



# FRM220 Solution Portfolio

CTC Union Technologie's FRM220 series chassis solution is a multi-service chassis platform, which provides an economic and reliable solution in high density media converter installations for applications oriented in markets such as telecom operator, enterprise, long haul transmission and factory automation. All critical components of FRM220 series chassis solution, such as power module, fans, management module and interface cards, are hot swappable, allowing for online field replacement.

Because of deployment scale and installation dimension concerns, the FRM220 series are offered in two chassis density versions for Central Office site solution as follows :



FRM220-CH20 ( 2U height, 19" rack mountable, 20 slots )



FRM220-CH08 (1U height, 19" rack mountable, 8 slots)



SNMP

### Common Feature :

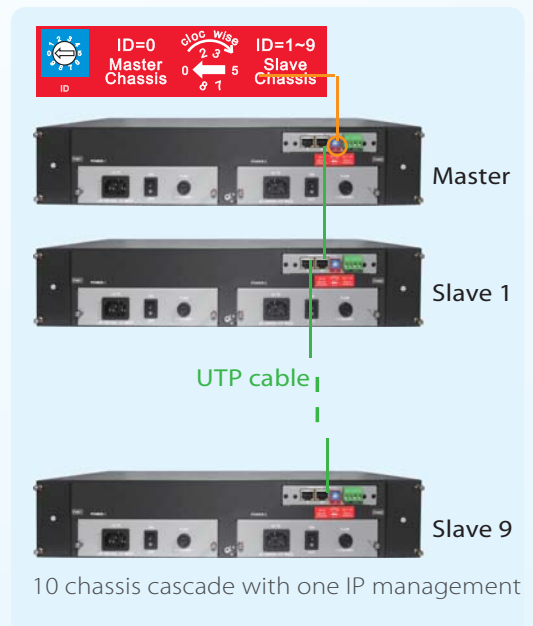
- Supports AC/DC power module hot swap and power redundancy
- Two alarm relay contacts for critical events warning
- All modules and interface cards are hot swappable
- Chassis backplane consists of passive components

## Network Management

Both FRM220-CH20 and FRM220-CH08 require an NMC (Network Management Controller) card which must be installed into the first slot of chassis. The NMC card allows a network administrator to configure and monitor the status of the blades. Management can be achieved locally over RS-232, or over the network via Telnet, Web or SNMP. If the blade supports Ethernet in the First Mile (IEEE 802.3ah), then the management module can also monitor the status of a remote CPE.

## Chassis Cascade

FRM220-CH20 chassis features cascaded management which allows managing a stack (up to 10 chassis) from a single IP address. Chassis are interconnected with standard UTP cables that carry control signals. Each chassis has its own ID, starting with the master chassis ID0 and cascading up to ID9. Network management card (NMC) is still required in each chassis.



# FRM220 Slide-in Card Chassis

All interface cards can be slid into various types of low density chassis, as shown below.

## FRM220 One Slot Chassis



FRM220-CH01 : Non-managed type  
(External AC adapter)



FRM220-CH01



FRM220-CH01M : Console port managed type

## FRM220 Two Slots Chassis



FRM220-CH02 : Non-managed type  
(External AC adapter)



FRM220-CH02/NMC : SNMP managed type



FRM220-CH02M : Console port managed type

## FRM220 Four Slots Chassis



FRM220-CH04/NMC : SNMP managed type  
External AC adapter

All of the above standalone chassis options are summarized in the tabel below along with the supported power supply type :

Chassis Type	Slot	Power Type	Console Port	NMC
FRM220-CH01	1	DC12, AC, DC, AD, AA, DD		
FRM220-CH01M	1	AC, DC, AD	✓	
FRM220-CH02	2	DC12		
FRM220-CH02M	2	AC, DC, AD	✓	
FRM220-CH02/NMC	2	AC, DC, AD		✓
FRM220-CH04/NMC	4	DC12		✓

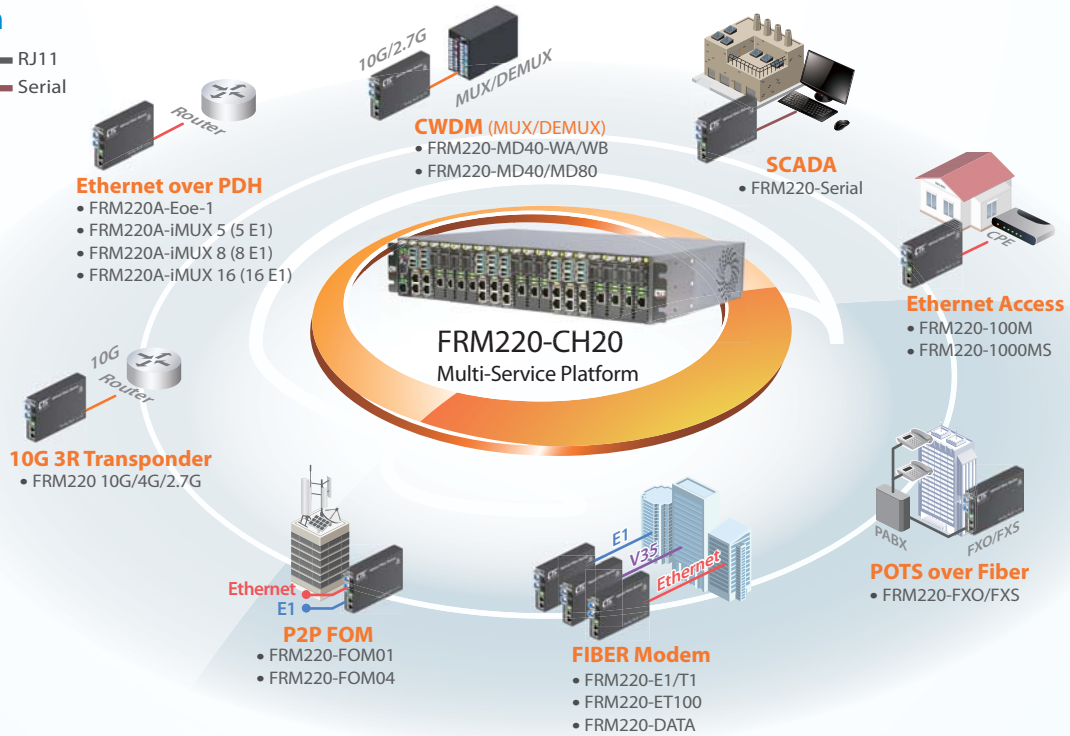
**Note :** DC12 : AC power adapter AC : AC power module built-in DC : DC power module built-in  
AD : AC+DC power module built-in AA : AC+AC power module built-in DD : DC+DC power module built-in

# FRM220 Cards for Deployment Scenarios

The FRM220 series is positioned as a multi-service platform. All of the interface cards can be categorized in eight deployment scenarios to easily understand and select. The cards will be individually separated based on the following categories.

## Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## 10G 3R Transponder Converter Card

The product list includes :

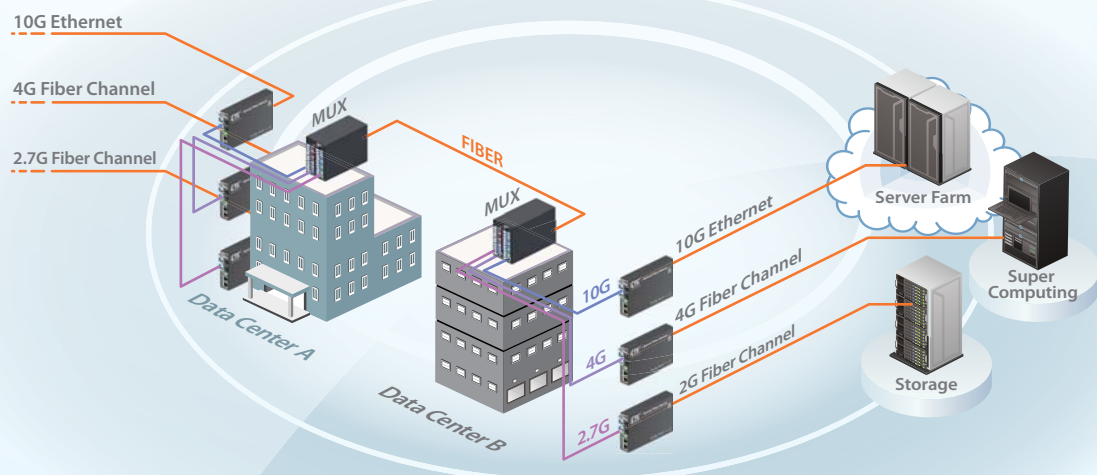
- FRM220-10G-SS : 10G 3R transponder card
- FRM220-4G-2S : 4G 2R transponder card
- FRM220-2.7G-3S : 2.7G 3R transponder card

Key Feature :

- Transmits multi-service protocols transparently
- 2R/3R fiber media transponder and repeater
- Web GUI, telnet, SNMP management in FRM220 chassis
- Enables network fault management and redundant functions

## Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## Ethernet Access Card

The product list includes :

- 10G media converter
- FE/GbE media converter
- Layer 2 FE/GbE switch

Key Feature :

- In-band management enables users to monitor/configure local or remote device
- Supports 9K bytes jumbo frame
- Enables network fault management functions

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## Point-to-Point FOM Card ( Fiber Optical Multiplexers )

The product list includes :

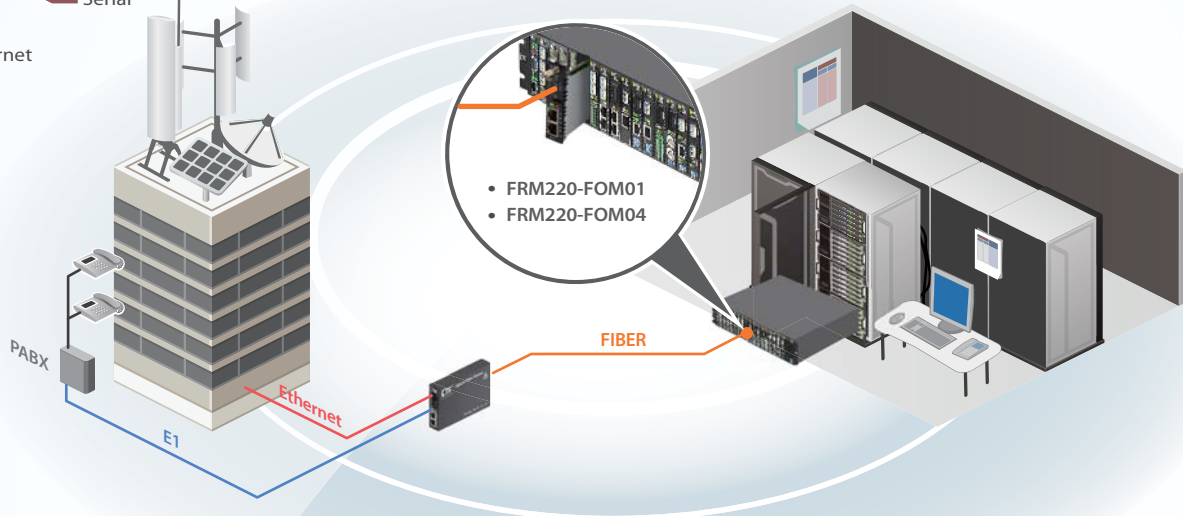
- FRM220-FOM01 : 1 port E1/T1 + 100M Ethernet fiber multiplexer
- FRM220-FOM04 : 4 ports E1/T1 + 100M Ethernet fiber multiplexer

Key Feature :

- Multi-services integrated solution includes E1/T1, Ethernet
- Enables network fault management functions

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## CWDM MUX/DEMUX Card

### The product list includes :

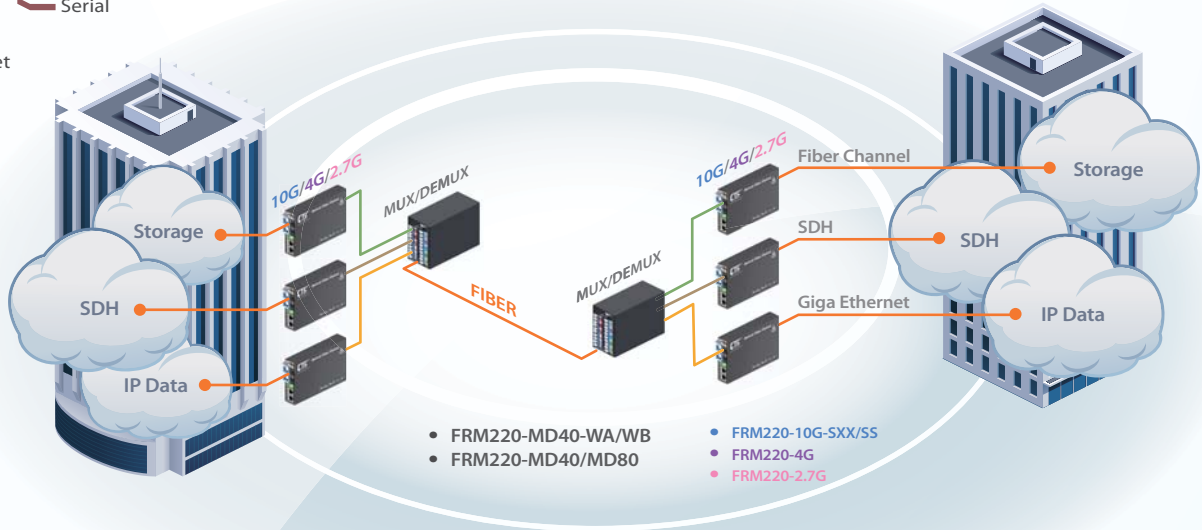
- FRM220-MD40-WA/WB : 4 channels single fiber MUX/DeMUX
- FRM220-MD40 : 4 channels dual fiber MUX/DeMUX
- FRM220-MD80 : 8 channels dual fiber MUX/DeMUX

### Key Feature :

- Protocol transparent, no speed limitation
- Standard ITU-T CWDM wavelengths
- Dual fiber or single fiber MUX / DeMUX
- Full native mode performance
- LC optical connectors
- Passive model requires no power

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## Fiber Modem Card

### The product list includes :

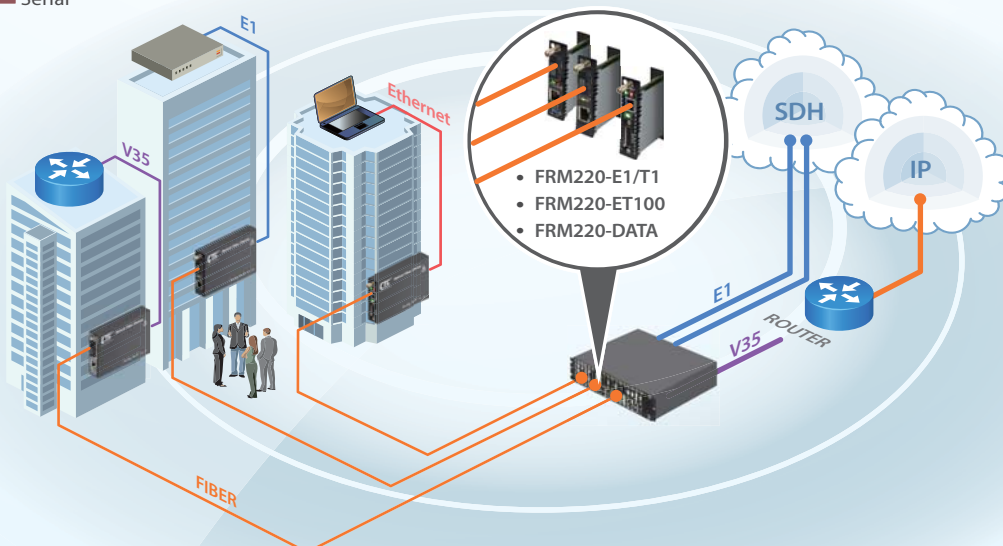
- FRM220-DATA : V.35/X.21/RS-530/RS-449/RS-232 over fiber
- FRM220-E1/T1 : E1/T1 over fiber
- FRM220-ET100 : Ethernet over E1 fiber

### Key Feature :

- User configurable interface, V.35, X.21, RS-530, RS-449, RS-232
- User configurable DCE or DTE mode
- User configurable E1 or T1 setting
- Ethernet encapsulated with ISO 13239 standard HDLC
- Electrical and optical loop back test
- In-band network management via terminal, web or SNMP in FRM220 chassis

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## Ethernet over PDH Card

The product list includes :

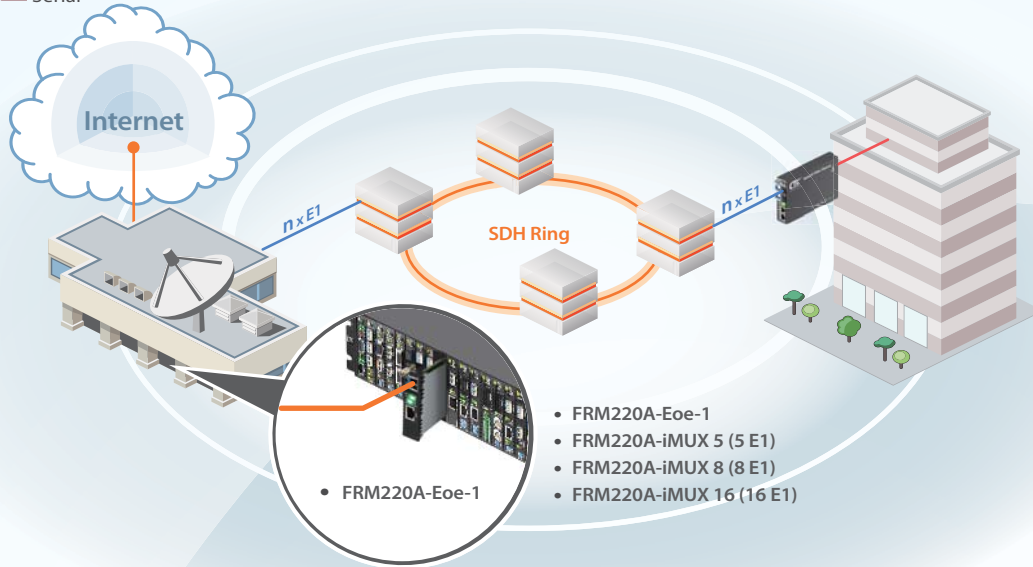
- FRM220A-Eoe1 : Ethernet bridge over E1 (GFP)
- FRM220A-iMux5 : 5E1 Inverse Multiplexer
- FRM220A-iMux8 : 8E1 Inverse Multiplexer
- FRM220A-iMux16 : 16E1 Inverse Multiplexer

Key Feature :

- Connect one fast Ethernet over E1/5E1/8E1/16E1 links
- Built-in HDLC or GFP bridge operates at WAN rate
- Auto negotiation
- Unbalanced E1/BNC or balanced E1/RJ45
- SNMP management with FRM220A chassis

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## SCADA Card ( Supervisory Control And Data Acquisition )

The product list includes :

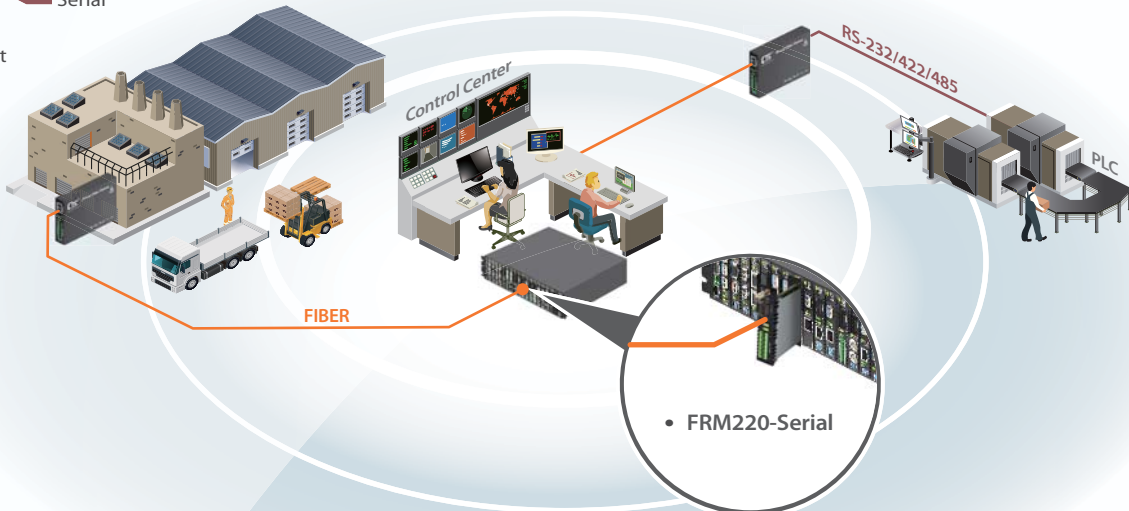
- FRM220-Serial : RS-232 / RS-422 / RS-485 over fiber

Key Feature :

- Extend asynchronous serial transmission from 2km to 120km over fiber
- In-band network management via terminal, web or SNMP in FRM220-CH20 chassis
- User configurable data interface for RS-232 / RS-422 / RS-485
- User configurable 2 wires (half duplex) or 4 wires (full duplex) RS-485
- User configurable 3 or 5 wires RS-232

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## POTS over Fiber Card

### The product list includes :

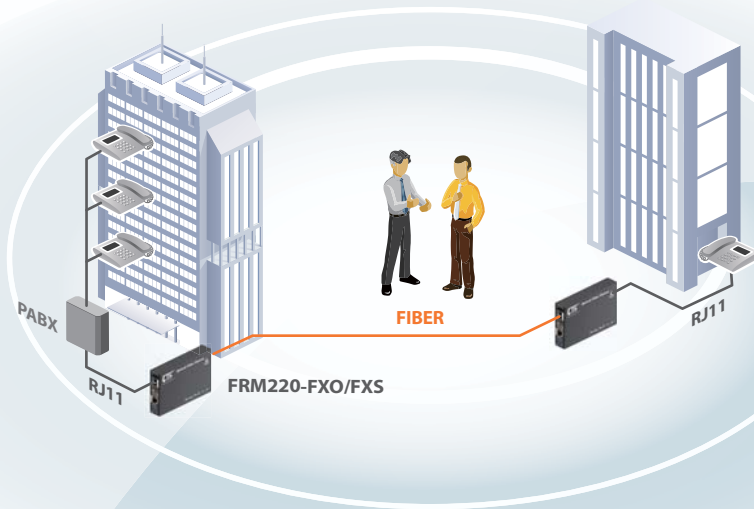
- FRM220-FXO/FXS : FXO/FXS 2-wire fiber converter

### Key Feature :

- Extend telephone voice transmission from 2km to 120km over fiber
- In-band network management via terminal, web or SNMP in FRM220-CH20 chassis
- Supports telephone voice transmission
- Supports Caller ID pass through
- User configurable FXO or FXS mode
- Supports FXS to FXS hot line

### Application

- FIBER
- E1
- V35
- Ethernet
- RJ11
- Serial



## FRM220A-CH20 Ethernet Aggregation Platform

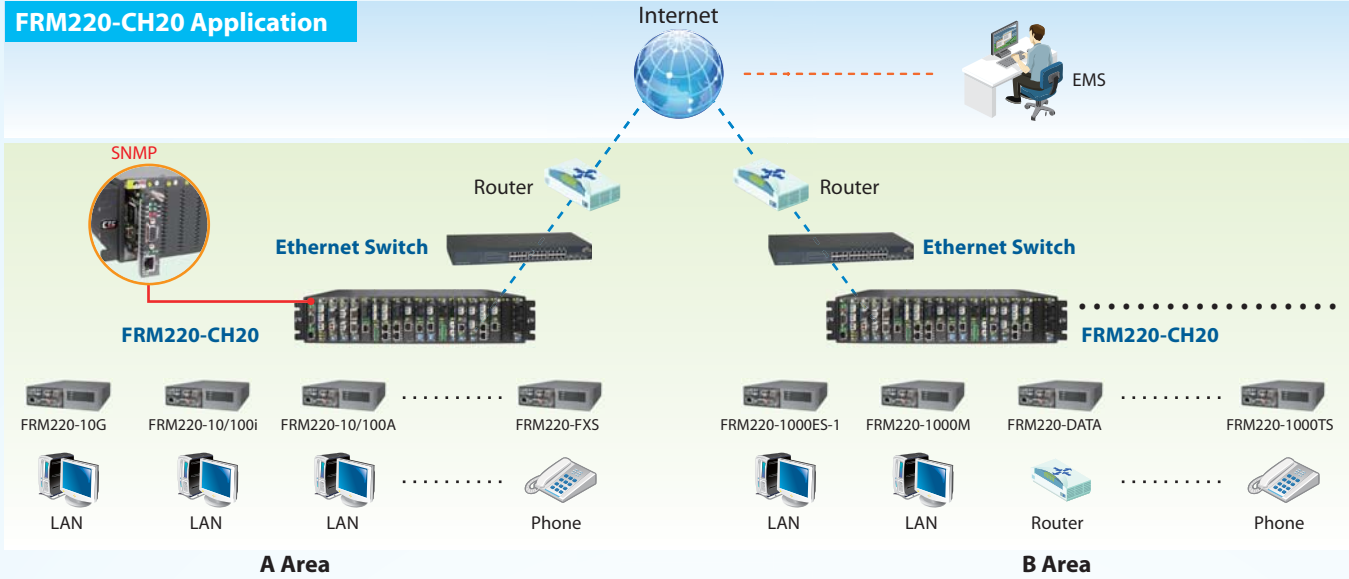
In addition to the FRM220-CH20 in-band managed multi-service platform, CTC Union Provides an Ethernet aggregation platform called FRM220A-CH20, which incorporates a 24+4 port Gigabit Ethernet switch. This Gigabit Ethernet aggregation switch card is named FRM220A-GSW/SNMP, where twenty ports supply each slot of the 2U 20 slots chassis with an electrical Gigabit Ethernet uplink, with the remaining 4 electrical gigabit ports accessible via the rear side of the chassis. An additional four ports are provided by SFP slots.

All eight gigabit ports (4+4) are usable without restrictions for uplink aggregation to an Ethernet Metropolitan Area Network (E-MAN). The FRM220A-GSW/SNMP card can transmit Ethernet traffic between the subscriber equipment and the E-MAN and is capable of providing high bandwidth for aggregating Ethernet traffic. It is not only the system aggregating/trunking module but also the system's management module, providing SNMP management functions.

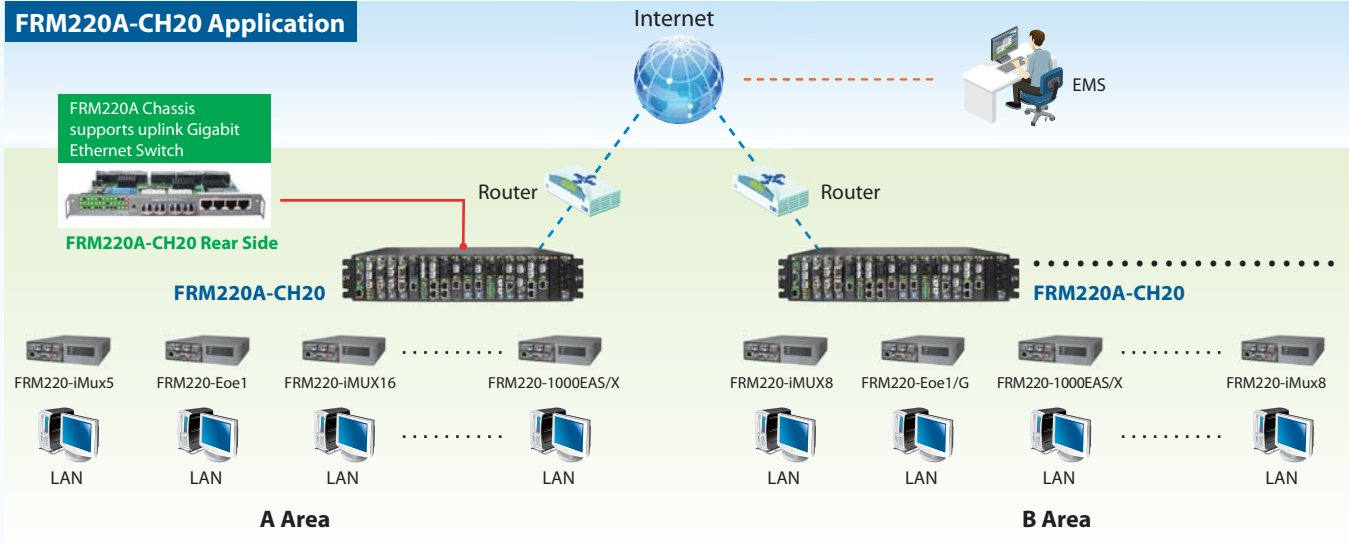
### The Product list Includes :

- FRM220A-1000EAS/X : 2 ports 10/100/1000Base-T + 2 ports 100/1000Base-X OAM/IP managed switch
- FRM220A-1002ES : Hardened 2 ports 10/100/1000Base-T + 2 ports 100/1000Base-X managed switch
- FRM220A-Eoe1/FRM220A-iMux5/FRM220A-iMux8/FRM220A-iMux16 : E1 inverse multiplexer
- FRM220A-FSW103 : 3 ports 10/100Base-TX + 100Base-FX managed switch

### FRM220-CH20 Application



### FRM220A-CH20 Application



### Key Features ( FRM220A-GSW/SNMP )

- Chassis aggregation via 4 ports 10/100/1000Base-T + 4 ports 1000Base-X SFP slots
- Gigabit Ethernet connection with each slot of FRM-220A chassis
- Fiber optic ports support STP/RSTP for ring and chain topology
- Fiber optic ports support IEEE 802.3ad for link aggregation
- Support Web GUI, Telnet and SNMP management

### General Specifications ( FRM220/FRM220A chassis solution )

#### Physical Specifications :

- Dimension (W x D x H) : 303mm x 438mm x 88mm
- Weight : 5.2Kg w/o power supply module

#### Environment Specifications :

- Operating temperature : 0°C ~ 60°C
- Storage temperature : -10°C ~ 70°C
- Relative humidity : 5% ~ 90% non-condensing
- Predicted MTBF : 65000 hrs

#### Power characteristics :

- AC : 100 ~ 240 VAC
- DC24 : 18 ~ 36 VDC ; DC48 : 36 ~ 75VDC

#### Certification :

- FCC Class A, VCCI class A, CE, RoHS

