



**REDUCED  
SWaP**



**INTEGRATED  
ANDROID™**



**VIDEO  
ENCODING**



**WAVE RELAY®  
MANET**



**COMMAND  
& CONTROL**



**DISPARATE  
PLATFORMS**

## Embedded Module



### Join the Wave Relay® Ecosystem

The Embedded Module is the most advanced, scalable, and efficient Mobile Ad Hoc Networking (MANET) radio in the world, available in an integration-ready, SWaP-timized form factor. Integrate the Embedded Module into your products to unite UAVs, UGVs, and sensors on a single network. Because the Embedded Module features an HD video encoder and onboard Android™ computer, eliminate redundant equipment from your platform. The Embedded Module is compatible with Persistent System's full line of Interchangeable Frequency Modules, allowing you to change frequencies to ensure compliance, future-proof your design, and protect your product from obsolescence.

#### Transform Your Systems into Network Devices

- Designed for integration into disparate unmanned systems and sensors
- Communicate further and faster than ever before
- Communication, computing, and video encoding all in a single device

#### SWaP-timize Your Unmanned Systems

- Consolidate your computing, video encoding, communications, and networking hardware
- Focus on what matters most: the mission, time on station, and payloads
- Streamlined integration

#### Achieve the Vision

- Bring your unmanned platform into the Wave Relay® Ecosystem
- MPU5 radio users can now operate your platforms, watch your video feeds, and steer your cameras
- Take your unmanned systems to the next level by adding swarming, autonomy, and collaborative capabilities

# SPECIFICATIONS

## Physical

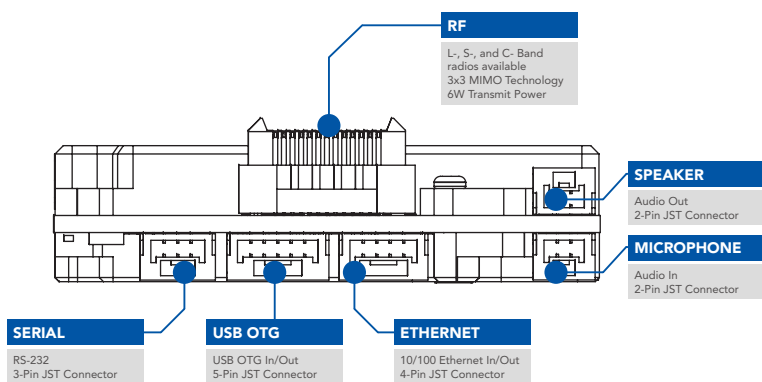
**Weight**  
3.2 oz.  
**Main Board Dimensions**  
2.00 x 3.29 x 0.59 in.

## Power

**Input**  
8 - 30 VDC  
**Power Consumption**  
0.3A & 12V

## Environmental

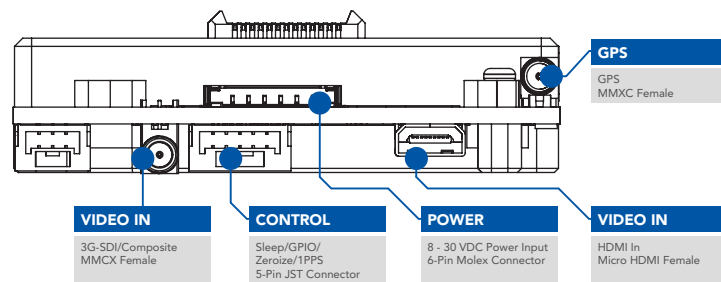
**Operating Temperature**  
-40°C to +85°C  
**Emissions**  
RE102  
**MIL-STD-810G**  
Vibration  
High Temperature (operational)  
High Altitude (operational)



## Video

**Video Input**  
3G-SDI  
Composite  
HDMI  
**Video Compression**  
H.264 Encoding and Decoding  
Native Scaling  
**Bit Rates**  
500 Kbps - 20 Mbps  
**Frame Rates**  
6/10/15/24/29.97/30/59.94/60 fps  
59.94/60 fps not available at 1080p

**Resolutions**  
240p  
SD 480  
SD 576 PAL  
720p  
1080p  
**Network Protocols**  
UDP Multicast & Unicast (MPEG-2 Transport Stream)  
RTP Multicast & Unicast  
RTSP Unicast



## I/O

**Interfaces**  
GPS  
HDMI In  
3G-SDI/Composite In  
Control (Sleep, GPIO, Zeroize, 1PPS, GND)  
RS-232 Serial  
USB OTG  
Ethernet  
Audio In (Mic)  
Audio Out (Speaker)

## Android™ Computer

**Operating System**  
Android™ 5.0 – Lollipop  
**Processor**  
1 GHz Quad Core ARM

## RAM

2GB

## Storage

128GB Flash

## Networking

### Ethernet

10/100 Mbps  
Integrated serial-to-Ethernet

### Integration and Extension

Seamless layer 2 network  
Cloud Relay™ compatible

### Protocols

Advanced multicast algorithms  
IPv4 and IPv6 compatible  
Integrated DHCP server  
USB RNDIS Host and Device

## Security

### Crypto Modes

CTR-AES-256 Encryption  
SHA-256 HMAC

### Hardware

Cryptographic Acceleration  
Suite-B Algorithms

## MANET

### MANET

Wave Relay®  
Self-Forming/Healing

Peer-to-Peer

No Master Node

### Node Entry Time

<1 sec.

### Max. Number of Hops

No Limit

### Max. Number of Nodes

No Limit

### Max. Distance between Nodes

130 mi