

MX-88A Specifications

System Hardware

Computer:

- **Processor:** 1.8 GHz NXP i.MX 8M Plus Quad-Core
- **Memory:** 1GB RAM
- **Storage:** 64GB eMMC
- **Security:** TPM 2.0 crypto processor
- **Sensors:** 3-axis accelerometer
- **Temperature:** -40°C to +85°C
- **Expansion Interface:** USB 2/3.0 | mPCIe 3.0

Graphics Processing Unit:

- GC7000UL (3D) / GC520L(2D)
- ~16 GFLOPS (FP32)
- OpenGL® ES 3.1/3.0
- Open CL™ 1.2 FP
- OpenVG™ 1.1
- Vulkan®

Video Processing Unit:

- 1080p60 H.264 / H.265 Decoder
- 1080p60 H.264 / H.265 Encoder

GNSS:

- U-BLOX NEO-M10
- GPS, GLONASS, Galileo, BeiDou
- External GNSS and network-distributed positional support

Wireless / RF

Primary Radio Options:

- 2.4 GHz 2x2 MU-MIMO
- 900 MHz 1x1 SISO

See MX-88A Wireless Module Spec sheet for more details

Secondary Radio:

- LoRa (902–928 MHz / 868 MHz configurable)
 - Parallel low-bandwidth network for PLI / fallback
- Meshtastic / MeshCore Compatible

Network / Mesh

Mesh Architecture:

- **Type:** MANET (Mobile Ad Hoc Network)
- **Topology:** Fully decentralized (no master node)
- **Node Role:** Each node functions as both a router & endpoint
- **Self-Forming:** Automatic peer discovery and connection
- **Self-Healing:** Dynamic routing under node movement or RF degradation

Routing & Networking:

- **Routing:** Layer 2 / Layer 3
- **Mesh:** 802.11s Protocol
- **Multi-Hop:** Extends range via intermediate nodes
- **Dynamic Routing:** Adapts to link quality & network conditions
- **Low-Latency Forwarding:** Optimized for real-time traffic

Backhaul Integration (Layer 3):

- Supports external WAN backhaul via Ethernet bridging
- Compatible with Starlink and LTE/GSM gateways
- Enables LAN-to-WAN extension for internet access

Security & Encryption:

- WPA / WPA2 / WPA3-SAE
- AES-CCMP / AES-GCMP (128/256-bit)
- Supports integration w/ external encryption systems

Firmware:

- MOROSX OpenWRT-based mesh stack
- Supports integration with third-party software and network systems

IP Support:

- IPv4 / IPv6
- TCP / UDP / RTP
- Unicast / Multicast / Broadcast

Data Performance:

- Hard Wired Throughput: Up to ~1 Gbps
- Wireless Throughput: Wireless Module Dependent
- Optimized for low-latency multi-hop communication

Interface / Connectors

RF (Radio Frequency):

- 2x TNC F (Primary Wireless Module)
- 1x TNC F (Secondary Wireless Module - LoRa)
- 1x SMA F (GPS)

Data:

- 8-Pin M12 Ethernet
- Supports Gigabit Ethernet w/ M12 EUD / RJ45 Cable
 - Supports WAN backhaul / gateway
 - Supports Starlink, LTE/GSM
 - Supports IP-based devices (e.g., cameras, sensors, nodes)

Audio / Push To Talk:

- **Interface:** 6-pin Hirose
- **Codec:** Opus (low latency, high efficiency)
- **Function:** Digital PTT optimized for MANET environments

Power / Mechanical

Input Power:

- 8-60V DC Input

Battery Interface:

- Twist-Lock Connector Compatibility
 - MOROSX Power Management Battery
- AN/PRC-152 / PRC-148 batteries

External Power (via battery eliminators):

- MOROSX Battery Eliminator
- AN/PRC-152 / PRC-148 battery eliminators

External Power Sources:

- MOROSX Power Management Charger
- USB-C PD power sources (≥65W recommended)
- AC/DC power adapters

Mechanical

- Material: Hardcoat Type III / Class II Anodized Machined Aluminium
- Dimensions: 150 x 66 x 33 mm (5.9 x 2.6 x 1.3 in)
- Weight: (x) grams / oz
- Rear Mounting: M3 0.5mm thread pitch