ETL Systems

Excelling in RF Engineering

Model Number:
NGMC-101-xxxx

32 x 32 Enigma L-band Combining Switch Matrix / Router

Typical applications:

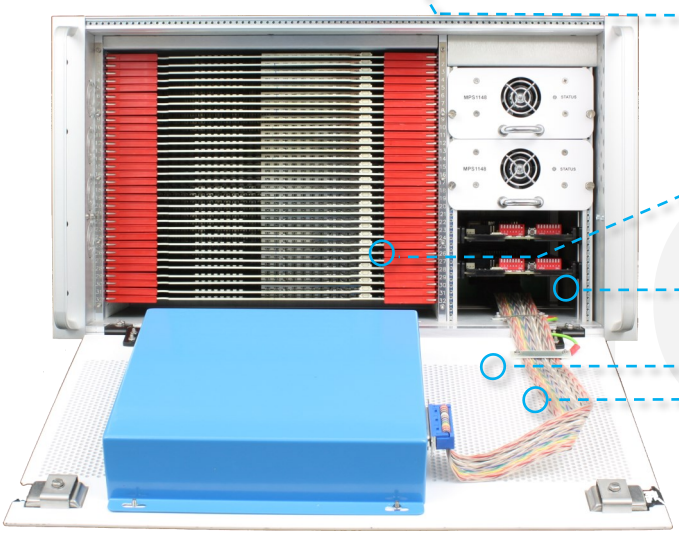
- RF content acquisition for TVRO &IPTV headends
- Signal monitoring of satellite traffic
- Remote controlled unmanned satcom sites

4th generation Enigma Matrix with enhanced RF performance including variable gain –5 dB to +5 dB settable per input.

850 - 2150 MHz operating frequency range

Compact up to 32 inputs x 32 outputs in a 6U high chassis

Upgraded local control & monitoring via front panel capacitive touchscreen

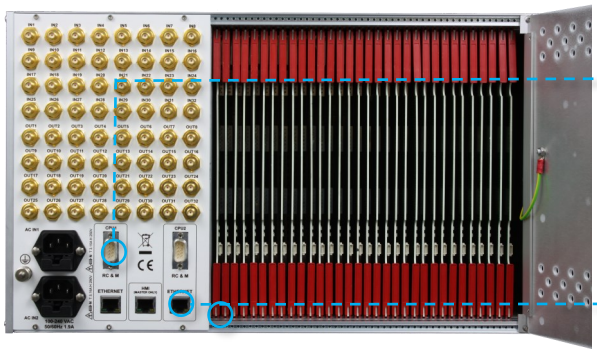


Self diagnostics with continuous monitoring of amplifiers, CPU's & PSU's

Expansion in single increments or with additional matrix modules for larger systems

Resilience from dual redundant power supplies & CPU modules

Minimal impact from failure with hot-swap single input & output RF cards, dual power supplies & dual CPU's, fans



Dry contact alarm port & serial communications for amplifier & power supply status

Future proof secure protocols with SNMPv3 & HTTPS

Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface

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Technical specifications and operating parameters

RF Parameters					
Capacity		32 inputs x 32 outputs, fully populated			
Routing		Combining (fan-out), non-blocking		Many inputs can be routed to each outputs	
Frequency Range		850-2150 MHz (L-band)			
Gain		0±1 Typical, mean across band			
Gain Control		-5 to +5 in 0.5dB steps		Settable at each input	
RF Connectors		50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type
		All ports DC blocked			
Gain Flatness	Full band	±1.0 dB	±1.0 dB	±1.5 dB	±1.5 dB
	Any 36MHz	±0.25 dB	±0.25 dB	±0.50 dB	±0.50 dB
Input Return Loss	Typical	18 dB	18dB	16 dB	16 dB
	Minimum	14 dB	14 dB	10 dB	10 dB
Output Return Loss	Typical	20 dB	20 dB	16 dB	16 dB
	Minimum	16 dB	16 dB	10 dB	10 dB
Isolation (min between any 2 ports)	I/P - O/P	60 dB			
	I/P - I/P	75 dB			
	O/P - O/P	75 dB			
Group Delay		≤ 1 ns, across operational bandwidth			
Noise Figure	Typical	16 dB		Typical, 1 input routed to 1 output (@ unity gain)	
	Maximum	18 dB			
1dB GCP (dBm)		+10 dBm output power (@ unity gain)			
OIP3	Typical	22 dBm (@ unity gain)			
	Minimum	20 dBm (@ unity gain)			
OIP2	Typical	32 dBm (@ unity gain)			
	Minimum	30 dBm (@ unity gain)			
Switching Time		< 50ms from receipt of a command to implementation of path change			
Input RF Power		+ 20 dBm		Absolute maximum	

System Control	
Local Control	Via Front Panel capacitive touchscreen
Remote Control	Serial (RS232 or RS422/485) and Ethernet port via RJ45, 10BaseT/100BaseTx. TCP/IP, SNMPv3, HTTPS & web browser interface
Alarms	Dry contact (D-type) & Ethernet (RJ45) for PSU & Amp. status

Power			
PSU Power		85-264Vac 50-60Hz	Fused 2A
AC Consumption		150W	Max. consumption at steady state
LNB Power		None	
PSU		Dual redundant & alarmed	Diode OR. Hot swappable
Hot-swap PSU		Yes	
CPU		Dual Redundant	Hot swappable
Input Cards		Hot swap	Failure effects only one input port
Output Cards		Hot swap	Failure effects only one output port
MTTR		20 mins, 15 mins to retrieve spare part and 5 mins to replace	Applies to LRUs only and assumed in house stock.
MTBF	Chassis	271,444	Chassis excludes HMI & RF cards
	Switch card	270,297	
	Divider card	317,227	

Environmental	
Operating temperature	0 to 45˚C
Gain Stability versus Temperature	0.05dB/°C
Storage temperature	-20˚C to +75˚C
Location	Indoor use only
Humidity	20 to 90% non-condensing
Altitude operational	10,000 feet AMSL (Above Mean Sea Level)
Altitude storage	30,000 feet AMSL (Above Mean Sea Level)

Physical	
Dimensions	6U high x 450mm deep x 19" wide
Weight	35 kg, fully populated
Colour	RAL9003—White (Semi-Matte)

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.
Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.

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