



ETL Systems
New technologies
in RF distribution

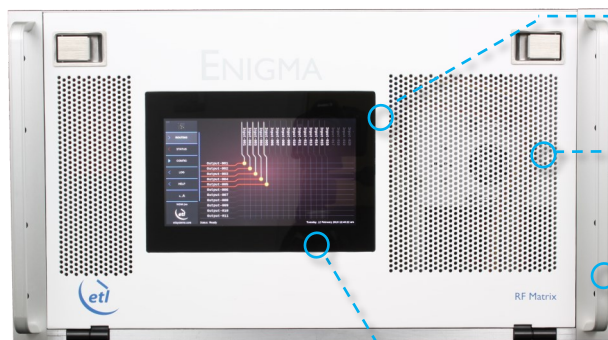
Model Number:
NGM-103-xxxx

32 x 32 Enigma 500-3150 MHz Distributive Switch Matrix / Router

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

Typical applications:

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



500 - 3150 MHz
operating frequency range



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



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



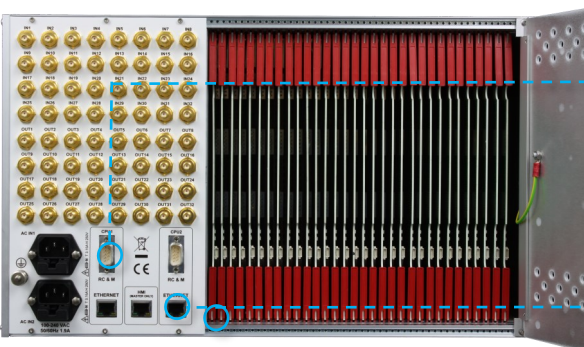
Dry contact alarm port & serial communications for amplifier & power supply status



Future proof secure protocols with SNMPv3 & HTTPS



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





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	500-3150 MHz				
Gain	0±1 dB Typical, mean across band				
Gain Control	-5 to +5 in 0.25 dB steps		Settable at each output		
RF Connectors	50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type	
	All ports DC blocked				
Gain Flatness	850-2450 MHz	±1.25 dB	±1.25 dB	±1.5 dB	±1.5 dB
	500-3150 MHz	±2.5 dB	±2.5 dB	±2.5 dB	±2.5 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	14 dB	14 dB
	Min <2450MHz	16 dB	14 dB	10 dB	10 dB
	Min >2450MHz	14 dB	14 dB	8 dB	8 dB
Output Return Loss	Typical	18 dB	18 dB	14 dB	14 dB
	Min <2450MHz	16 dB	14 dB	10 dB	10 dB
	Min >2450MHz	14 dB	14 dB	8 dB	8 dB
Isolation Minimum between any 2 ports	I/P - O/P	60 dB <2450 MHz			
	I/P - I/P	55 dB >2450 MHz			
	O/P - O/P	75 dB			
1dB Gain Compression Point	<2450 MHz	Minimum Gain	3 dBm Min		
		Unity Gain	8 dBm Min		
		Maximum Gain	12 dBm Min		
	>2450 MHz	Minimum Gain	1 dBm Min		
		Unity Gain	6 dBm Min		
		Maximum Gain	10 dBm Min		
Noise Figure	<2450 MHz	Minimum Gain	18 dB Max		
		Unity Gain	16 dB Max		
		Maximum Gain	16 dB Max		
	>2450 MHz	Minimum Gain	20 dB Max		
		Unity Gain	18 dB Max		
		Maximum Gain	16dB Max		
OIP3 3rd order intercept point	<2450 MHz	Minimum Gain	16 dB Min		
		Unity Gain	20 dB Min		
		Maximum Gain	24 dB Min		
	>2450 MHz	Minimum Gain	10 dB Min		
		Unity Gain	14 dB Min		
		Maximum Gain	20 dB Min		
OIP2 2nd order intercept point	Typical	32 dBm Min			
	Minimum	30 dBm Min			
Group Delay	≤ 1.2 ns across operational bandwidth				
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 HMI capacitive touchscreen
Remote Control	Serial (RS232 or RS422/485) and Ethernet port via RJ45 10Base T/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
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 minutes. 15 minutes to retrieve spare part and 5 minutes 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.

