ETL Systems

*Excelling in RF Engineering*

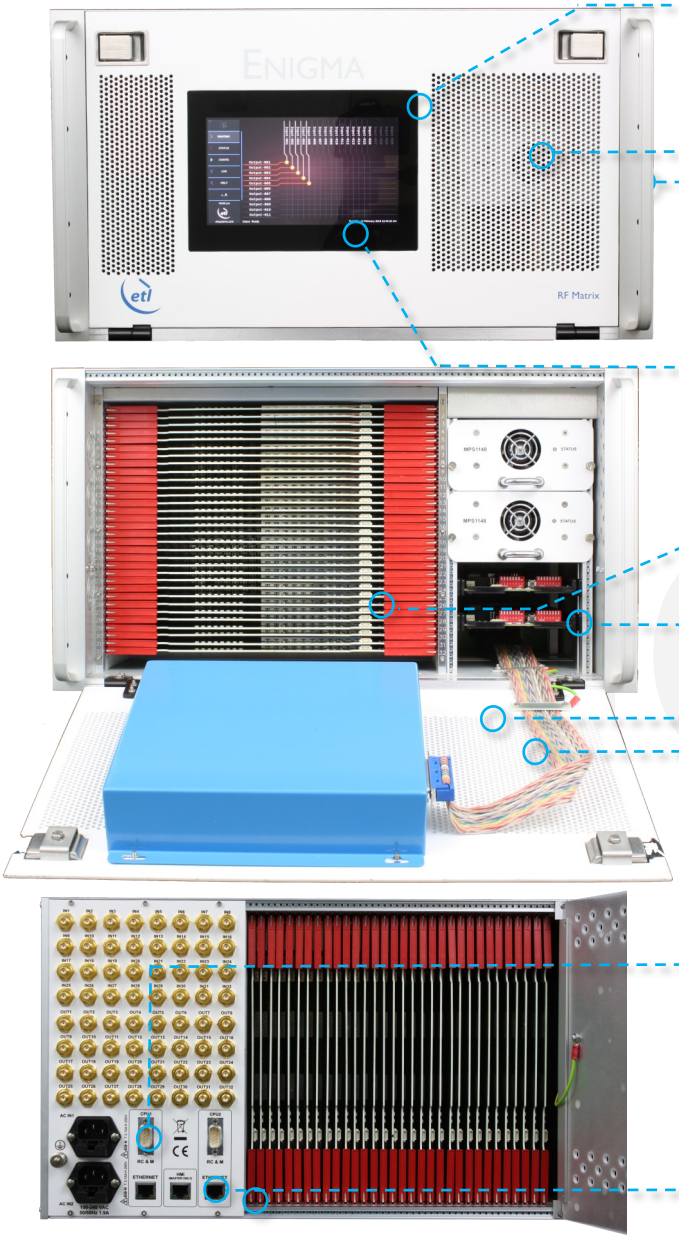
Model Number:
NGMC-102-xxxx

# 32 x 32 Enigma Extended L-band Combining Switch Matrix / Router

**Typical applications:**

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

4th generation Enigma Matrix with enhanced RF performance including variable gain –5 dB to +5 dB settable per input.



**850 - 2450 MHz** operating frequency range

**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

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

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

**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

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## Technical specifications and operating parameters

| RF Parameters | | | | | |
|---|---|---|---|---|---|
| Capacity | | 32 inputs x 32 outputs, fully populated | | | |
| Routing | | Combining (fan-out), non-blocking | Many inputs can be routed to each output | | |
| Frequency Range | | 850-2450 MHz (Extended L-band) | | | |
| Gain | | 0±1 Typical, mean across band | | | |
| Gain Control | | -5 to +5 in 0.5dB steps | Settable at each input | | |
| 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 | ±0.50 dB | ±0.50 dB |
| | > 2150 MHz | ±0.30 dB | ±0.30 dB | ±0.50 dB | ±0.50 dB |
| Input Return Loss | Typical | 18 dB | 18 dB | 16 dB | 16 dB |
| | Minimum | 14 dB | 14 dB | 10 dB | 10 dB |
| Output Return Loss | Typical | 20 dB | 20 dB | 16 dB | 16 dB |
| | Minimum | 16 dB | 16 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 | Typical | 16 dB | Typical, 1 input routed to 1 output | | |
| | Maximum | 18 dB | | | |
| 1dB GCP (dBm) | < 2150 MHz | +10 dBm output power | | | |
| | > 2150 MHz | +8 dBm output power | | | |
| OIP3 | Typical | 22 dBm | | | |
| | Minimum | 20 dBm | | | |
| OIP2 | Typical | 32 dBm | | | |
| | Minimum | 30 dBm | | | |
| 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 RS422/48) 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 input 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 | Chassis excludes HMI & RF cards |
| | Switch card | 270,297 | |
| | Divider card | 317,227 | |

| Environmental | |
|---|---|
| Operating temperature | 0 to 45˚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.

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