



ETL Systems
New technologies
in RF distribution

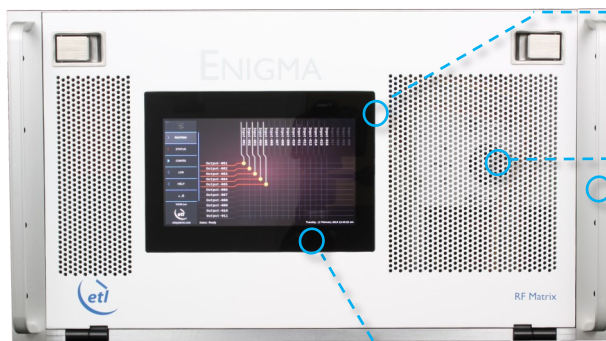
Model Number:
NGM-102-xxxx

32 x 32 Enigma Extended L-band Distributive Switch Matrix / Router

4th generation Enigma matrix with enhanced RF performance including variable gain -5 dB to $+5\text{ dB}$ settable per output.

Typical applications:

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



850 - 2450 MHz
operating frequency



Suitable for HTS applications due to extended bandwidth



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



Upgraded local control & monitoring via front panel capacitive touchscreen



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



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



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



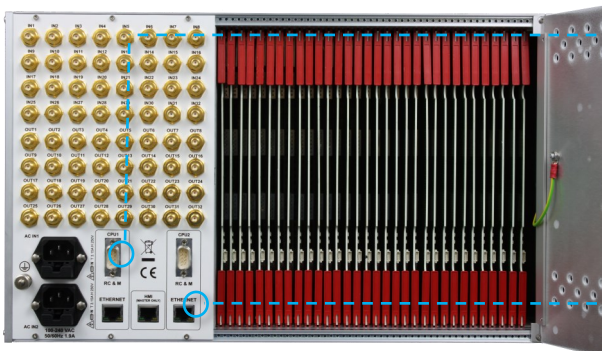
Dry contact alarm port & serial communications for amplifier & power supply status



Future proof secure protocols with SNMPv3 & HTTPS



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





Technical specifications and operating parameters

RF Parameters					
Capacity		32 inputs x 32 outputs, fully populated			
Routing		Distributive, non-blocking		Any input can be connected to any number of outputs	
Frequency Range		850-2450 MHz (Extended L-band)			
Gain		0±1 dB Typical, mean across band			
Gain Control		-5 to +5 dB in 0.25dB steps		Settable at each output	
RF Connectors		50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type
		All ports DC blocked			
Gain Flatness	Full band	±1.25 dB	±1.25 dB	±1.5 dB	±1.5 dB
Any 36MHz	< 2150 MHz	±0.25 dB	±0.25 dB	±0.5 dB	±0.5 dB
	> 2150 MHz	±0.5 dB	±0.5 dB	±0.75 dB	±0.75 dB
Input Return Loss	Typical	20 dB	20 dB	16 dB	16 dB
	Minimum	16 dB	16 dB	10 dB	10 dB
Output Return Loss	Typical	18 dB	18 dB	16 dB	16 dB
	Minimum	14 dB	14 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)		+8 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/100 BaseTx. 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 Redundancy	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, 5 mins to replace.	Applies to LRUs only and assumed in house stock
MTBF	Chassis	271,444
	Switch card	270,297
	Divider card	317,227
Chassis excludes HMI & RF cards		

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.