

# Gemini satellite modulator

## Single channel modulator supports DVB-S and DVB-S2

The Calian Gemini single-channel satellite modulator supports full-featured DVB-S, DVB-S2 and Turbo functionality. 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

- Signal format • CCM/VCM/ACM<sup>1</sup>
- Modulation format and FEC rates • QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/102
- 8PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/102
- 16APSK 2/3, 3/4, 4/5, 5/6, 8/9, 9/102
- 32APSK 3/4, 4/5, 5/6, 8/9, 9/102
- Roll-off factor • 0.2, 0.25, 0.35
- Number of streams • 1-16

### DVB-S

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

### Turbo

- Modulation format and FEC rates • QPSK 1/2, 2/3, 3/4, 5/6, 7/8
- 8PSK 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  $\Omega$  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  $\Omega$  BNC-Female

## 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  $\Omega$   
SMA-female

**IF output** • 50 - 90 MHz (70 MHz IF), 1 Hz step,  
105-175 MHz (140 MHz IF), 1 Hz step, 75  $\Omega$   
• BNC-Female, +5 to -30 dBm

## Output power

**Step** • 0.1 dB

**Stability** •  $\pm 0.5$  dB

**Accuracy** •  $\pm 0.5$  dB

**Monitor output** • 50  $\Omega$  BNC - Female

	L-band (950 - 1750 MHz)	IF (70/140 MHz)
	27 dBc, +/-3 dB	-30 dBc, +/-2dB

**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 a  
uto-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

### Notes:

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