

Features

- ❑ Installable in a standard 19" rack
- ❑ E1 network interface with 2 or 4 E1 lines
- ❑ 15 channel units for customer applications
- ❑ Versatile user services including:
 - 2W / 4W E&M
 - Loop termination
 - FXO/FXS
 - ISDN BRITE
 - IDSL (128 Kbps baseband transmission)
 - G.703 64Kbps co-directional
 - V.35/ V.36 N x 64 Kbps
 - V.24 subrate
 - MSDSL
 - LAN extension
- ❑ Timeslot interchange (TSI) functionality
- ❑ Arbitrary timeslot assignment from tributary signals to E1 lines
- ❑ Cross connection between tributary signals and between E1 lines
- ❑ Firmware downloading
- ❑ Configuration data storage in non-volatile memory
- ❑ Ethernet interface for centralized control
- ❑ 1+1 protection switch for E1 lines
- ❑ Timing source: Loop, external, and internal
- ❑ Test unit for analog and digital tests
- ❑ Power unit redundancy to guarantee system reliability
- ❑ GUI management software
- ❑ SNMP management
- ❑ Remote management over in-band E1 timeslot
- ❑ Remote control with Comtrend's CT-128 Multiple-Rate NTU, CT-50 Subrate NTU and CT-210 MSDSL NTU



Description

The FM-60 is a flexible transmission system, which provides voice and data applications by time division multiplexing and demultiplexing on 2.048 Mbps E1 signals. Timeslot interchange (TSI) technique is applied to provide timeslot assignment and timeslot interchange capability, so that any 64 Kbps or Nx64 Kbps user-signal can be assigned and cross-connected to any E1 timeslot (s).

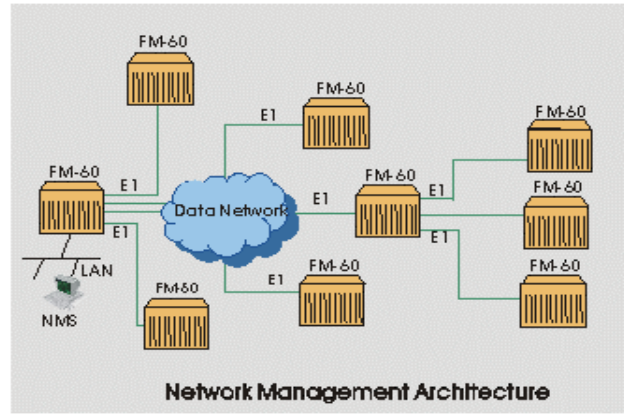
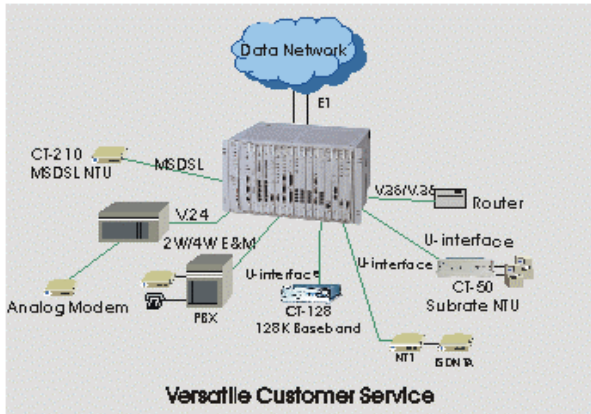
The FM-60 has a compact design. It is equipped with nineteen slots for various units. Four of them are for common units, and the remaining fifteen slots are for channel units, which provide versatile user services. All the channel units are hot - swappable, and different types of channel units can be placed in the FM-60 simultaneously, in any combination.

The FM-60 features powerful diagnostic capabilities. Several types of loopbacks can be activated for the units. In addition, by installing the optional test unit (ETMU) on the shelf, the FM-60 provides versatile testing functions, such as measuring the analog tone of analog channel units, and performing BER testing, for digital channel units.

Utilizing a built-in SNMP agent, the FM-60 supports network management for operation, administration, maintenance, and provision. It can be managed through Comtrend's user-friendly GUI management software. The FM-60 is equipped with two RS-232 ports, and one Ethernet port for management. Moreover, the FM-60 has remote management capability, which allows it to be managed over an in-band E1 timeslot. With the assistance of the static routing function, management messages can be routed from one FM-60 to another FM-60 over an E1 line, so that the remote management capability can be greatly extended.

The network management system of the FM-60 can remotely control comtrend's CT-128 Multiple-Rate NTU, and CT-50 Subrate NTU and CT-210 MSDSL NTU.

Applications Diagram



Specifications

Common Units	
ELIU/ELIU2 - E1 Line Interface unit	
Port number	ELIU: 4 ports ELIU2: 2 ports
Line type	120 symmetrical, 75 coaxial
Line Code	HDB3
Frame	Basic frame, CRC multi-frame, TS16 multi-frame
EMCU - A- Maintenance and control unit	
Number of HDLC controller	2
Static routing function	Yes
Maintenance function	See "Other Specifications" below
ENRS - Network routing server	
Number of HDLC controller	32
Static routing function	Yes
ETMU - Test and monitor unit	
Analog test items	Signal measurement, idle noise, S/N ratio
Digital test pattern	Mark, space, 1:1,2 ⁹ -1,2 ¹¹ -1,2 ¹⁵ -1
Digital test result	Error seconds, error bits, bit error ratio
Test period	Timed continuous
EPSU - Power supply unit	
Input power	See "Other Specifications" below
Redundancy	Yes
Channel Units	
EE&M - 2W/4W E&M unit	
Port number	4
Interface	2-wire 600 , 2-wire 900 , 4-wire 600
Encoding	A-law
Signaling	E&M
EEMA - 2W/4W E&M unit	
Port number	4
Interface	2-wire 600 , 2-wire 900 , 4-wire 600
Encoding	A-law
Signaling	E&M
Analog circuit test support	Yes (with ETMU)
EFXO - Foreign exchange office unit	
Port number	4 or 8
Interface	2-wire 600 , 2-wire 900
Encoding	A-law
EFXS- Foreign exchange static unit	
Port number	4 or 8
Interface	2-wire 600 , 2-wire 900 ,
Encoding	A-law
Ring generator	Built-in
ELAN - LAN extension unit	
Number of HDLC control	8
Mode	Static route/bridge
ELTU - Loop terminating	
Port number	4
Interface	2-wire 900

Coding	A-law
Signaling	Loop started
EEOU - G.703 64 Kbps unit	
Port number	8
Interface	G.703 co-directional interface
EBRI - ISDN BRI TE unit	
Port number	2
Interface	ISDN U -interface
Line code	2B1Q
Mode	LULT or LUNT
Power feeding	DC 96 Volts
Embedded operations channel	EOC (ANSI T1.601) and MP-EOC (TR-TSY-000829)
EMSU - MSDSL channel unit	
Port number	2
Line code	2B1Q
Data rate	N x 64Kbps, N=1~31
EBCU - Baseband channel unit	
Port number	4
Interface	ISDN U -interface
Line code	2B1Q
Data rate	64 or 128 Kbps
EDSU - Data service unit	
Port number	2
Interface	V.35, V.36
Data rate	N x 64 Kbps, N=1~31
ESUB - Subrate unit	
Port number	5
Interface	V.24
Data rate	Async: 2.4, 4.8, 9.6, 19.2 Kbps Sync: 2.4, 4.8, 9.6, 19.2, 64 Kbps (64 Kbps for port #1 only)
Operation mode	X.50 or DSOA (exclusive)
Other Specifications	
Synchronization	
Timing source	Loop, external, and internal
Internal clock generator	2.048 MHz ± 32 ppm
External timing input & output	2.048 MHz
Alarm relay contact	Audible/visible, normally closed/normally open
Management interface	
Local	Two RS-232 ports and one 10BaseT Ethernet port
Remote	In-band E1 timeslot (64 Kbps)
Power	
Input power	Dual power feed, DC-42~ -56 volts
Environment requirements	
Temperature	0~50 degrees Celsius (operating)
Humidity	5%~95%, non-condensing
Dimensions	43.2 cm (W) x 25.6 cm (H) x 30 cm (D)
Note: Specifications are subject to change without notice.	



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