Overview

The AMT30 modem series provide unparalleled flexibility in interfaces and capabilities stemming from its modular construction. The AMT supports two modulator/demodulator stuffing slots allow the AMT30 modem series to support the following configurations:

<table>
<thead>
<tr>
<th>Tx-only</th>
<th>Rx-only</th>
<th>Rx-Tx</th>
<th>Tx-Tx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modulator only</td>
<td>Demodulator only</td>
<td>Mod/Demod</td>
</tr>
<tr>
<td>4Rx (referred to as AMT34)</td>
<td>2x Dual-Demod or Quad-demod</td>
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</tbody>
</table>

The modem modulates carriers directly at L-band, resulting in an efficient uplink system with an extremely pure output spectrum. A 70±18MHz / 140±36MHz option is also available. The modem includes support for BPSK, QPSK, 8PSK and 16QAM with data rates from 16 kbps to 10 Mbps in 1 bps steps.

The AMT30 provides Viterbi forward error correction (FEC) as standard. Available options include Intelsat compliant Reed Solomon outer FEC codec, or Turbo FEC option that greatly improves BER performance.

Monitor and Control (M&C) is available via RS-232 and RS-485 ports to provide access to a command line interface, with an Ethernet option for SNMP and Telnet interfaces. In addition, the modem can be configured via an optional front panel or hand held controller.

DC power and high stability 10 MHz reference can be supplied for powering and synchronizing a Block Up Converter (BUC) and Low Noise Block Down Converter (LNB).

As standard data interface the AMT30 modem provides a 10/100BaseT Ethernet supporting forwarding rates of up to 10Mbps for bridging or IP routing applications. In the AMT34 configuration, the AMT34 forwarding rate is limited to 10Mbps. Alternatively, the AMT30 can be ordered with EIA530 serial port interface capable of supporting 10Mbps speeds. In the AMT34 configuration, each of the four EIA530s is capable of supporting 10Mbps.

In addition, PowerTrackTM system provides additional stability (control) over the transmission chain when using compatible AMT BUC’s. AMT BUCs include a power detector on the output, which the modem monitors and adjust its own Tx output level in response and maintaining a constant output power from the BUC. This closed loop power control maintains the output power from the BUC stable within ±1 dB under all environmental conditions.

Performance specifications

<table>
<thead>
<tr>
<th>Modulation</th>
<th>FEC</th>
<th>BPSK ½</th>
<th>BPSK 7/8</th>
<th>BPSK 19/20</th>
<th>QPSK ¼</th>
<th>QPSK 7/8</th>
<th>QPSK 19/20</th>
<th>8PSK ¼</th>
<th>8PSK 7/8</th>
<th>8PSK 19/20</th>
<th>16QAM ¼</th>
<th>16QAM 7/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPSK ½</td>
<td>14.4 to 4425 kbps</td>
<td>16.8 to 5162 kbps</td>
<td>18.5 to 5686 kbps</td>
<td>28.8 to 8850 kbps</td>
<td>33.6 to 10000 kbps</td>
<td>37.0 to 10000 kbps</td>
<td>43.2 to 10000 kbps</td>
<td>50.4 to 10000 kbps</td>
<td>55.5 to 10000 kbps</td>
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<tr>
<td>QPSK ¼</td>
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</table>

Scrambling: V.35, CCITT 308/309
Roll off: 0.15, 0.20, 0.25, 0.30, 0.35
Spectral Shape: CCITT 308/309 compliant
RF Frequency: L-band: 950 to 1750MHz in 1Hz steps
Optional: 950 to 2000MHz.
Optional: 70+/-18MHz, 140+/-36MHz

Optional Features

- 4Mbps and 10Mbps options.
- Turbo FEC ¾, ⅛, 0.95 rates
- EIA530 in lieu of 10/100BaseT as standard data interface.
- Concatenated Reed Solomon outer/ Viterbi inner FEC
- High stability power supplies
- Reference for BUC and LNB
- Optional front panel display and keypad as shown
- 11 redundancy solutions available

Features

- 16kbps to 10Mbps in 1bps Steps
- L-band or 70MHz interfaces
- BPSK, QPSK, 8PSK & 16QAM Operation
- Bridging and/or IP routing (standard)
- Viterbi FEC
- Multi-demod configurations
- Optional: Reed Solomon
- Optional: Turbo Product Code

AMT30 Low Data Rate
SCPC Modulator / Demodulator
**Modulator Specification:**

- **IF output connector:**
  - Type N (f) 50 Ohm for L-band
  - BNC (f) for 70/140MHz, 50 Ohm
  - Return Loss ≥17dB

- **RF output power:**
  - Range: -5 to -35 dBm, in 0.10 dB steps
  - Accuracy: +0.5 dB; Temp
  - Stability: +0.25 dB

- **Output spurious/harmonics:** -55dBc DC to 2500MHz/-50dBc; 1900 MHz to 2500MHz

- **Phase noise:** IESS 308/309 compliant

- **BUC reference frequency and stability:**
  - Frequency: 10 MHz, 0 dBm, +2 dB
  - Stability: 5 x 10^{-9}/per day, 5 x 10^{-8}/year, no frequency/phase hits for external ref.

- **Optional:** BUC Power Supply 24VDC@4A, 48VDC@2A, 48VDC@4A.

**Demodulator Specifications:**

- **IF input connector:**
  - Type N (f) 75 Ohm for L-band, BNC (f) 70/140MHz, 50 Ohm
  - Return loss: ≥12 dB

- **LNB alarm for short circuit**

- **RF input power levels:**
  - L band: -70 to -40dBm, AGC
  - 70/140MHz: -55 to -35dBm, -5dBm max composite level, AGC

- **LNB Power and Control:**
  - Selectable LNB Supply Voltage: ON/OFF, 18 VDC (Horizontal Pol.) or 13 VDC (Vertical Pol.), 0.5A max
  - LNB Control: 22 +4 kHz single tone burst, amplitude = 0.6 +0.2 V p-p

- **Typical Eb/No Performance @ 10^{-6} BER QPSK:**
<table>
<thead>
<tr>
<th>Rate</th>
<th>Viterbi</th>
<th>Viterbi+RS</th>
<th>TPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>½</td>
<td>6.1dB</td>
<td>4.3dB</td>
<td>---</td>
</tr>
<tr>
<td>¾</td>
<td>7.6dB</td>
<td>5.7dB</td>
<td>3.9dB</td>
</tr>
<tr>
<td>7/8</td>
<td>8.7dB</td>
<td>6.7dB</td>
<td>5.4dB</td>
</tr>
<tr>
<td>0.95</td>
<td></td>
<td>7.5dB</td>
<td></td>
</tr>
</tbody>
</table>

- **Data Interfaces:**

  10/100Mbps Ethernet (IP router/bridge)

- **IP options:**
  - Static routing, RIP and OSPF
  - DHCP server and NAT
  - Packet filtering (firewall)
  - Layer-3 Quality of Service support

- **Command line interface (Industry Standard)**
- **SNMP v.1 & v.2c, MIB II**
- **AAA (Authentication, Authorisation & Accounting)**
- **Local AAA (Access Rights Table)**
- **PAP, CHAP, MS-CHAP (Client/Server Authentication)**
- **RADIUS, TACACS+ (Client, Remote server authentication)**
- **Ping, Traceroute, Discovery Protocol**
- **IP, TCP, UDP, ICMP Protocol Statistics**
- **Interface Statistics**
- **Multicast**
- **VPN Support**
- **IP Header Compression**
- **Payload Compression**
- **Telnet**
- **Large IP/ethernet packet support (MPLS)**

**Bridging options:**

- **Spanning Tree Protocol (STP)**
- **Rapid STP (RSTP)**
- **MAC filtering**

- **EIA-530 (RS422)**
  - Can either be transported transparently or can interface and interoperate with Frame relay or HDLC.

**Management and Control**

- **Active Front Panel:**
  - Provides display and keypad on front panel for access to all functions, alarms and status messages

- **Hand Held Terminal:**
  - Allows text-based access to all functions, alarms and status messages

- **Remote Monitor and Control:**
  - 10/100 Base-T port, RS-485, and RS-232 at rear panel.
  - Can be managed by CLI, Telnet, SNMP v2c.

**Physical and Power Specifications**

- **Dimensions:**
  - 1 RU standalone chassis,
  - 19W X 19D X 1.75H inches
  - (48W X 48D X 4.4H cms)

- **Weight:** 11lbs (5kgs)
- **Power:** 90 - 264VAC (50/60Hz)
- or -48VDC (32 to 72VDC).
- **Power consumption:** 50W (without BUC consumption)
- **Operating temp:** 0°C to 45°C(32°F to 122°F)
- **Storage temp:** -25°C to 85°C(-13°F to 185°F)
- **Relative humidity:**
  - Operating: Up to 90% non-condensing
  - Non-Operating: Up to 95% non-condensing

- **Altitude:** Operating: up to 10,000’ (3,045M) During Transit: up to 40,000’ (12,180M)