

SMD-155 SATELLITE MODEM



HIGHLIGHTS

- 2 Mbps to 155.52 Mbps, steps of 1 bps
- BPSK/QPSK/8PSK Modulation
- 70/140 MHz IF
- FEC- RS, Viterbi, PTCM, eTPC
- Spectral mask IESS 308/309/310/419 compliant
- User programmable configuration and monitor features
- Automatic Uplink Power Control (AUPC) option.

OVERVIEW

The SMD-155 satellite modem developed by C-DOT is designed to operate from data rates of 2 Mbps to high rates of 155.52 Mbps to meet the requirements of all data broadcast applications. SMD-155 uses latest FEC codes like TCM and eTPC to get maximum power efficiency using the minimum possible transponder bandwidth. The power spectral mask is IESS308/310/315 compliant and fully user programmable. Standard data interfaces like G.703, STM-1 electrical, RS-422 are provided.

Modulation schemes include BPSK, QPSK and 8PSK. FEC schemes include Rate 1/2 and Rate 3/4 convolution encoder/Viterbi decoder and TPC for BPSK & QPSK, Rate 2/3 PTCM and enhanced Turbo Product Code (programmable code rates) for 8PSK. Fully programmable Reed-Solomon code provided as outer coding for PTCM and Viterbi coding schemes. Interface provided for external 10 MHz reference to synchronize the modem with Converters.

The SMD-155 is a duplex modem that fits into the standard 19" cabinet. All programming and monitoring functions can be controlled via remote interface. Additional software provided to display all parameters and control the modem through a PC.

Hardware options include G.703 interface, AC/DC power, 50/75 ohm IF interface. Software options include programmable eTPC code rates Reed-Solomon coding, ES-ES communication, AUPC.

The SMD-155 can be integrated with CDOT 1:1 modem redundancy unit for use in 1+1 configuration.

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SPECIFICATIONS

Modulator

Information Rate	2.048 Mbps to 155.52 Mbps in steps of 1 bps
Output level	0 dBm to -20 dBm
IF Interface	BNC female, 75 ohms or 50 ohms
Level Adjustability	In steps of 0.5 dB
FEC	<ul style="list-style-type: none">• Viterbi Rate $\frac{1}{2}$ & $\frac{3}{4}$• PTCM Rate $\frac{2}{3}$• TPC (code rates 0.64, 0.76, 0.863 and 0.9)
Outer Code	Reed-Solomon (Intelsat standard code rates)
Modulation	BPSK, QPSK and 8PSK
IF Range	<ul style="list-style-type: none">• 52 MHz to 88 MHz (for data rates till 8 Mbps)• 70 MHz (for data rates till 34 Mbps)• 140 +/- 40 MHz (for data rates till 8 Mbps)• 140 MHz (for rates from 34 Mbps to 155 Mbps)
Output return loss	18 dB
Level Stability	+/- 0.2 dB/day at a constant Temperature of 25°C
On/Off levels	50 dB
Output Spurious levels	better than -50 dBc
Phase accuracy	+/- 2 deg
Amplitude accuracy	+/- 0.2 dB

Demodulator

IF Range	<ul style="list-style-type: none">• 52 MHz to 88 MHz (for data rates till 8 Mbps)• 70 MHz (for data rates till 34 Mbps)• 140 +/- 40 MHz (for data rates till 8 Mbps)• 140 MHz (for rates from 34 Mbps to 155 Mbps)
Output data rate	2.048 Mbps to 155.52 Mbps
Demodulation	BPSK, QPSK and 8PSK
Decoding	<ul style="list-style-type: none">• Viterbi Rate $\frac{1}{2}$ & $\frac{3}{4}$• PTCM Rate $\frac{2}{3}$• TPC (code rates 0.64, 0.76, 0.863 and 0.9)

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Outer Code	Reed-Solomon (Intelsat standard code rates)
IF interface	BNC female, 75 ohms or 50 ohms
Input Return Loss	18 dB minimum
Input Level per carrier	-30 dBm to -60 dBm @ 60MSPS 40 dBm to -70 dBm @ 15MSPS 50 dBm to -80 dBm @ 1MSPS
Total input power	-10 dBc w.r.t signal power @ 60MSPS -25 dBc w.r.t signal power @ 15MSPS -40 dBc w.r.t signal power @ 1MSPS
Terrestrial Interface	G.703 for E1, E2, E3 and STM1 (electrical) RS422/449 Data Rates up to 50 Mbps PECL for Data rates from 20 Mbps to 155.52 Mbps

Engineering Service Channel (ESC) :

- AUPC and Remote end Alarms through Overhead channel.
- Asynchronous data interface provided.
- IDR Overhead (Optional)

Monitoring and Controls :

- Front Panel
- RS232
- RS485
- M&C Internal linked to ES-ES communication for over the air control

Environmental:

- AC input 100-240VAC, 50 Hz, 1A -48VDC optional
- Operating Temperature 0 to 50°C, 95% humidity, non-condensing
- Storage Temp -20 to 70°C 99% humidity, non-condensing

Dimensions:

19" Rack mountable , 2U height