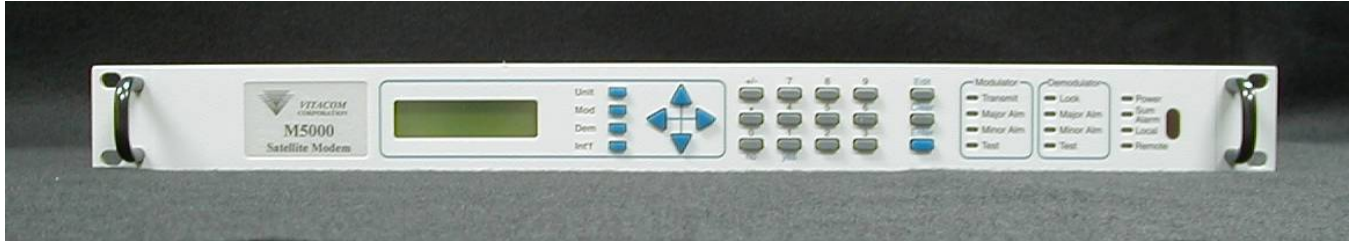


M-505 SATELLITE MODEM



Description

The Datum Systems M505 satellite modem supplied by Vitacom offers state of the art performance and reliability with the best features of a sophisticated programmable modem, all at the industry's lowest price. The M505 uses proprietary techniques of direct modulation and demodulation to completely eliminate transmit and receive IF sections and their associated filters. Sophisticated digital signal processing eliminates all on-board physical adjustments and provides performance within 0.3 dB of theoretical. Direct Digital Synthesis (DDS) of the transmit, receive and data rate synthesizers allow settings to 1 Hz and 1 bps respectively. The M505 is the latest design based on the extremely successful and reliable PSM4900 line of modems.

The BER vs. Eb/No performance is unmatched by any other modem in its class.

The M505 comes standard with Viterbi and Reed-Solomon FEC. Optional turbo products code can also be purchased for improved BER vs Eb/No performance.

The M505 includes BPSK, QPSK, and OQPSK modulations. The unit can be field-upgraded to 8PSK and/or 16QAM.

The M505 has the most sophisticated receive acquisition and tracking system on the market, improving on even the PSM4900. It offers extremely fast DSP acquisition over a programmable range of +/- 100 Hz to +/- 1.25 MHz.

The full front panel provides a backlit LCD display, full keypad and LED indicators for monitor and control of all modem parameters.

Features

- BPSK, QPSK OR OQPSK operation.
- Programmable receive acquisition/tracking range.
- Typical DSP acquisition time of 315 mseconds at 9.6 kbps QPSK, 71 mseconds at 64 kbps QPSK.
- Viterbi and Reed-Solomon FEC standard, TPC optional. BER vs Eb/No performance within 0.3 dB of theoretical.
- DDS setting of transmit and receive frequency from 50 to 90 MHz in 1 Hz increments.
- Programmable Interface type.
- Low power, light weight 1 U case.
- Built-in IBS Multiplexer with overhead channel, AUPC and Remote Modem Control
- Built-in BER Test Set.
- DDS setting of transmit and receive data rates from 1.2 kbps to 5.0 Mbps in 1 bps increments.
- Viterbi FEC codec programmable to rate $\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, and disabled.
- 40 dB AGC range with +15 dBm composite input power.
- Fully programmable from either front panel or remote command without jumpers.
- Accurate Eb/No and Symbol Error Rate display.
- Built-in 1:1 Redundancy.
- 8 User Storable and recallable configurations. Automatic Configuration Recovery.
- Optional 140 MHz IF

M-505 MODEM SPECS



Operating Modes, all programmable

- Receive and Transmit Continuous (SCPC)
- Optional Transmit Burst (VSAT)

IF Frequency Range, Tx and Rx, Independent

50 to 90 MHz (optional 100 to 180 MHz on special order)

Transmit Output Power: (Programmable 50 or 75 Ω)

+5 to -35 dBm, programmable in 0.1 dB steps
(max. +3 dBm @ 50 Ω), 20 dB min return loss

Transmit Output Level Stability/Accuracy

+/- 0.5 dB stability, 0 to 50 deg C
+/- 0.5 dB accuracy, 50 to 90 mHz, 25 deg C

Transmit Output Spurious/Harmonics

<-50 dBc up to -10 dBm out, <-40 dBc up to +5 dBm out

Transmit and Receive Phase Noise

Better than IESS308/309 by 4 dB min, 6 dB typ

Receive Carrier Level In, Programmable (50 or 75 Ω)

-20 to -60 dBm, scales to -84 at lower rates, 10 dB min RL

Maximum Composite Receive Input Power

+15 dBm or +40 dBc whichever is lower power

Tx/Rx Frequency Setting (independent)t: 1 Hz steps

Receive Acquisition Range: +/- 100 Hz to +/- 1.25 MHz

Frequency Reference

Internal 2 x 10⁻⁶ oscillator. Ext reference input on rear panel.

Modulation and Demodulation (independent)

Programmable for BPSK, QPSK, OQPSK, 8PSK

Forward Error Correction

Viterbi k=7 and concatenated Reed-Solomon, n=126,
K=112, t=7 or n=219, k=201, t=9 or programmable
With depth of 4 or 8. Optional 4k or 16k turbo.

Data Rate Selection, Transmit & Receive

1bps increments. Accurate to 2x10⁻¹² (rel to reference).

Data Rates

Max: 5 Mbps
Min: 1.2 kbps R 1/2, 2/4 kbps R 3/4 or 7/8 BPSK
2.4 kbps R 1/2, 4.8 kbps R 3/4 or 7/8 QPSK or OQPSK

IBS Multiplex Built-in

IBS framing supporting enhanced fully buffered RS-232/485 overhead channel, AUPC, remote modem control and Variable overhead.

FEC Rates Selectable

R 1/2, 3/4, 7/8, or disabled, R 5/6 in Viterbi only.

Receive Data FIFO Buffer

Plesiochronous or Doppler Elastic Store

4 bits to 524,280 bits, programmable in 1 bit increments, or in delay time.

Data Interface (All synchronous)

RS-449/422 or V.35 or EIA-530 or RS-232 electronically selectable at DB-37 connector. DB25 and V.35 (M34) Adaptors available.

BER Performance:

1/2 rate Viterbi, 10-5 at 4.8 dB Eb/No, 10-7 at 6.0 dB
1/2 rate Viterbi +R-S FEC: 10-7 at 3.7 dB, 3.5 dB typ
3/4 rate Viterbi +R-S FEC: 10-7 at 4.7 dB, 4.5 dB typ
1/2 Rate Turbo FEC: 10-7 at 3.0 dB, 2.8 dB typ
3/4 Rate Turbo FEC: 10-7 at 3.7 dB, 3.5 dB typ

Fast Receive Lock Performance at FEC rate 1/2, 6.0 dB Eb/No, +/-30kHz acquisition range, (Average)

315 msecond at 9.6 kbps QPSK
175 msecond at 9.6 kbps BPSK
71 msecond at 64 kbps.QPSK

Front Panel Control

LCD display and keypad provide full status and programmability.

Remote Control

Terminal Mode: Full screen live display and interactive control of all operating parameters and status.

Packet Mode: Command driven RS-232/485/IrDA control and reporting of all parameters and status.

Case Dimension and Weights

Rack mount @ 1 RU (19"W X 14"D X 1.75"H.), 6 lbs

Input Power Requirements

90 to 264 VAC, 50/60 HZ, Approx. 40 Watts.
60 Watts max fully loaded

Operating Conditions

0 to 50° C, to 95% humidity, non-condensing