

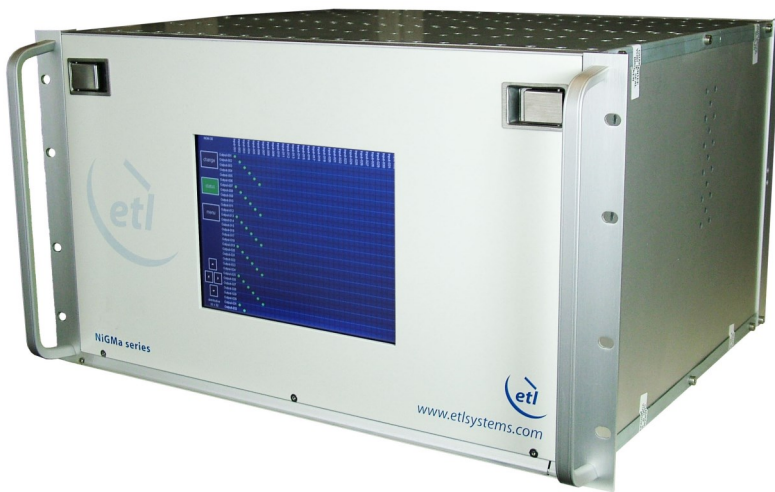


Model Number: NGMC-30-xxxx

High Linearity & Variable Gain

Enigma L-band Switch Matrix / Router

32 x 32 L-band signal routing evolves to new heights



Front View of Model NGMC-30 showing touch screen VGA

ETL's popular high performance Enigma L-band **combining (fan-in)** 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. The NGMC-30 matrix joins the existing Enigma range by providing **high linearity** and **variable gain**.

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 NGMC-30.

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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RF Engineering
and Custom Build

32x32 Enigma L-band high linearity & variable gain Switch
Matrix / Router

NEW FEATURES:

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

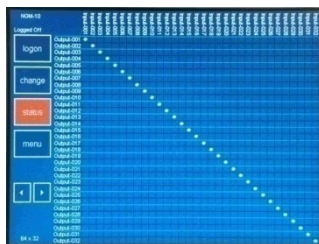
Fast Matrix Card Changeout from front and rear



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 touch screen 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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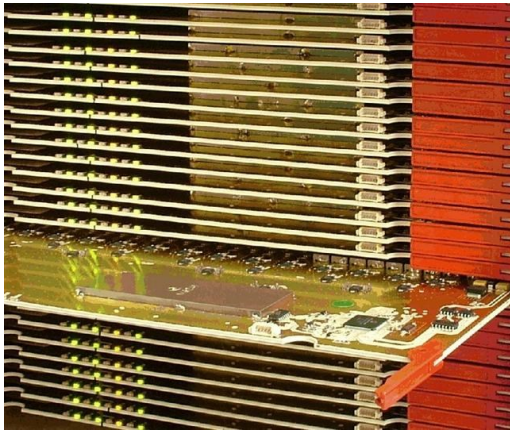
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Resilience

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.

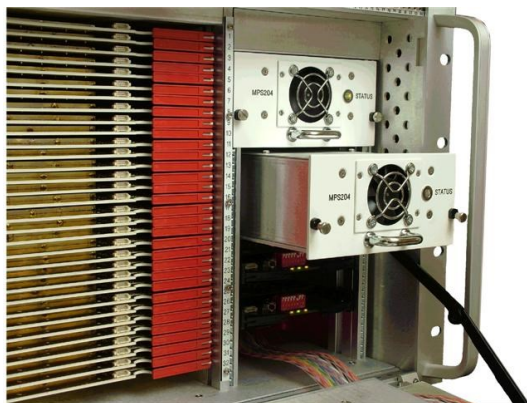
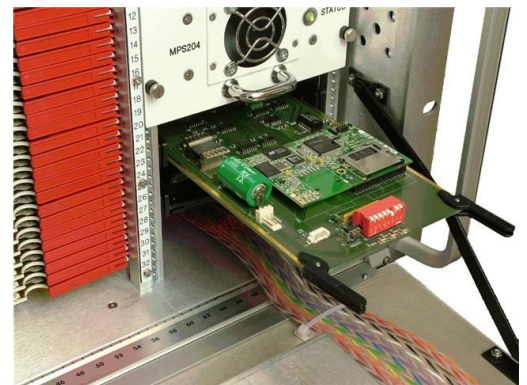


Minimal impact from card failure

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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32x32 Enigma L-band high linearity & variable gain Matrix Router

Technical specifications and operating parameters

RF Parameters						Power			
Capacity		32 inputs x 32 outputs				AC Power		85-264Vac 50/60Hz	Fused 2A
Routing		Combining, non blocking		Many inputs can be routed to each output		PSU		Dual redundant Diode OR	
Frequency Range		850-2150MHz (L-band)				Hot-swap PSU		Yes	
RF Connectors		50Ω BNC	75Ω BNC	75Ω F-type	50Ω SMA	Input RF Power		+20 dBm Absolute maximum	
Gain Flatness	Full Band	±1.5 dB	±1.75 dB	±2 dB	±1.25 dB	AC Consumption		100W Maximum consumption at steady state	
	Any 36MHz	±0.25 dB	±0.5 dB	±0.5 dB	±0.25 dB				
Input Return Loss	Typical	15 dB	12 dB	12 dB	15 dB				
	Minimum	12 dB	10 dB	10dB	12 dB				
Output Return Loss	Typical	15 dB	12 dB	12 dB	15 dB				
	Minimum	12 dB	10 dB	10 dB	12 dB				
Gain	Maximum	5+1 dB							
	Minimum	-5 ± 1 dB							
Gain Control Steps		0.5 ± 0.1 dB							
1dB Gain Compression	Maximum Gain	10 dBm		Typical, 1dB Gain Compression point, output power					
	Unity Gain	12 dBm							
	Minimum Gain	15 dBm							
Noise Figure	Maximum Gain	22 dB		Typical, with one input routed to one output					
	Unity Gain	28 dB							
	Minimum Gain	32 dB							
Isolation	Input-Input	70 dB		Minimum between any two ports					
	Output-Output	70 dB							
	Input-Output	60 dB							
OIP3	Maximum Gain	20 dBm							
	Unity Gain	22 dBm							
	Minimum Gain	25 dBm							
Group Delay		<1ns		Across operational bandwidth					
MTBF (hours)	Chassis	170,740		Chassis excludes HMI and RF cards					
	Switch Card	270,297							
	Combiner Card	317,227							
Environmental						Physical			
Operating temperature		0 to 45°C				Dimensions		6U high x 450mm deep x 19" wide	
Location		Indoor use only				Weight		35 kg Fully Populated	
Storage temperature		-20°C to +75°C				Colour		White 00-E-55 semi-gloss	
Humidity		20 to 90% non-condensing							
Altitude		10,000 feet AMSL							
Key Features						System Control			
Input Splitter Cards		One Card per input				Local Control		Touch screen & VGA Display	
Output Switch Cards		One Card per output				Remote Connection		Via RS232/RS485 and RJ45 Ethernet	
Matrix Cards		Single, Hot-swap				SNMP Traps		For alarms & monitoring	
CPU		Dual redundant, Hot-swap				Comms/Power Failure		Retains settings	
PSU		Dual redundant, Hot-swap				Remote Control Software		Available	
Self Diagnostics		Continuous Monitoring				Web Browser Interface		Standard	

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