



ETL Systems
New technologies
in RF distribution

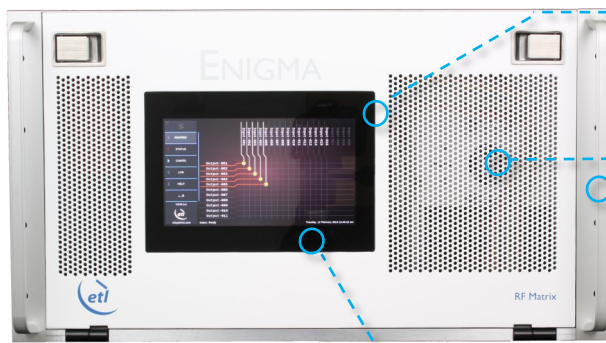
Model Number:
NGM-102-xxxx

32 x 32 Enigma Extended L-band Distributive Switch Matrix / Router

4th generation Enigma matrix with enhanced RF performance including variable gain -5 dB to $+5$ dB settable per output.

Typical applications:

- RF content acquisition for TVRO & IPTV headends
- Signal monitoring of satellite traffic
- Remote controlled unmanned satcom sites



850 - 2450 MHz
operating frequency



Suitable for HTS applications due to extended bandwidth



Compact up to 32 inputs x 32 outputs in a 6U high chassis



Upgraded local control & monitoring via front panel capacitive touchscreen



Expansion in single increments or with additional matrix modules for larger systems



Self diagnostics with continuous monitoring of amplifiers, CPU's & PSU's



Resilience from dual redundant power supplies & CPU modules



Minimal impact from failure with hot-swap single input & output RF cards, dual power supplies & dual CPU's, fans



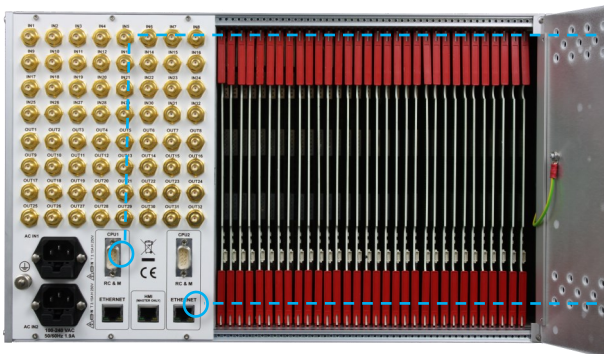
Dry contact alarm port & serial communications for amplifier & power supply status



Future proof secure protocols with SNMPv3 & HTTPS



Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface





Technical specifications and operating parameters

| RF Parameters | | | | | |
|-------------------------------------|---|---|-------------------------|--|----------|
| Capacity | 32 inputs x 32 outputs, fully populated | | | | |
| Routing | Distributive, non-blocking | Any input can be connected to any number of outputs | | | |
| Frequency Range | 850-2450 MHz (Extended L-band) | | | | |
| Gain | 0±1 dB Typical, mean across band | | | | |
| Gain Control | -5 to +5 dB in 0.25dB steps | | Settable at each output | | |
| RF Connectors | 50Ω SMA | 50Ω BNC | 75Ω BNC | 75Ω F-type | |
| | All ports DC blocked | | | | |
| Gain Flatness | Full band | ±1.25 dB | ±1.25 dB | ±1.5 dB | ±1.5 dB |
| Any 36MHz | < 2150 MHz | ±0.25 dB | ±0.25 dB | ±0.5 dB | ±0.5 dB |
| | > 2150 MHz | ±0.5 dB | ±0.5 dB | ±0.75 dB | ±0.75 dB |
| Input Return Loss | Typical | 20 dB | 20 dB | 16 dB | 16 dB |
| | Minimum | 16 dB | 16 dB | 10 dB | 10 dB |
| Output Return Loss | Typical | 18 dB | 18 dB | 16 dB | 16 dB |
| | Minimum | 14 dB | 14 dB | 10 dB | 10 dB |
| Isolation (min between any 2 ports) | I/P - O/P | 60 dB | | | |
| | I/P - I/P | 75 dB | | | |
| | O/P - O/P | 75 dB | | | |
| Group Delay | ≤ 1 ns across operational bandwidth | | | | |
| Noise Figure | Minimum Gain | 20 dB Max | | With one input routed to one output. | |
| | Unity Gain | 16 dB Max | | | |
| | Maximum Gain | 16 dB Max | | | |
| 1dB GCP (dBm) | Minimum Gain | +3 dBm Min | | 1dB Gain Compression point, output power | |
| | Unity Gain | +8 dBm Min | | | |
| | Maximum Gain | +12 dBm Min | | | |
| OIP3 | Minimum Gain | 16 dBm Min | | | |
| | Unity Gain | 20 dBm Min | | | |
| | Maximum Gain | 24 dBm Min | | | |
| OIP2 | Typical | 32 dBm Min | | | |
| | Minimum | 30 dBm Min | | | |
| Switching Time | < 50ms from receipt of a command to implementation of path change | | | | |
| Input RF Power | + 20 dBm | | Absolute maximum | | |

| System Control | |
|----------------|---|
| Local Control | Via Front Panel capacitive touchscreen |
| Remote Control | Serial (RS232 or RS422/485) and Ethernet port via RJ45 10BaseT/100 BaseTx. TCP/IP, SNMPv3, HTTPS & Web browser interface. |
| Alarms | Dry contact (D-type) & Ethernet (RJ45) for PSU & Amp. status |

| Power | | |
|---------------------------------|---|---|
| PSU Power | 85-264Vac 50-60Hz | Fused 2A |
| AC Consumption | 150W | Max. consumption at steady state |
| LNB Power | None | |
| PSU | Dual redundant & alarmed | Diode OR. Hot swappable |
| Hot-swap PSU | Yes | |
| CPU Redundancy | Dual redundant | Hot swappable |
| Input Cards | Hot swap | Failure effects only one input port |
| Output Cards | Hot swap | Failure effects only one output port |
| MTTR | 20 mins. 15 mins to retrieve spare part, 5 mins to replace. | Applies to LRUs only and assumed in house stock |
| MTBF | Chassis | 271,444 |
| | Switch card | 270,297 |
| | Divider card | 317,227 |
| Chassis excludes HMI & RF cards | | |

| Environmental | |
|-----------------------------------|---|
| Operating temperature | 0 to 45°C |
| Gain Stability versus Temperature | 0.05dB/°C |
| Storage temperature | -20°C to +75°C |
| Location | Indoor use only |
| Humidity | 20 to 90% non-condensing |
| Altitude (operational) | 10,000 feet AMSL (Above Mean Sea Level) |
| Altitude (storage) | 30,000 feet AMSL (Above Mean Sea Level) |

| Physical | |
|------------|---------------------------------|
| Dimensions | 6U high x 450mm deep x 19" wide |
| Weight | 35 kg, fully populated |
| Colour | RAL9003—White (Semi-Matte) |

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.
Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.

