



Features

- MIL-STD-188-165A CERTIFIED
- Data Rates 64kbps – 52Mbps in 1bps steps
- Optional eTPC Rates from 0.5 to 0.92
- eTPC Extends data rate to 110Mbps
- BPSK, QPSK, OQPSK, 8PSK & 16QAM
- Modem types A, B, D, E & F
- Intelsat and OM-73 (V)/G scrambling
- Optional DVB-S and DVB-SNG
- Physical Engineering Service Channel
- Software Up-gradable
- Built in BERT
- Clock recovery from input data
- Software Defined Radio
- Excellent spurious performance
- Meets 40dBc ACI requirement
- L Band 950 to 2000MHz
- 70/140MHz IF options
- Compliant with IESS 308/309/310
- EIA530/449, HSSI interfaces standard
- G703, 10/100BaseT, DS-3, STS-1 (SONET), LVDS and ASI interfaces optional.
- **Future option:**
 - DVB-S2, LDPC
 - Adaptive coding modulation
 - 16APSK, 32APSK with adaptive equalizer
 - Pilot assisted demodulation for enhanced carrier recovery

Applications

The first modem to be certified with MIL-STD-188-165A. The AMT 73L was designed to fulfil two way satellite communication requirements in Defence Satellite Communications Systems (DSCS).

Overview

Based on the Advantech Wireless “Software Defined Radio” architecture, the design ensures unrivalled flexibility and upgrade paths to meet the increasingly demanding requirements now and in the future.

Employing advanced FEC’s, Viterbi, PTM, Concatenated Reed Solomon & Turbo. eTPC offers gains up to 3.0 dB Eb/No @10⁻⁷ BER over previous generation of concatenated Viterbi and Reed-Solomon FEC.

This performance gain can be translated directly into higher data throughput, reduced antenna size or reduced satellite bandwidth, which significantly reduces transponder costs; provides more link margin or decrease antenna cost.

The standard data interfaces are EIA530/499 and HSSI, optional are the IP Gateway 10/100BaseT, G703, DS-3, STS-1 (SONET), LVDS and ASI.

The IP Gateway option is a miniaturized fully fledged IP router designed to give ease of use, support for a wide range of protocols, security and QoS. (See datasheet for full information)

1:1 Redundancy switching is built into the unit as an optional feature. With the addition of an interconnecting control cable between the modems and the switch unit for IF and data interfaces complete redundancy is achieved.

Monitoring and Control via Ethernet using HTTP, Telnet or SNMP V1, and serial interface using packet mode RS485 or terminal mode RS232.

AMT 73L Modem Series

DESCRIPTION	SPECIFICATION												
PERFORMANCE SPECIFICATIONS													
Data Rate	64kbps to 52Mbps (110Mbps with turbo option)												
Symbol Rate	32ksps to 30Msps												
Data Interfaces	EIA/TIA530/422 or EIA/TIA449, HSSI Optional G703 Interface Optional 10/100BaseT Ethernet Optional DS-3, STS-1 or LVDS												
Scrambling, Descrambling	IDR/IBS (IESS-308; IESS-309; IESS-310), OM-73 (V)/G (and no scrambling for BPSK, QPSK and OQPSK)												
Data Connector EIA/TIA530 EIA/TIA449 HSSI	Standard 25-pin Sub-D (f) Standard 37-pin Sub-D (f) Standard 50 pin SCSI-2 connector												
MODULATOR SPECIFICATIONS													
Data Rates 165A Compliant (Max Rate for Modulation)	Viterbi with Reed Solomon BPSK: 64kbps to 8.472Mbps QPSK: 64kbps to 20Mbps (52Mbps) 8PSK: 256kbps to 52Mbps (60Mbps)												
Modulator Roll-Off Factor	Approx 23% as defined by MIL-STD-188-165A												
Forward Error Correction (FEC) Code Rates	QPSK with Rate 1/2, 3/4 and 7/8 Viterbi encoding with K=7 8PSK with Rate 2/3 PTCM Selectable Reed-Solomon outer code based on IESS 308/309/310 standards												
IF Output Connector	Type TNC (f) 50 Ohms for L-band, optional BNC (f) 50 Ohms for 70/140MHz												
Return Loss:	>10 dB												
RF Output Frequency	L Band: 950-2000MHz; optional 70 +/-18MHz or 140 +/-36MHz, variable in 1kHz steps												
RF Output Power	Range: 0 to -25dBm, adjustable in 0.25dB continuous increments Accuracy: +0.5dB; Temp Stability: +0.2dB												
Eb/No Performance	<table border="1"> <thead> <tr> <th>Viterbi 1/2 Rate</th> <th>Viterbi 3/4 Rate</th> <th>Viterbi 7/8 Rate</th> <th>8PSK PTCM</th> </tr> </thead> <tbody> <tr> <td>1 x 10⁻⁴</td> <td>4.0dB</td> <td>5.2dB</td> <td>6.4dB</td> </tr> <tr> <td>1 x 10⁻⁷</td> <td>6.0dB</td> <td>7.4dB</td> <td>8.6dB</td> </tr> </tbody> </table>	Viterbi 1/2 Rate	Viterbi 3/4 Rate	Viterbi 7/8 Rate	8PSK PTCM	1 x 10 ⁻⁴	4.0dB	5.2dB	6.4dB	1 x 10 ⁻⁷	6.0dB	7.4dB	8.6dB
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DEMODULATOR SPECIFICATIONS													
IF Input Frequency	L band 950-2000MHz, variable in 100Hz steps												
Nominal Input Level	-20dBm												
AGC Range	+40dB												
Maximum Input Signal Level	+20dBm												
IF Input Impedance and Return Loss	Impedance: 50 Ohms; Return Loss: > 10dB; Connector: TNC (f)												
Noise Figure	9dB typical, 12dB at maximum AGC gain												
Symbol Rate Acquisition Range	+100ppm												
Synchronization and Acquisition Time	Depends on data rate, frequency uncertainty, and operating Eb/No. Following is a sample: Average Acquisition Time: <25.0 sec. 64kbps @ +/-30kHz sweep range												
INTERFACE SPECIFICATIONS													
Monitoring and Control (M&C) Interface	External M&C Interface: EIA/TIA485 Packet mode or EIA/TIA232 10/100BaseT for SNMP, Web Server, Telnet or HTTP Configuration Parameter Storage: NVRAM												
Optional IP Gateway	RJ45 Traffic Interface Full 10/100BaseT interface with Router/Bridge capability for full information see the IP Gateway datasheet												
Optional G703	Encoded Line Rate: n x 2048kbps (with Fractional E1) +102.4bits/s (+50ppm) Line Coding: HDB3 Digital Interface: Balanced or Unbalanced												
PHYSICAL AND POWER SPECIFICATIONS													
Dimensions	Standalone or rack-mountable 1U Rack or 1U EIA chassis Height: 4.4 cm (1.75") Width: 48.26 with mounting ears or 43.2 cm without (19" or 17") Depth: 50.8 cm (20") Weight: 13.5 lb (6.2 kg) maximum												
Power, AC	90 – 264 VAC, 50/60Hz Power Consumption: 65 Watts typical												
Power, DC (Option)	DC Power: -48 VDC (32 to 72 VDC) Power Consumption: 62 Watts typical												
ENVIRONMENTAL SPECIFICATIONS													
Environmental	Operating Temperature: 0oC to 50oC (32oF to 122oF) Storage Temperature: -25oC to 85oC (-13oF to 185oF) Relative Humidity: Operating: Up to 90% non-condensing Non-Operating: Up to 95% non-condensing Altitude: Operating: Up to 10,000' (3,045 M) During Transit: Up to 40,000' (12,180 M)												

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Ref.: PB-AMT30-001-13150



Features

- MIL-STD-188-165A COMPLIANT
- Software Defined Radio
- Data Rates 4kbps – 155Mbps in 1bps steps
- DVB-S / DVB-DSNG / DVB-S2 with ACM
- Intelsat Viterbi, Reed Solomon, Turbo, or LDPC Coding
- Intelsat and OM-73 (V)/G scrambling
- Built in BERT
- Clock recovery from input data
- IP Data Interface
- GSE encapsulation
- Excellent spurious performance
- Meets 40dBc ACI requirement
- L-Band 950 to 2050 MHz
- 70/140 MHz IF options
- Compliant with IESS 308/309/310
- AES 128/256 encryption
- Direct Sequence Spread Spectrum (DSSS) spreading

Applications

The AMT-83L modem series continues the line of the first worldwide satellite modem (AMT-73L), to be certified with MIL-STD-188-165A by DISA. The AMT-73L was designed to fulfil two way satellite communication requirements in Defence Satellite Communications Systems (DSCS). Several thousands of these modems were deployed in the field on tactical terminals.

Overview

Based on the Advantech Wireless “Software Defined Radio” architecture, the AMT-83L satellite modem series adds a number of advanced features to the DISA certified AMT-73L series modems. Among these new features there are:

- DVB-S2 with LDPC Coding and Adaptive Coding and Modulation (ACM)
- IP data interface
- GSE encapsulation
- Direct Sequence Spread Spectrum (DSSS) spreading
- AES 128/256 Encryption

All these new features transform the AMT-83L series modem into a powerful satellite communication tool. The modem can now address the new advanced and efficient DVB-S2 modulation and error corrections codes, via full-fledged IP traffic, with built in router, and GSE encapsulation, as well as the SATCOM-on-the-move (SOTM) mobility applications due to the DSSS spreading features.

With built in AES 128/256 Encryption, the modem allows for secure communication links, unhindered by eavesdropping.

The standard data interface is the IP Gateway, with optional EIA530/499, HSSI, ASI.

The IP Gateway data interface is a miniaturized fully fledged IP router designed to give ease of use, support for a wide range of protocols, security and QoS.

1:1 Redundancy switching is built into the unit as an optional feature. With the addition of an interconnecting control cable between the modems and the switch unit for IF and data interfaces complete redundancy is achieved.

Monitoring and Control is performed via Ethernet using HTTP, Telnet or SNMP.

DESCRIPTION	SPECIFICATION
PERFORMANCE SPECIFICATIONS	
Data Rate	4kbps to 155 Mbps
Data Interfaces	IP Gateway RJ45 Traffic Interface Full 10/100BaseT interface with Router/Bridge capability
	Optional EIA/TIA530/422 or EIA/TIA449, HSSI, ASI
Scrambling, Descrambling	IDR/IBS (IESS-308; IESS-309; IESS-310), OM-73 (V)/G (and no scrambling for BPSK, QPSK and OQPSK)
Data Connector, IP Gateway	RJ45
MODULATOR SPECIFICATIONS	
Data Rates	4kbps to 155 Mbps
Modulator Roll-Off Factor	As defined by MIL-STD-188-165A (in addition, optional from 5% to 25%)
Forward Error Correction (FEC) Codes	Viterbi with Reed Solomon, eTPC, LDPC Coding
IF Output Connector	Type TNC (f) 50 Ohms for L-band, optional BNC (f) 50 Ohms for 70/140MHz
Return Loss:	>10 dB
RF Output Frequency	L Band: 950-2050MHz; optional 70 +/-18MHz or 140 +/-36MHz, variable in 1kHz steps
RF Output Power	Range: 0 to -25dBm, adjustable in 0.25dB continuous increments Accuracy: +0.5dB; Temp Stability: +0.2dB
DEMODULATOR SPECIFICATIONS	
IF Input Frequency	L band 950-2050MHz, variable in 100Hz steps
Nominal Input Level	-20dBm
AGC Range	+40dB
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IF Input Impedance and Return Loss	Impedance: 50 Ohms; Return Loss: > 10dB; Connector: TNC (f)
Noise Figure	9dB typical, 12dB at maximum AGC gain
Symbol Rate Acquisition Range	+100ppm
Synchronization and Acquisition Time	Depends on data rate, frequency uncertainty, and operating Eb/No. Following is a sample: Average Acquisition Time: <25.0 sec, 64kbps @ +/-30kHz sweep range
INTERFACE SPECIFICATIONS	
Monitoring and Control (M&C) Interface	External M&C Interface: 10/100BaseT for SNMP, Web Server, Telnet or HTTP Configuration Parameter Storage: NVRAM
PHYSICAL AND POWER SPECIFICATIONS	
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Ref.: PB-AMT83L-003-17300