NEXT GENERATION
Enigma L-band Switch Matrix / Router

32 x 32 L-band signal routing evolves to new heights
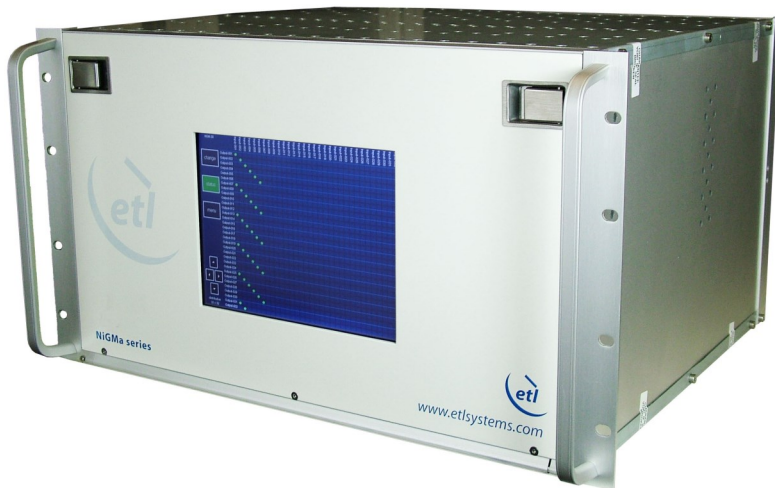
ETL's popular high performance Enigma L-band distributive matrix evolves to set new benchmarks for RF performance and leading edge technologies.

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

Front View of Model NGM-21 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, 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 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.

NEW FEATURES:

A number of new features have been introduced to the Enigma matrix, including those described below:
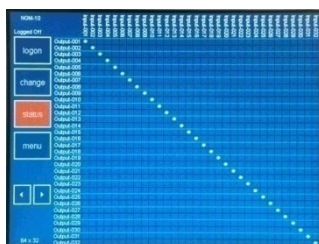
Fast Matrix Card Changeout from front and rear

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

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

Active Splitter & combiners offer patch panel & gain options

Front View

Resilience

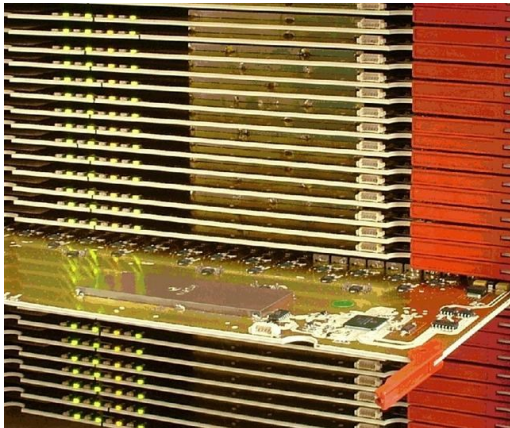### Resilience is designed-in

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.
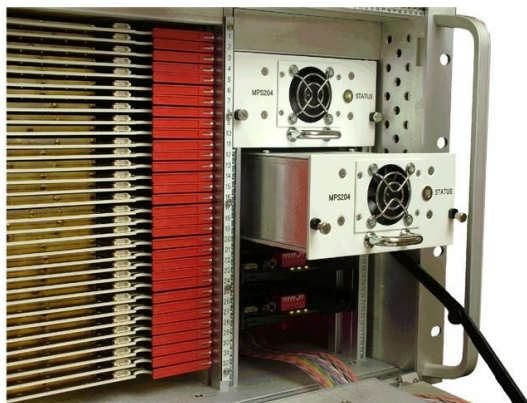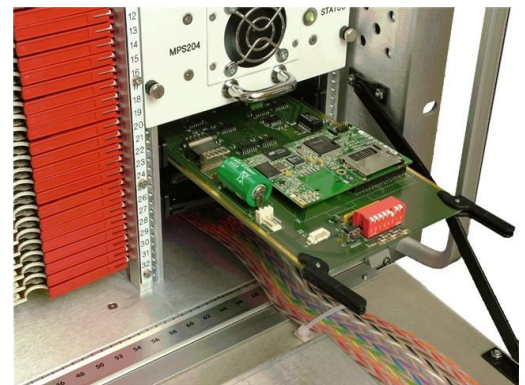

Minimal impact from card failure

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.

Model Number: NGM-21-xxxx

Enigma L-band Matrix Router

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		
Frequency (MHz)	850-2150			
Gain	0±1 dB (nominal, mean across band)			
1 dB Compression	5 dBm at unity gain			
Noise Figure	20 dB			
OIP3	19 dBm typ, 16 dBm min			
Connector Type	SMA 50Ω	BNC 50Ω	BNC 75Ω	F-Type 75Ω
Isolation — Input-output	65 dB			
Isolation — Input-Input	75 dB			
Isolation — Output-output	75 dB			
Flatness — Full Band	± 1.0 dB	± 1.0 dB	± 1.5 dB	± 1.5 dB
Flatness — Any 36MHz	± 0.25 dB	± 0.25 dB	± 0.5 dB	± 0.5 dB
Input Return Loss — Typical	20 dB	20 dB	14 dB	12dB
Input Return Loss — Minimum	16 dB	16 dB	10 dB	8 dB
Output Return Loss — Typical	20 dB	20 dB	14 dB	12 dB
Output Return Loss — Minimum	16 dB	16 dB	10 dB	8 dB
Switching Time	<50ms	From receipt of command to implementation of path change		
Group Delay	<1ns			

Physical

Dimensions	6U high x 450mm deep x 19" wide
Weight	35 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	20 to 90% 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	
AC Consumption	100W	Max Consumption

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

RoHS COMPLIANT Pb

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