



## Ruggedized MPM-1000 IP Modem

**Provides Military and Commercial Customers with the Specialized IP SATCOM Necessary to Keep Highly Mobile, Dispersed and Remote Users Connected**



*Linkabit's Ruggedized MPM-1000 Modem IP (RMPM) with its Network Centric Waveform (NCW) reduces operational cost and supports the highest number of IP users by providing very efficient use of Satellite Bandwidth over any Military or Commercial transponded satellite. The RMPM is a conduction cooled unit that is environmentally sealed for optimal use in harsh environments. It has been tested and certified to meet all the requirements of the tactical environment. The RMPM is fully automated and once properly configured, requires no operator intervention if link conditions change, or if a different type terminal joins the network. It has been designed to utilize and optimize the full capabilities of the Wideband Global SATCOM (WGS) multi-beam, multi-band satellite.*

The NCW is the U.S. Army's Open Standard (Non-Proprietary) Waveform that provides optimal performance in any SATCOM architecture with any size aperture terminal. It provides a fully certified secure network that is self forming and self healing making it very easy to use and maintain. Satellite resources can be managed on the battlefield or remote area with no special hub hardware required. Any large aperture terminal can operate as the Network Controller and there are allowances for automatic or planned Network Control handover.

With its rapid acquisition/reacquisition, hub assist functions and Doppler compensation, it provides outstanding support for COTM communications.

### • EFFICIENT USE OF SATELLITE RESOURCES

- ADVANCED MF-TDMA, DAMA SCHEDULER
- ADAPTIVE CODING AND MODULATION
- DIRECT SEQUENCE SPREADING ON A BURST-BY-BURST BASIS
- SUPPORTS MESH, HUB-SPOKE AND HYBRID NETWORKS
- SUPPORTS NON-CONTIGUOUS BANDWIDTHS IN MULTIPLE TRANSPONDERS

### • MEETS TACTICAL ENVIRONMENT

- DESIGNED TO MEET MIL-STD-810F AND MIL-STD-461

### • MAXIMUM THROUGHPUT WITH ANY SIZE TERMINAL IN A SINGLE NETWORK

- RESPONSIVE LINK POWER AND DATA RATE CONTROL
- WIDE RANGE OF DATA RATES, MODULATIONS AND FEC CODE RATES
- SIMULTANEOUS SUPPORT FOR SPREAD AND NON-SPREAD USERS

### • OPTIMIZED FOR USE WITH THE WGS SATELLITE

- TUNEABLE OVER 1.2 GHZ
- 500 MHZ INSTANTANEOUS BANDWIDTH
- MULTI-BAND/MULTI-BEAM OPERATION
- MULTI-BEAM FAN IN/FAN OUT CAPABILITIES
- GAIN STATES FOR OPTIMAL ASSIGNMENT OF DISADVANTAGED TERMINALS



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## Network Capabilities

- Full Mesh, Hub-Spoke, and Hybrid Topologies Supported
- Burst-to-Burst Dynamic Control of Power, Spread Factors, Data Rates, Channel Rates, Modulation and Code Rates

## Excellent Support for On The Move (OTM)

- Dynamic Spreading on a Burst-by-Burst Basis to Control Power Spectral Density
- Rapid Acquisition/Reacquisition
- Support of Doppler, Doppler-Rate, and Doppler Acceleration Requirements
- Link-Layer Assured Delivery (ARQ)

## Optimized for Use with the WGS Satellite

- Multi-Band/Multi-Beam Operation Allows for Ka-Band and X-Band Terminals in Different Satellite Footprints to Operate in the Same Network
- WGS Gain States Allows for Optimal Assignment of Disadvantaged Terminals to Highest Gain State Segments
- Multi-Beam Fan-In and Fan-Out Channelization Allowing Control of a Network from a Single NC Along with Efficient Dissemination of Multi-Cast and Broadcast Traffic
- Full WGS RF Coverage, 1.2 GHz IF with an Instantaneous 500 MHz Bandwidth
- Non-Contiguous Bandwidth Segments can be Assigned Within One Transponder or Across Multiple Transponders

## Ruggedized MPM-1000 IP Modem Technical Specifications

### MF-TDMA Network Centric Waveform

|                                                |                                                                                          |
|------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Data Rate:</b>                              | 32 kbps – 4.096 Mbps (Per Carrier)                                                       |
| <b>Turbo Coding:</b>                           | SCCC – Rates 1/2, 2/3 and 3/4                                                            |
| <b>Interleaver Block Length:</b>               | 640, 1280, 2560, and 5120                                                                |
| <b>Modulation Formats:</b>                     | BPSK (Rate 1/2 Coding)<br>QPSK (Rate 1/2, 2/3 and 3/4 Coding)<br>8 PSK (Rate 2/3 Coding) |
| <b>Direct Sequence Spreading Gain:</b>         | 0 to 12 dB (Spread Factor 1, 2, 4, 6, 8, 12, 16; up to 8.192 Mcps)                       |
| <b>Number of Carriers (MF-TDMA Operation):</b> | 2 Tx<br>4 Rx                                                                             |
| <b>Encryption:</b>                             | AES-256 CBC TRANSEC<br>FIPS 140-2 Level 2 Certified                                      |
| <b>Control:</b>                                | SNMP V3/L-3 Linkabit HCI                                                                 |

### Environmental

|                                                     |                |
|-----------------------------------------------------|----------------|
| <b>Conduction Cooled and Environmentally Sealed</b> |                |
| <b>Non-Operating Temp:</b>                          | -40°C to +71°C |
| <b>Operating Temp:</b>                              | 0°C to +50°C   |
| <b>Vibration/Shock:</b>                             | MIL-STD-810F   |
| <b>EMI:</b>                                         | MIL-STD-461    |

### Mechanical/Electrical

|                                |                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Size:</b>                   | 1U 19" Rack Mountable Chassis<br>19" Wide x 1.75" High x 18.5" Deep                                                                                                        |
| <b>Weight:</b>                 | 19 lbs (excluding mounting slides)                                                                                                                                         |
| <b>Input Power:</b>            | 90 VAC to 264 VAC, 47-63 Hz or<br>+24 VDC Vehicle Power (Optional)                                                                                                         |
| <b>Power Consumption:</b>      | < 170 Watts                                                                                                                                                                |
| <b>Frequency Reference:</b>    | Internal or External (5 or 10 MHz)                                                                                                                                         |
| <b>Intermediate Frequency:</b> | Tx L-Band (950-2150 MHz) w/10 MHz<br>Reference and Externally Supplied<br>+18 to +48 VDC @ 3.0 Amps<br>Rx L-Band (950-2150 MHz) w/10 MHz<br>Reference and +18 VDC @ 450 mA |

### Baseband Interfaces

|                         |                                                                       |
|-------------------------|-----------------------------------------------------------------------|
| <b>Monitor/Control:</b> | 10/100/1000 Base-T<br>(NCW and FDMA Control)<br>RS-485 (FDMA Control) |
| <b>NCW Data Port:</b>   | 10/100/1000 Base-T                                                    |
| <b>FDMA Data Port:</b>  | MIL-STD-188-114/RS-422/RS-423                                         |

### MIL-STD-188-165A (FDMA) Compliant

|                |                                                                                                                                                                   |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type I:</b> | BPSK - 64 kbps to 6000 kbps<br>QPSK/OQPSK - 64 kbps to 8472 kbps<br>Convolutional Coding, RS Coding<br>and Data Scrambling (IAW IESS-<br>308, 309, 310 and OM-73) |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Note: All specifications subject to change without notice.

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