CWDM

CWDM Concentrator Series

- **SigmaLinks5000** 5U, 17-slot chassis
- **SigmaLinks2000** 2U, 6-slot chassis
- **SigmaLinks1000** 1U chassis

- Up to 8 CWDM wavelength in compliance with ITU G.694.2
- AC/DC redundant power supply
- Chassis cascade up to 6

SigmaLinks2000   *SigmaLinks5000*

Available Line Card Modules

- SNMP Card   Management
- Transponder Card   1.25G/2.5G SFP-LC Type
- Mux-DeMux Card   4, 4+1, 8, 8+1 Channels
- Protection Card   1+1 full optic protection
- OADM Card   Drop/Pass and Drop/Insert

SNMP   *Transponder*   *Mux/DeMux*   *Protection*   *OADM*

Fiber Optical Multiplexer

E1/T1/Datacom/Ethernet F.O.M.

- **FMUX01A**

Available Modules

- E1 75/120 Ohm-T1 100 Ohm (4-CH)
- Ethernet (1-CH)   ■ Datacom (4-CH)
- E1/T1 wire-wrap (4-CH)   ■ SNMP
- High-speed Datacom (1-CH) *
- ‧ * ‧ *V.35 & RS-530 speed up 8Mbps*

FMUX01A

E1/T1/Datacom/Voice F.O.M.

- **FMUX01A⁺**

Features

- 100Mbps throughput Ehternet Bridge
- AC/DC redundant power
- Order wire
- SNMP

FMUX01A⁺

Available "Hot Swap" modules

- E1 75/120 Ohm-T1 100 Ohm (4-CH)
- E1/T1 Wire-Wrap (4-CH)
- FXO/FXS (4-CH)
- Datacom (4-CH)

Fixed 4E1/4T1 F.O.M.

- **FMUX04**
  - SMNP   ■ "Hot Line" phone connection

FMUX04

SDH

Ethernet and TDM service over Fiber

- **Single Fiber port, 4-port Ethernet STM-1 converter**
  - Complies with G.957 Standard
  - Supports SFP transceiver

SDH155B

- **SDH Ring, 155Mbps Multi-service Access 1U rack with 4-slot**
  - AC/DC redundant power supply
  - Each slot supports optional 4*10/100Mbps Ethernet module or 4*E1 module

SDH155A   *4*E1 module*   *4*Ethernet module*

Fiber IAD

Fiber Based IAD with 802.11b/g Wireless LAN

- **CPE standalone**

- Fiber interface supports 100 Mbps rate
- Integrated four-port Ethernet switch with auto negotiation and auto MDIX, L2 QoS & VLAN (Tag & Port)
- 802.11b/g WLAN supports up to 54 Mbps transmission rate
- One FXO port for failsafe lifeline, two FXS ports for VoIP using POTS phone set

GW421W

Fiber Media Conversion

In-band Managed Series(Non-intrusive Management*)

■ FRM220
2U, 20-slot Concentrator

- Supports Bandwidth Control
- Scalable up to 10 Chassis with Single IP.
- Loop Back Test
- Remote Configuration and F/W Upgradeable
- Supports Dying Gasp
- Hot Swappable Dual Power and Fan

' * ' Non-intrusive' means no traffic will be blocked during transmission

■ FRM220 Series Line Card
- All line cards are designed to slide in the FRM220 chassis or may be used as stand-alone converters connecting via fiber to FRM220

Supported Protocols
- *Fast Ethernet*
- *Gigabit Ethernet*
- *TDM*
- *FXO/FXS*
- *Datacom*
- *STM-1/OC-3*

FRM220-CH01/AC
FRM220-CH01/DC
FRM220-CH01

Common Features for FRM220 & FRM301
- AC/DC power redundant
- Console/Telnet/GUI/SNMP
- Local status monitor
- Local configuration
- Remote status monitor
- Hot swappable
- TFTP F/W upgrade
- Loop back test
- Chassis Cooling Fan

Managed Series

■ FRM301
CO Concentrator, 3U, 16-slot Chassis

■ FIB1 Series
- All line cards can be converted for Stand-alone operation

Supported Protocols
- *Fast Ethernet*
- *Gigabit Ethernet*
- *TDM*
- *Serial*
- *Datacom*
- *Serial/Fiber Daisy Chain*

■ FIB2 Series
- All converters in this series feature either AC or DC power built-in

Supported Protocols
- *Fast Ethernet*
- *Gigabit Ethernet*
- *TDM*
- *Serial*
- *Datacom*

Unmanaged Series

■ FMC-CH08
CO Concentrator, 2U, 8-slot Chassis

- Chassis with cooling fan and AC or DC power built-in.
- Rack mountable in single (10") or tandem (19") space.

■ FMC Series Converters

- * All FMC converters may be used as stand-alone or placed in the FMC 8-slot chassis.

Supported Protocols
- *Fast Ethernet* *
- *Power over Ethernet*
- *Gigabit Ethernet*
- *VDSL2*

' * ' Plastic fiber or glass fiber both

Digital Video Server & IP Camera

4-Ch H.264 Encoder Video Server with Dynamic dual-stream resolution / frame rate

DVS-8504E

D1 **H.264** **Dual Stream**

- Full D1 (720 x 480)
- Complies with H.264 Technology
- Removable SATA hard disk
- Supports SNMP
- Supports two-way audio
- Embedded Web server for easy configuration
- Supports secure management and encrypted video streams
- Provides recording software

1-Ch M-JPEG & MPEG4 Video Server

DVS-8301

D1 **Dual Stream**

- Full D1 (720 x 480)
- Power over Ethernet
- Dual Streaming JPEG & MPEG-4
- Supports two-way audio
- Digital I/O for external sensor / alarm
- Supports 3GPP/ISMA (RTSP)
- Supports multiple PTZ camera control protocols through RS-485
- Intelligent motion detection
- UPnP for fast and easy installation
- Provides 16-Ch surveillance software

1/2/4-Ch M-JPEG Video Server

DVS-8201/8202/8204

D1 **M-JPEG**

- Full D1 (720 x 480)
- Complies with M-JPEG technology
- Embedded Web server for easy configuration
- Motion Detection / GPIO for event trigging
- Scheduled recording
- Provides 16-ch surveillance software

Dual streaming CMOS IP Camera

IPCAM8309F

D1 **Dual Stream** **CMS**

- M-JPEG and MPEG-4 streaming
- Excellent image quality with up to 30 fps in all resolutions
- Superior low-light performance with automatic night-mode
- Two-way Audio with built-in microphone
- Optimal synchronization of A/V
- Support 3GPP / ISMA (RSTP)
- UPnP for fast and easy installation
- Intelligent motion detection
- Provides 16-ch surveillance software
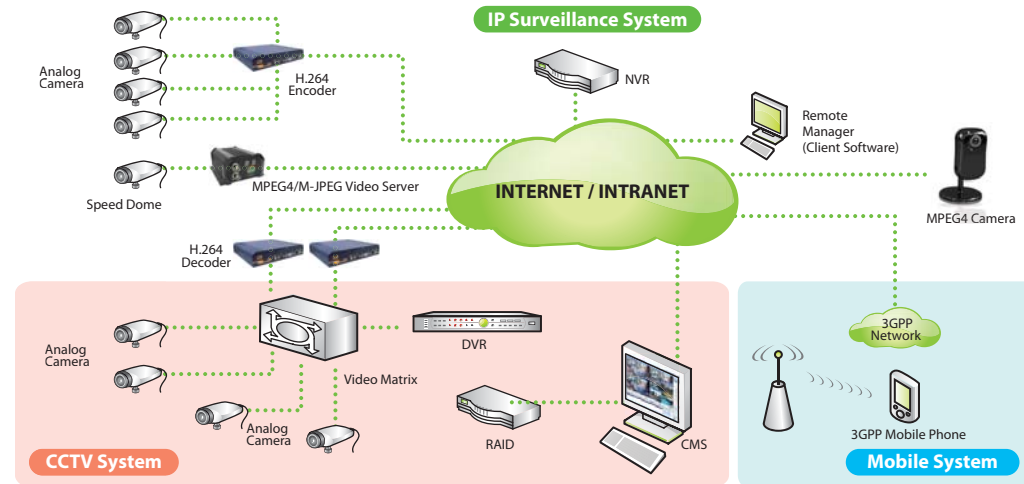
CMS

IP Surveillance Application

All You Can Watch And Do From CMS

- High performance
- Flexible remote access
- Full compatibility
- Scalable solution
- Licensing per video channel

Funnel labels (CMS)
- Power Plant Security
- DI/DO
- Entrance
- Power Plant Security
- Sewage Disposal
- Warehouse Security
- Central Office Security
- Humidity Sensor
- Dam Security
- Temp. Sensor
- Entrance Guard
- Traffic Monitor
- Fire Alarm
- Video Monitor
- RFID

IP Surveillance Application diagram labels

- Analog Camera
- H.264 Encoder
- IP Surveillance System
- NVR
- Remote Manager (Client Software)
- Speed Dome
- MPEG4/M-JPEG Video Server
- INTERNET / INTRANET
- MPEG4 Camera
- H.264 Decoder
- Analog Camera
- Video Matrix
- DVR
- RAID
- CMS
- Analog Camera
- CCTV System
- 3GPP Network
- 3GPP Mobile Phone
- Mobile System

PDH (E1/T1)

CSU / DSU

■ E1 concentrator
- 4U, 19", 13-slot charssis
- Supports SNMP
- Redundant power

ERM01

■ Available Line Cards
- E1-to V35
- E1 to RS-530/449/X.21
- E1 to LAN Bridge
- E1 to LAN Router
  (Above cards available in Nx64K Fractional
  or 2M Unframed E1)

■ Stand – alone access units

Single Data port
- Unframed / Fractional E1/T1
- Modular interface
- AC or DC power built-in
- Console/LCD/SNMP

ETU/TTU01 Series

2/4 port MUX
Up to 4 – slots can insert any ETU series interface
- Fractional E1/T1
- Modular interface
- AC or DC power built-in
- Console/LCD/SNMP

ETU/TTU02 Series

■ Various Interface Modules for ETU/TTU Series ✱
X.21, V.35, RS-232, RS-530, RS-449, G.703/64, NRZ, LAN Bridge and
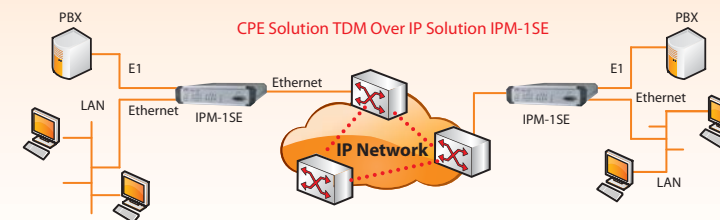LAN Router

‹ ✱ › *ETU01/ETU01A/ETU01U/ETU02/TTU01/TTU02*
Are available with the modules listed above

E1 over IP

■ Point to Point Solution –Stand-alone unit
Single E1 and Single Ethernet Port over IP Network

- Unframed / Fractional E1
- LAN QoS support
- AC or DC power built-in
- SNMP

IPM-1SE

CPE Solution TDM Over IP Solution IPM-1SE

PBX   E1   Ethernet   IP Network   E1   PBX
LAN   Ethernet   IPM-1SE   IPM-1SE   Ethernet
                                          LAN

PDH (E1/T1)

E1 Multi-Service Multiplexer

■ 4U, 19", 10 I/O slots E1 Multiplexer

- Supports SNMP
- Redundant power , CPU, E1
- All cards hot swappable
- Up to 4E1 application

ERM-MUX/Plus

Available Line Cards

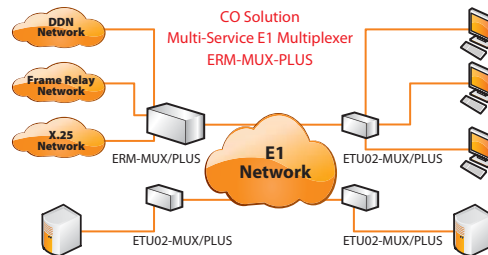| E1 Trunk Card	High Speed I/O Cards	Low Speed I/O Cards	Voice I/O Cards	
■ G.703 E1 (2-CH)	■ Serial (4-CH)	■ RS-232 (6-CH)	■ FXO (6-CH)	■ Magneto(6-CH)
	■ LAN Bridge (2-CH)	■ Co-directional / 64K (4-CH)	■ FXS (6-CH)	■ LD (4-CH)
	■ Sub-E1 (2-CH)	■ X.50 (5-CH)	■ E&M (6-CH)	

■ 1U, 19", 3 I/O slots E1 Multiplexer

ETU02-MUX/PLUS

■ Available Interfaces

- E1 Trunk (2-CH)
- Serial (2-CH)
- LAN Bridge (2-CH)
- FXO (8-CH)
- FXS (4-CH)
- E&M (4-CH)
- Co-directional / 64K (2-CH)

DDN Network

CO Solution
Multi-Service E1 Multiplexer
ERM-MUX-PLUS

Frame Relay Network

X.25 Network

ERM-MUX/PLUS

E1 Network

ETU02-MUX/PLUS

ETU02-MUX/PLUS

ETU02-MUX/PLUS

Inverse E1 Multiplexer

■ Concentrator

- 4U, 19", 12-slots chassis
- Each line card provides Ethernet over 4-E1
- Supports SNMP
- Supports redundant power
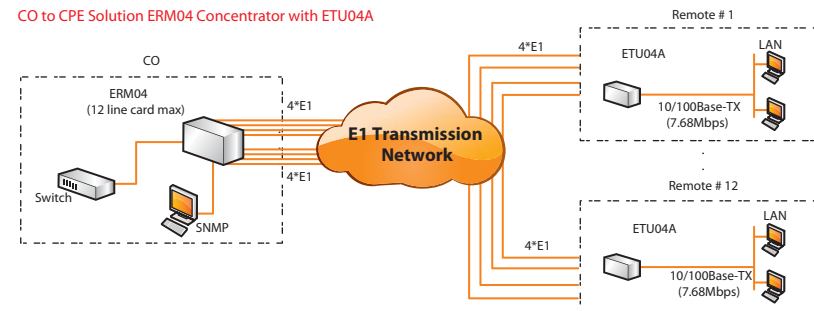- Bandwidth 1.92~7.68Mbps

ERM04

■ Stand-alone access units

- Ethernet over 4-E1
- Bandwith 1.92~7.68Mbps
- AC or DC power built-in

ETU04A

CO to CPE Solution ERM04 Concentrator with ETU04A

CO

ERM04
(12 line card max)

4*E1

4*E1

Switch

SNMP

E1 Transmission Network

Remote # 1

ETU04A

LAN

4*E1

10/100Base-TX
(7.68Mbps)

Remote # 12

ETU04A

LAN

4*E1

10/100Base-TX
(7.68Mbps)

xDSL

G.SHDSL

■ **CO Concentrator – TDM or ATM**
4U, 19" chassis supports 13 card slots, 2 channels/card

SHRM03

G.SHDSL / G.SHDSL.bis

■ **CPE Modem**

TDM   2-wire TDM CPE Modem
E1/V.35/Ethernet

SHDTU03(b)

ATM   2/4-wire ATM CPE Modem
Ethernet Bridge / Router

4-band VDSL

■ **CO – DSLAM**
1U, 19", 8 port IP DSLAM

VRM-308

VDSL2

■ **CO Concentrator**
2U, 8-slot chassis

■ Chassis with cooling fan and
AC or DC power built-in.
■ Rack mountable in single (10")
or tandem (19") space.

FMC-CH08

■ **CPE LAN Extender**
VDSL2 to Ethernet Converter

V2MC-10/100

ADSL / ADSL2 / ADSL2$^+$

■ **CO Solution - DSLAM**
1.5U, 48-ports ADSL2 DSLAM

MD-15

■ **CPE Solution – CPE modem**
ADSL2/ 2$^+$ Bridge / Router

ATU-R150

■ **CO / CPE Solution – Splitter / Micro Filter**
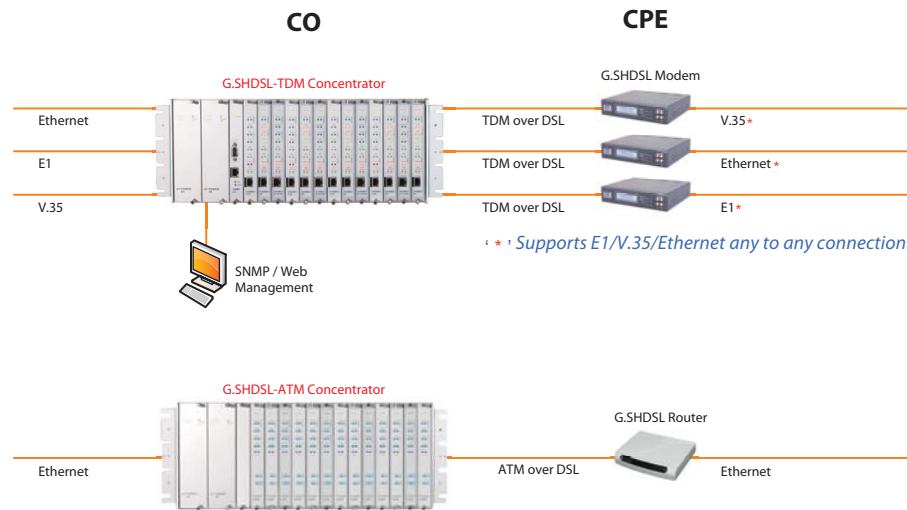
■ CO 8U, 19" 640-port ADSL
Splitter Concentrator

ALS-R60

■ CPE ADSL / VDSL Splitter &
Micro Filter

ALS-12

ALS-M12

G.SHDSL Application

CO   **CPE**

G.SHDSL-TDM Concentrator

G.SHDSL Modem

Ethernet — TDM over DSL — V.35*

E1 — TDM over DSL — Ethernet *

V.35 — TDM over DSL — E1*

SNMP / Web Management

‹ * › *Supports E1/V.35/Ethernet any to any connection*

G.SHDSL-ATM Concentrator

G.SHDSL Router

Ethernet — ATM over DSL — Ethernet

xDSL Characteristics

DSL Technology	Rate (unit: bps)	Coding	Distance @26AWG (km)
G.SHDSL (1 pair)	64K~2.3M(Symmetrical)	PAM16	3.6 ~ 6.3
G.SHDSL (2 pairs)	128K~4.6M(Symmetrical)	PAM16	3.6 ~ 6.3
G.SHDSL.bis (1 pair)	192K~5.69M(Symmetrical)	TC PAM32	3.6 ~ 8.7
G.SHDSL.bis (2 pairs)	384K~11.392M(Symmetrical)	TC PAM32	3.6 ~ 8.7
VDSL	UP TO 52M bps (Symmetrical or Asymmetrical)	CAP/DMT	0.3 ~ 1.2
VDSL2	UP TO 110M bps (Symmetrical or Asymmetrical)	CAP/DMT	1.4
ADSL2	Downstream 12M Upstream 1M	DMT	3.6 ~ 5.4
ADSL2+	Downstream 24M Upstream 1M	DMT	3.6 ~ 5.4
ADSL2+ Annex M	Downstream 24M Upstream 3.5M	DMT	3.6 ~ 5.4