



ETL Systems

Excelling in RF Engineering

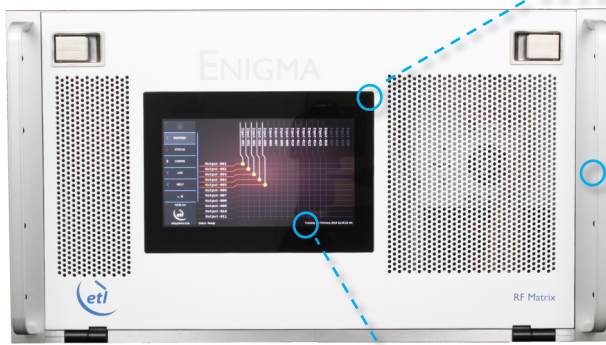
Model Number:
NGM-101-xxxx

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

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

Typical applications:

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



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



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



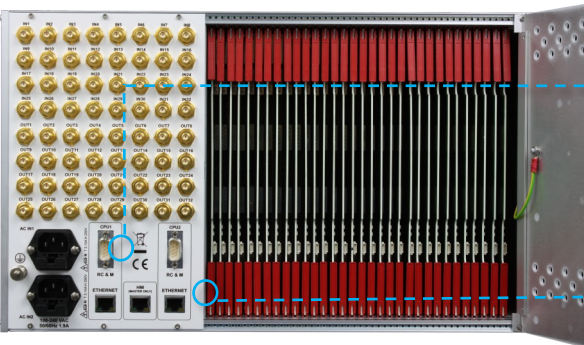
Resilience from dual
redundant power supplies &
CPU modules



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



**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	850-2150 MHz (L-band)				
Gain	0±1 Typical, mean across band				
Gain Control	-5 to +5 in 0.5dB steps	Settable at each output			
RF Connectors	50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type	
	All ports DC blocked				
Gain Flatness	Full band	±1.0 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	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	15 dB	Typical, 1 input routed to 1 output		
	Maximum	16 dB			
1dB GCP (dBm)	+8 dBm output power				
OIP3	Typical	22 dBm			
	Minimum	20 dBm			
OIP2	Typical	32 dBm			
	Minimum	30 dBm			
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	Ethernet via RJ45, 10BaseT/100BaseTx, ETL TCP/IP Protocol SNMP & built in Web Server
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
	Switch card	270,297
	Divider card	317,227
Chassis excludes HMI & RF cards		

Environmental	
Operating temperature	0 to 45°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.

