



Model Number: NGM-21-xxxx

RF Engineering
and Custom Build

NEXT GENERATION NiGMa Matrix Router

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



Front View of Model NGM-21 showing touchscreen VGA

ETL's popular high performance NiGMa L-band distributive matrix evolves to set new benchmarks for RF performance and leading edge technologies.

The next generation of NiGMa 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-21.

Improved RF performance of the NiGMa 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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NEW FEATURES:

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

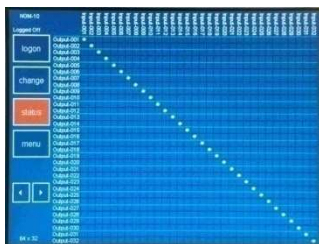
Fast Matrix Card Changeout from front and rear



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

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

Active Splitter & combiners offer patch panel & gain options



Front View



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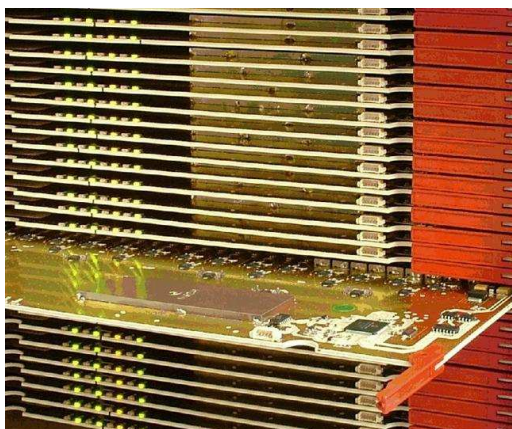
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Resilience

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.

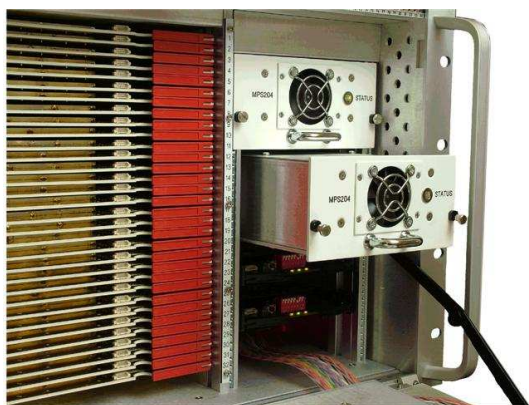
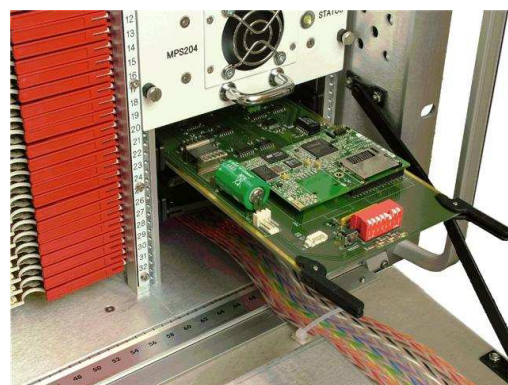


Minimal impact from card failure

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		
Routing		Distributive non-blocking	Any input can be connected to any number of outputs	
Gain		0±1 dB (nominal, mean across band)		
1 dB Compression		5 dBm at unity gain		
Noise Figure		20 dB at room temp, 21±2 °C		
OIP3		19 dBm typ, 16 dBm min		
Frequency (MHz)		950-1750	950-1950	850-2150
Isolation	Input-output	65 dB	65 dB	60 dB
		Typ. 70 dB		
	Input-input	75 dB	72 dB	70 dB
	Output-output	75 dB	75 dB	70 dB
RF Connector Type		NGM-21-B5B5 (all ports 50 ohm BNC)		
Flatness	Operational band width	± 1.0 dB	± 1.25 dB	± 1.5 dB
	Any 36MHz	± 0.25 dB	± 0.25 dB	± 0.25 dB
Input Return Loss		16 dB typ	16 dB typ	14 dB typ
Output Return Loss		18 dB typ	18 dB typ	14 dB typ
RF Connector Type		NGM-21-S5S5 (all ports 50 ohm SMA)		
Flatness	Operational band width	± 1.0 dB	± 1.25 dB	± 1.25 dB
	Any 36MHz	± 0.2 dB	± 0.2 dB	± 0.25 dB
Input Return Loss		20 dB typ	18 dB typ	16 dB typ
Output Return Loss		20 dB typ	18 dB typ	16 dB typ
RF Connector Type		NGM-21-B7B7 (all ports 75 ohm BNC)		
Flatness	Operational band width	± 1.0 dB	± 1.5 dB	± 1.75 dB
	Any 36MHz	± 0.25 dB	± 0.4 dB	± 0.5 dB
Input Return Loss		15 dB typ	14 dB typ	12 dB typ
Output Return Loss		15 dB typ	14 dB typ	12 dB typ
RF Connector Type		NGM-21-F7F7 (all ports 75 ohm F-type)		
Flatness	Operational band width	± 1.0 dB	± 1.5 dB	± 2.0 dB
	Any 36MHz	± 0.35 dB	± 0.4 dB	± 0.5 dB
Input Return Loss		10 dB typ	10 dB typ	10 dB typ
Output Return Loss		15 dB typ	14 dB typ	12 dB typ

Physical	
Dimensions	6U high x 450mm deep x 19" wide
Weight	29 kg
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	85% non-condensing

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	Standard

Power		
AC Power	85-264Vac 50/60Hz, Fused 2A	
PSU	Dual redundant	Diode OR
Hot-swap PSU	Yes	

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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