



FRM220A-iMux16
FRM220A-iMux8
FRM220A-iMux4

Ethernet over Bonded E1 NTU

The FRM220A-iMux is an E1 inverse multiplexer capable of bundling 4E1/ 8E1/16E1 lines for cost-effective connection of 10/100Base-TX LANs over multiple E1 transports. The FRM220A- iMux transmits 7.93Mbps (iMUX4)/ 15.87Mbps(iMUX8)/ 31.74Mbps(iMUX16) Ethernet bridge channel (GFP-F encapsulated) over multiple E1 links. The FRM220A-iMux bridges the gap between E1 and E3, allowing bridges to operate at faster rates. It also provides high speed access to SDH/SONET backbones where the only access services available are E1 lines. The FRM220A-iMux supports E1 attenuation of up to 43 dB on twisted pair or coax cable. This provides an approximate operating range up to 2km (using 22AWG). The FRM220A-iMUX fully comply the E1 specifications including ITU-T G.703 and G.823. The FRM220A-iMux features diagnostic capabilities for performing remote loopback. The operator at either end of the line may test both FRM220A-iMux NTU and the line in the digital loopback mode. The Ethernet copper interface supports auto-negotiation and auto MDI/MDIX, allowing plug-and-play Ethernet connection without any additional configuration.

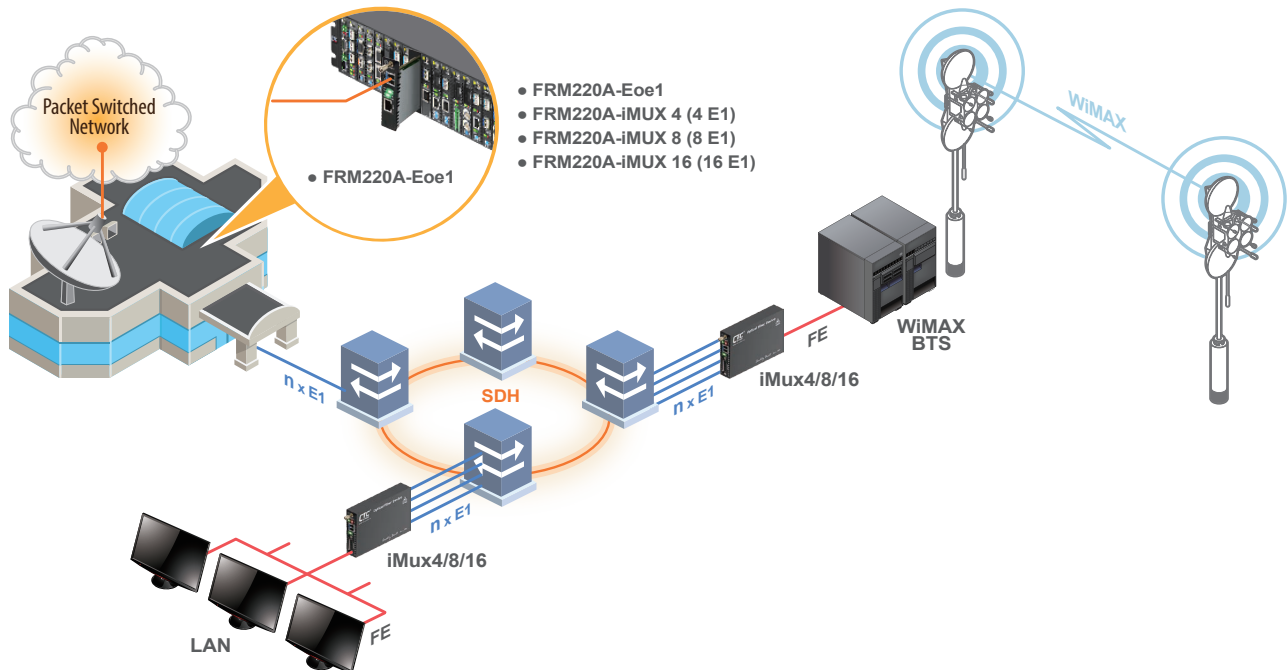
Features

- The FRM220A - iMUX connects one Fast Ethernet over 1-4 E1 links (1.984Mbps to 7.93Mbps) for iMUX4, over 1- 8 E1 links (1.984Mbps to 15.87Mbps) for iMUX8, over 1- 16 E1 links (1.984Mbps to 31.74Mbps) for iMUX16
- Built-in GFP bridge operates at WAN rate
- Maximum 220ms delay variance between E1 link
- Unbalanced E1/BNC or balanced E1/RJ45
- Fully compatible with FRM220A chassis
- SNMP management with FRM220A chassis
- LED Alarm indication & Auto-Negotiation
- Standalone RS232 console management via CH01M for iMUX4/iMUX8, CH02M for iMUX16
- Support MTU 1916 bytes

Specifications

E1 Interface	Framing	CCS+CRC (Framed)	Power Input 12VDC Power Consumption < 12W Dimensions Card: 155 x 42.1 x 88mm (D x W x H) Weight 130g Temperature 0 ~ 50°C (Operating), -10 ~ 70°C (Storage) Humidity 10 ~ 90% RH (non-condensing) Certifications CE, FCC MTBF 65,000 hrs
	Standard	ITU-T G.703/G.704/G.706 & G.732, G.823	
	Encapsulation Protocol	VCAT & LCAS (ITU-T G.7042) GFP-F (ITU-T G.7041)	
	Bit rate	2.048Mbps± 50ppm (up to 5E1)	
	Line code	HDB3	
	Clock setting	Internal OSC or recovery clock	
	Receive level	-43dB	
	Line impedance	75 ohm (BNC) / 120 ohm (RJ45)	
	Jitter Performance	Complies with ITU-T G.823	
	Pulse Mask	Complies with ITU-T G.703	
	Pulse amplitude	Nominal 2.37V ± 10%	
	Delay Variance	220ms	
	Connector	RJ45, BNC	
	Diagnostics	Digital remote loopback	
Ethernet Interface	Standards	IEEE 802.3, 802.3u, 802.1q VLAN, 802.1d bridging	
	Mac Address	1K	
	Data rate	10/100Base-TX, Half/Full duplex	
	Connector	RJ45 10/100Base-TX	
		Power, ALM, E1 signal loss	
Indications	Power, ALM, E1 signal loss, E1 Alarm(AIS, LOF, RAI, LOMF), LAN link /ACT. 10/100M. SD (100Base-FX)		

Application



Ordering Information

Model Name	Description
FRM220A-iMux16T-R	10/100Base-TX to 16 E1 mux card with 16E1 RJ45 cable
FRM220A-iMux16T-B	10/100Base-TX to 16 E1 mux card with 16E1 BNC cable
FRM220A-iMux8T-R	10/100Base-TX to 8 E1 mux card with 8 E1 RJ45 cable
FRM220A-iMux8T-B	10/100Base-TX to 8 E1 mux card with 8 E1 BNC cable
FRM220A-iMux4T-R	10/100Base-TX to 4 E1 mux card with 4E1 RJ45 cable
FRM220A-iMux4T-B	10/100Base-TX to 4 E1 mux card with 4E1 BNC cable

Note: This card may be locally configured by its own console when placed in CH02M with fan.
When connected as a remote to a managed central chassis, this card supports in-band management and only needs a CH02 chassis.

Cable Type



RJ45 Cable



BNC Cable

FRM220A – iMux –
Example: FRM220A – iMux16T – R

nx E1 Cable Type