AMT 30 Modem Series

Features

- 16 kbps to 10 Mbps in 1 bps Steps
- BPSK ,QPSK, 8PSK & 16QAM Operation
- Viterbi FEC
- Optional: Reed Solomon

- L-band or 70MHz interfaces
- Bridging and/or IP routing (standard)
- Multi-demod configurations
- Optional Turbo Product Code

Overview

The AMT 30 modem series provide unparalleled flexibility in interfaces and capabilities stemming from its modular construction. The AMT supports two modulator/demodulator stuffing slots allow the AMT 30 modem series to support the following configurations:

Tx-only	Modulator only
Rx-only	Demodulator only
Tx-Rx	Mod/Demod
Tx-2RX	Mod/Dual-demod
4Rx (referred to as AMT34)	2x Dual-Demod or Quad-demod

The modem modulates carriers directly at L-band, resulting in an efficient uplink system with an extremely pure output spectrum. A 70+18hz/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 AMT-30 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.

The standard data interface for the AMT 30 modem family is a 10/100BaseT Ethernet providing 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.

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). In addition, Advantech's 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.

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Optional features:

- Available with 4Mbps and 10Mbps options.
- Turbo FEC ¾, ⅞, 0.95 Rates
- EIA530 in lieu of 10/100BaseT as standard data interface.
- Concatenated Reed Solomon outer/ Viterbi inner FEC
- Power Supplies and High Stability
- Reference for BUC and LNB
- Optional Front Panel Display and Keypad (as shown)
- 1:1 redundancy solutions available

Performance specifications

Modulation modes: BPSK, QPSK, Optional: 8PSK, 16QAM

FEC: Viterbi: ½,3/4 or 7/8 rate, k=7

               Optional: Reed Solomon Outer Codec for Viterbi

               Optional: Turbo Product Code, ¾, 7/8 or 0.95

Data and code rates (in 1 bps increments)

BPSK, ¾ rate:	14.4 to 4425 kbps
BPSK, 7/8 rate:	16.8 to 5162 kbps
BPSK, 19/20 rate:	18.5 to 5686 kbps
QPSK, ¾ rate:	28.8 to 8850 kbps
QPSK, 7/8 rate:	33.6 to 10000 kbps
QPSK, 19/20 rate:	37.0 to 10000 kbps
8PSK, ¾ rate:	43.2 to 10000 kbps
8PSK, 7/8 rate:	50.4 to 10000 kbps
8PSK 19/20 rate:	55.5 to 10000 kbps
16QAM, ¾ rate:	57.6 to 10000 kbps
16QAM 7/8 rate:	67.2 to 10000 kbps
16QAM:	128kbps to 120Mbps

Scrambling: V.35, IESS 308/309 CCITT

Spectral Shape: IESS 308/309 compliant

Roll off: 0.15, 0.20, 0.25, 0.30, 0.35

RF Frequency

- L-band: 950 to 2150Mhz in 1Hz steps
- Optional: 70+/-18Mhz and L-band

               140+/-36Mhz and L-band

Modulator specific

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 specific

F Input Connector:

- Type N (f) 75 Ohm for L-band
- Option: BNC (f) for 70/140Mhz. 50 Ohm
- Return loss: ≥12 dB
- LNB Alarm for Short Circuit

RF Input Power Levels

- Lband: -70 to -40dBm, with AGC
- 70/140: -55 to -35dBm, -5dBm max composite level, with AGC

LNB Power and Control

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

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.

Typical Eb/No Performance @ 10^{-6} BER QPSK

Rate	Viterbi	Viterbi+RS	TPC
½	6.1dB	4.3dB	—
¾	7.6dB	5.7dB	3.9dB
⅞	8.7dB	6.7dB	5.4dB
.95			7.5dB

Physical and Power Specifications

Dimensions:

> 1RU standalone chassis,
>
> 19W X 19D X 1.75H inches
>
> (48W X 48D X 4.4H cms)

Weight: 11lbs (5kgs)

Power: 90 – 264VAC (50/60H)

> or -48VDC (32 to 72VDC).
>
> Power consumption: 50Watts (no BUC power supply)

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)

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 Windows GUI, CLI, Telnet, SNMP v2, and HTTP.

Data Interfaces

10/100Mbps Ethernet (IP router/ Bridge)

IP options:

- Static and Dynamic IP routing (RIPv1&2)
- OSPF
- DHCP Server
- Network Address Translation
- Packet Filtering (Firewall)
- Quality of Service support to Level 3
- Command line interface (Industry Standard)
- SNMP v.1 & v.3, 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.

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