



# ETL Systems

Excelling in RF Engineering

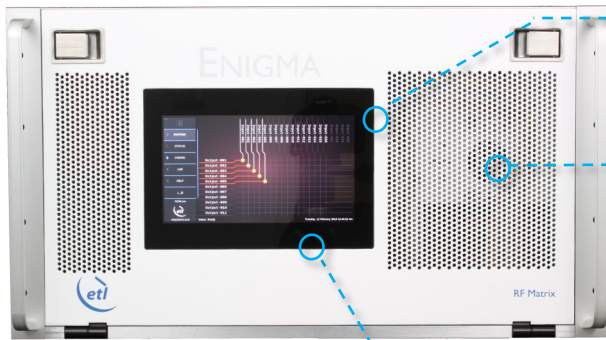
Model Number:  
NGMC-103-xxxx

## 32 x 32 Enigma 500-3150 MHz Combining Switch Matrix / Router

4th generation Enigma Matrix with enhanced RF performance including variable gain -5 dB to +5 dB settable at each input.

### 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



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



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



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



**Resilience** from dual redundant power supplies & CPU modules



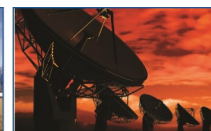
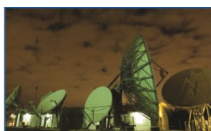
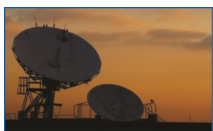
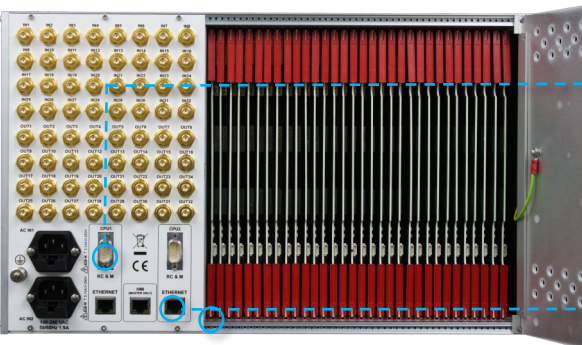
**Dry contact alarm port & serial communications** for amplifier & power supply status



**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	Combining (fan-out), non-blocking	Many inputs can be routed to each output			
Frequency Range	500-3150 MHz				
Gain	0±1 dB Typical, mean across band				
Gain Control	-5 to +5 in 0.5 dB steps	Settable at each input			
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	±2.25 dB	±2.25 dB	±2.5 dB	±2.5 dB
Any 36MHz	<2450 MHz	±0.3 dB	±0.3 dB	±0.5 dB	±0.5 dB
	>2450 MHz	±0.6 dB	±0.6 dB	±0.75 dB	±0.75 dB
Input Return Loss	Typical	18 dB	18 dB	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 Minimum between any 2 ports	I/P - O/P	60 dB <2450 MHz			
		55 dB >2450 MHz			
	I/P - I/P	75 dB			
	O/P - O/P	75 dB			
1dB Gain Compression Point	<2450 MHz	+8 dBm output power			
	>2450 MHz	+5 dBm output power			
Noise Figure	Typical	16 dB	Typical, 1 input routed to 1 output		
	Maximum	18 dB			
OIP3	<2450 MHz	Typical 22 dBm	Minimum 20 dBm		
	>2450 MHz	Typical 18dBm	Minimum 15 dBm		
OIP2	Typical	32 dBm			
	Minimum	30 dBm			
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	Via RJ45 Ethernet port 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
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 and 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.