



# Gemini Satellite Modulator

Single Channel Modulator Supports DVB-S and DVB-S2



Calian, Advanced Technologies' Gemini single-channel satellite modulator supports full-featured DVB-S, DVB-S2 and Turbo functionality with optional support for DVB-S2X. With both ASI and IP data inputs and both IF and L-band outputs, Gemini provides flexibility and full support for IP-based content.

An LCD control and status display is provided on the front panel. The convenient rear panel Ethernet management port offers easy access to the user interface using any standard web browser.

An SNMP-based monitor and control interface is provided for connection to external management systems.



# Technical Specifications

## DVB-S2 / DVB-S2X (optional)

Signal format	CCM/VCM/ACM <sup>1</sup>
Modulation format and FEC rates	<b>QPSK</b> 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 <sup>2</sup> <b>8PSK</b> 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 <sup>2</sup> <b>16APSK</b> 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 <sup>2</sup> <b>32APSK</b> 3/4, 4/5, 5/6, 8/9, 9/10 <sup>2</sup>
Roll-off factor	0.2, 0.25, 0.35
Number of streams	1-16

## DVB-S

Modulation format and FEC rates	<b>QPSK</b> 1/2, 2/3, 3/4, 5/6, 7/8 <b>8PSK</b> 2/3, 5/6, 8/9
Roll-off factor	0.05 to 0.5 with 0.05 resolution

## TURBO

Modulation format and FEC rate	<b>QPSK</b> 1/2, 2/3, 3/4, 5/6, 7/8 <b>8PSK</b> 2/3, 4/5, 5/6, 8/9
Roll-off factor	0.1 to 0.5 with 0.05 resolution

## COMMON

Spectral Inversion	On/Off
Packet stuffing and PCR recalculation	Insert Null packets as required and recalculate PCR
Input sync	On/Off. When on, symbol rate is determined from input data and selected modulation type and FEC rate.
Carrier Control	Off / No modulation (CW) / Random PN23 bit stream / input data bit stream

## PERFORMANCE

Symbol rate	0.100 to 45 MBaud (DVB-S/S2) 0.100 to 33 Mbaud (Turbo)
Symbol rate step	1 Baud
User packet size	188 bytes

## INPUT INTERFACE

DVB-ASI	75 Ω BNC; Qty 2
Ethernet (data)	10/100/1000 Base T (RJ-45); Qty 2 Supports COP3 as per: SMPTE 2022-1-2007 and SMPTE 2022-2-2007
Ethernet (control)	10/100 Base T (RJ-45)
10 MHz Reference	50 Ω BNC-Female

## Notes:

- Several different operational scenarios are available. Contact Calian for more details.
- Rate 9/10 is not applicable for short frames.
- All specifications at 25°C unless otherwise noted.
- All specifications subject to change without notice.

## L-BAND INTERFACE

L-Band Output Composite	950 - 1,750 MHz (L-Band), 1 Hz step, +5 to -25 dBm, 950 - 1,450 MHz, 0 to -25 dBm, 1,200 - 1,750 MHz, 50 Ω SMA-female
IF Output	50 - 90 MHz (70 MHz IF), 1 Hz step, 105-175 MHz (140 MHz IF), 1 Hz step, 75 Ω BNC-Female, +5 to -30 dBm
Output power step	0.1 dB
Output power stability	± 0.5 dB
Output power accuracy	± 0.5 dB
Monitor Output	50 Ω BNC - Female L-band (950 - 1750 MHz) -27 dBc, +/-3 dB IF (70/140 MHz) -30 dBc, +/-2 dB
Return Loss	Minimum 14 dB
Spurious	-60 dBc in any 4 kHz bandwidth
Phase Noise	100 Hz -80 dBc/Hz 1 kHz -85 dBc/Hz 10 kHz -85 dBc/Hz 100 kHz -100 dBc/Hz 1 MHz -110 dBc/Hz

## CONTROL INTERFACE

SNMP	SNMPv2. Accessed over ethernet physical interface.
Web interface	Accessed over the ethernet physical interface.
Alarms	Complete suite of parameters monitored. Access via GUI or SNMP. Comprehensive alarm history. Alarm relay contact - DB9 sockets.

## PHYSICAL

Size	19" W, 1RU (1.75")H, 11" D EIA standard 19 inch rack mountable
Weight	7 pounds
Power	Male IEC 320 100-120 VAC, 220-240 VAC auto-ranging, 50-60 Hz
Power consumption	75 W typical

## ENVIRONMENTAL

Operating Temp.	0°C to 50°C
Storage Temp.	-10°C to 55°C
Operating Humidity	10% to 80% non-condensing
Electromagnetic Compatibility	EN 61000-6-2 2005, EN 55022 2006 Class A FCC Title 47, Part 15
Safety	EN 60950-1, UL 60950-1, CSA22.2 No. 60950-1

## To learn more, please contact:

Peter Waskowic - Director, Satcom Products  
T: 306-933-1580  
E: peter.waskowic@calian.com

