multi-color LEDs
Console Port	Electrical: RS232 Connector: RJ45 (female, DCE) Protocol: Menu driven VT-100
Telnet	
SNMP	SNMPv1 (RFC1213)
Outband Interface	Using DCC channel, user selectable 3, 9 or 12 channels

Diagnostics System

Loopback Test	Direction: to optical lines, to tributary lines
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Unit E1

Loopback Test	Direction: to optical lines, to tributary lines
BERT Test	E1 interface Direction: to optical lines, to tributary lines

Unit Ethernet

Lane Loopback Test	Direction: to optical lines
Wan Loopback Test	Direction: to optical lines, to tributary lines
Wan-to-Wan Loopback Test	Direction: to tributary lines

Unit RS232/RS485

Loopback Test	Direction: to TSI, to DTE
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Performance Monitor

Performance Reports	Performance Parameters: Error Block (EB), Background Block Error (BBE), Error Second (ES), Burst Error Second (BES), Severe Error Second (SES), Unavailable Second (UAS)			
Alarm History	System Alarm	Power Loss, TS Sync Loss, SNCP Switch, MSP Switch, Login/Logout, FOM Equip/Unequip		
	SDH Line Alarm	SDH Line	PI-LOS, RS-LOF, RS-TIM, RS-BIP UAS, MS-SD, MS-SF, MS-AIS, MS-RDI, MS-BIP UAS, MS-REI UAS, AU-LOP, AU-AIS, HP-TIM, HP-UNEQ, HP-PLM, HP-RDI-S, HP-RDI-C, HP-RDI-P, HP-BIP UAS, HP-REI UAS, LOM	
		Ho-Path	TU-LOP, TU-AIS, LP-UNEQ	
Alarm Queue	Contains up to 300 alarm records of latest alarm types, alarm severity, date and time.			

Power

DC Power	-48 Vdc (-36 to -72Vdc)
Power Consumption	Maximum 50 Watts

Physical

Dimensions	480 x 44 x 220 mm. (W x H x D)
Temperature	0 to 50 °C
Humidity	0-95%RH (non-condensing)
Mounting	Desk-top, 19-inch rack mountable, and wall mountable

Standards Compliance

ITU	G.664, G.707, G.7041, G.7042, G.775, G.783, G.806, G.823, G.747, X.86
ANSI	T1.105, T1.107
IEEE	802.1q (VLAN), 802.1w (RSTP), 802.1s (MSTP), 802.3x (flow control)
IETF	RFC2236 (IGMP Snooping), RFC1213 (SNMPv1)

Certification

EMC	EN55022 Class A, EN55024
Safety	EN60950-1

MODELS

HX9170-1U-4FE-6E1	SDH STM1 ADM & PDH multiplexer 2 STM1 with SFP slots (w/o SFP), 1U 19", with 6 E1/120ohms RJ45, 4 x10/100BaseT E-Line. Factories option for TG3, TG4 and TG6. Slots for 2 power supplies.
HX9170-1U-4FE-8E1DB	SDH STM1 ADM & PDH multiplexer 2 STM1 with SFP slots (w/o SFP), 1U 19", with 8E1/75ohms DB37, 4 x10/100BaseT E-Line. Factories option for TG3, TG4 and TG6. Slots for 2 power supplies.
HX9170-4FXS-4RS232	Factory option card for TG3: 4 FXS and 4 RS232
HX9170-4FXS-4RS485	Factory option card for TG3: 4 FXS and 4 RS485
HX9170-4RS232-4RS485	Factory option card for TG3 or TG4: 4 RS232 and 4 RS485
HX9170-Q2EM	Factory option card for TG4 or TG5: 4 E&M 2wires
HX9170-Q4EM	Factory option card for TG4 or TG5: 4 E&M 4wires
HX9170-8FXO	Factory option card for TG3, TG4 or TG5: 8 FXO
HX9170-SA	AC 100/240V power supply for HX9150, maximum A
HX9170-48	AC 100/240V power supply for HX9150, maximum 2
CA-DB37-8E175-16BNC	Cable DB37 to 16 BNC for 8 E1/75ohms



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