



Model Number: **NGM-11-S5**

RF Engineering  
and Custom Build

# NiGMA Matrix Router

L-band signal routing taken to new heights



ETL's high performance Enigma L-band matrix sets new benchmarks for RF performance and introduces leading edge technologies.

The NiGMA matrix focuses on **resilience and performance** the impact of failure is minimised throughout the unit.

Front View of Model NGM-11 showing touchscreen VGA

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, 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 peace of mind.

**RF performance** of the Enigma is exceptional as well. Isolation, frequency response or flatness, and the 1 dB GCP all set exciting new limits – 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, and internal communications is included as standard. Any problems are rapidly identified and hot swap means they can be addressed in seconds.





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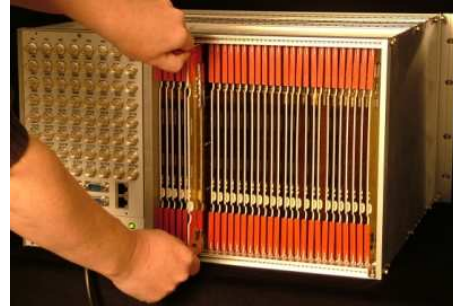
NiGMa L-band Matrix Router

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## NEW FEATURES:

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

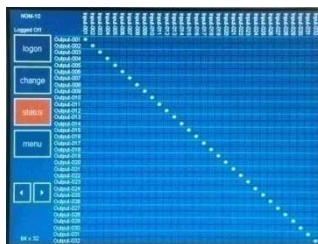
**Fast Matrix Card Changeout** from front and rear



**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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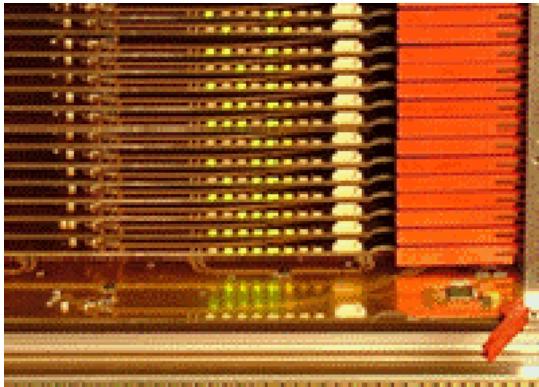
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## Resilience

### Resilience is designed-in

The NiGMa 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.

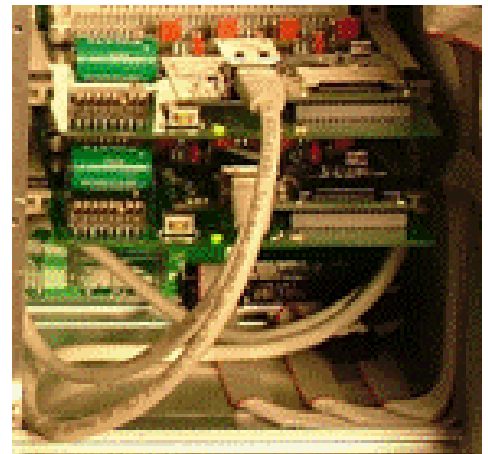


### Minimal impact from card failure

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	32 inputs x 32 outputs		
Frequency Range	850-2150 MHz (L-band)		
Gain	0 dB $\pm$ 2 dB nominal		
Flatness	850-2150MHz	$\pm$ 2 dB	$\pm$ 1 dB typical
	Any 36MHz	$\pm$ 0.5 dB	
Noise Figure	16 dB		
1 dB Compression	+3.5 dBm	+5 dBm typical	
Isolation	I/P – O/P	50 dB minimum	55 dB typical
	I/P – I/P	70 dB typical	
	O/P – O/P	60 dB typical	
Input Return Loss	10 dB typical		
Output Return Loss	10 dB typical		

### Environmental

Operating temperature	0 to 45°C
Location	Indoor use only
Storage temperature	-20°C to +75°C
Humidity	85% non-condensing

### Power

AC Power	85-264Vac 50/60Hz
PSU	Dual redundant
Hot-swap PSU	Yes

### System Control

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

### Physical

Connectors	SMA
Impedance	50 $\Omega$
Dimensions	6U high x 450mm deep x 19" wide
Weight	29 kg Fully Populated
Colour	White 00-E-55 semi-gloss

### Key Features

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

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