

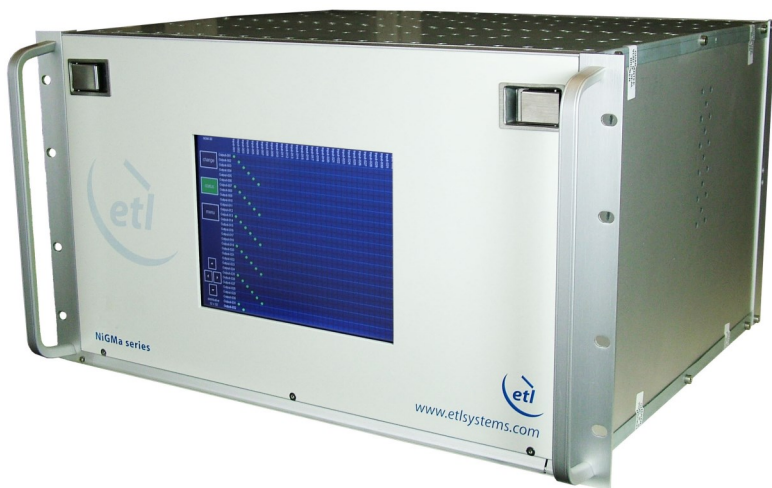


Model Number: **NGM-33-xxxx**

RF Engineering
and Custom Build

Extended L-band Enigma Matrix Router

32 x 32 **Extended L-band (950-2450MHz)** distributive signal routing



Front View of Model NGM-33 showing touchscreen VGA

ETL's popular high performance Enigma **extended L-band (950-2450MHz)** distributive matrix evolves to set new benchmarks for RF performance and leading edge technologies.

The next generation of Enigma matrix focuses on **improved resilience and performance** the impact of failure is minimised throughout the unit.

As ETL customers use matrices in mission-critical applications, we understand the importance of redundancy and hot swap. Input and output cards, power supplies, CPU controller cards, fans and the new VGA human interface can all be **hot swapped**.

New Matrix design means there is one card associated with each input and each output – so failure of a card only affects one channel. For broadcasters, satellite operators and the defence sector, this provides exceptional resilience. The refined design offers rugged dual redundant power supplies with simple front access, enhanced CPU change-out, hot-swap fans and new card connectors. **Web Browser Interface** is standard on an NGM-33.

Improved RF performance of the Enigma which provides superior Isolation, frequency response or flatness, and 1 dB GCP levels – helping our customers ensure that their overall RF chain signal performance is optimised.

Self Diagnostics with continuous monitoring (and reporting) of amplifier status, PSU status (including temperature), fan speed and internal communications is included as standard. Any problems are rapidly identified and hot swap means they can be addressed in minutes.





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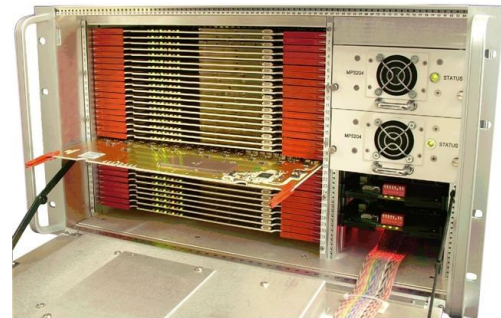
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Enigma Extended L-band (950-2450MHz) Distributive
Matrix Router

NEW FEATURES:

A number of new features have been introduced to the Enigma matrix, including those described below:

Fast Matrix Card Changeout from front and rear



On board log records all routing changes for each user



Touchscreen VGA control with security log on for up to 10 users



Aliases (10 character) on front screen to identify signal sources



FLEXIBILITY

The Enigma Matrix can be adapted and grown to a number of different sizes

Master Matrix offers routing control from touchscreen or remotely

All modules offer hot-swap CPUs and PSUs for peace of mind



Front View

Hot-Swap Input & Output Matrix Cards on all modules offer easy expansion

Active Splitter & combiners offer patch panel & gain options



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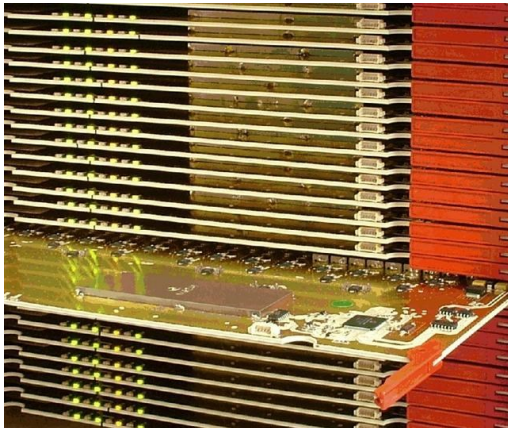
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Resilience

Resilience is designed-in

The Enigma matrix has been designed with resilience in mind. The impact of component failure is minimised and all active components can be hot swapped. Problems are rapidly identified and can be easily sorted out.

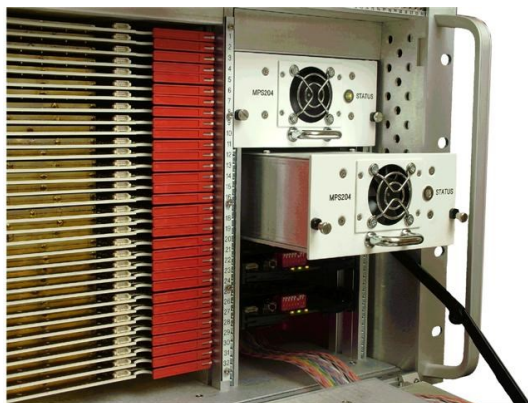
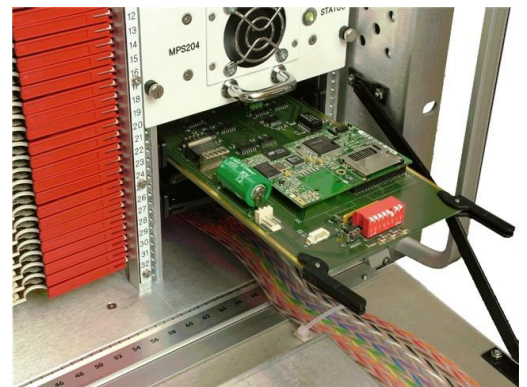


Minimal impact from card failure

One card per input and one card per output mean that the impact of card failure is minimised. Cards can be hot-swapped, and hot expansion can take place in single increments.

Minimal impact from CPU failure

The matrix contains dual redundant CPU's which both operate in parallel. If one CPU fails the other automatically becomes the master. CPU's can be hot-swapped.



Minimal impact from PSU failure

Dual redundant PSU's can be hot-swapped.

Rapid diagnosis of problems

The matrix continuously monitors the conditions of amplifiers, CPUs and PSUs. Any faults are immediately reported through the front panel and remotely. Alarms report the specific faults down to component level.





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Technical specifications and operating parameters

RF Parameters					
Capacity	Up to 32 inputs x 32 outputs				
Routing	Distributive (fan-out), non blocking	Any input can be connected to any number of outputs			
Frequency Range	950-2450MHz (Extended L-band)				
RF Connectors	50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type	
Gain	Over 950-2450MHz	±1.8 dB	±2.0 dB	±2.2 dB	±2.5 dB
Flatness	Over any 60MHz	±0.3 dB	±0.3 dB	±0.4 dB	±0.4 dB
Input Return Loss	15 dB	14 dB	12 dB	10 dB	
Output Return Loss	15 dB	14 dB	12 dB	10 dB	
Gain	0 ± 2 dB		Typically 0 dB ± 1 dB		
Group Delay (ns)	0.8 pk-pk				
Noise Figure	22 dB maximum		19 dB typical		
1dB Compression	+5 dBm minimum				
OIP3	+15 dBm minimum				
OIP2	+20 dBm minimum				
Spurii	Signal independent	-85 dBc maximum			
	AC related	-50 dBc maximum			
Isolation	I/P-O/P	55 dB minimum			
	I/P-I/P	65 dB minimum			
	O/P-O/P	65 dB minimum			

System Control	
Local Control	Touch screen & VGA Display
Remote Control	Via RS232/RS485 and RJ45 Ethernet
SNMP Traps	For alarms & monitoring
Comms/Power Failure	Retains settings
Remote Control Software	Available
Web Browser Interface	Standard

Physical	
Dimensions	6U high x 450mm deep x 19" wide
Weight	29 kg Fully Populated
Colour	White 00-E-55 semi-gloss

Environmental	
Operating temperature	0 to 45°C
Location	Indoor use only
Storage temperature	-20°C to +75°C
Humidity	20 to 90% non-condensing

Key Features	
Extended L-band	950-2450MHz
Input Splitter Cards	One Card per input
Output Switch Cards	One Card per output
Matrix Cards	Single, Hot-swap
CPU	Dual redundant, Hot-swap
PSU	Dual redundant, Hot-swap
Self Diagnostics	Continuous Monitoring

Power		
AC Power	85-264Vac 50/60Hz	Fused 2A
AC Consumption	<200 W total on both AC inputs	Typically <100W total
PSU	Dual redundant	Diode OR
Hot-swap PSU	Yes	
Input RF Power	+16 dBm	Absolute maximum

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