

# Hercules Satellite Modulator

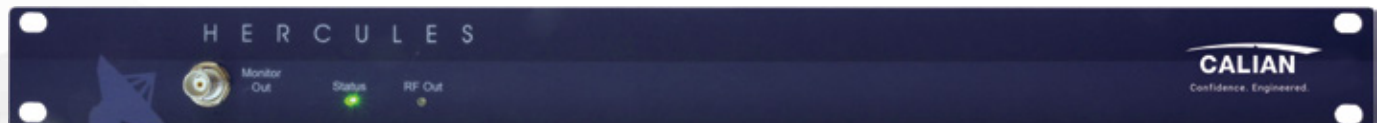
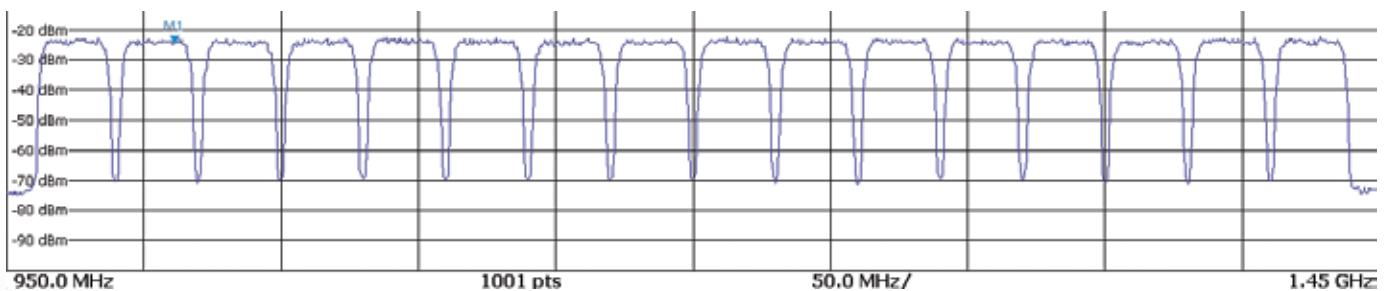
## Generate Multiple Channels out of a Single 1RU Chassis

The Calian, Advanced Technologies Hercules satellite modulator is an innovative product for use in a multi-channel environment. The high density provides significant savings in capital costs, reduced operating expenses and other benefits.

Equipped with two GigE based IP data inputs, Hercules is capable of generating up to 16 independent 30 Msp/s carriers in the 950 MHz to 1750 MHz band.

All carriers are frequency agile and have individual control of power, symbol rate, FEC rate and roll off.

Hercules is flexible to support multiple operational modes and includes the ability to generate a single carrier up to 416 Msp/s. The convenient rear panel Ethernet management port provides easy access to the user interface using any standard web browser. An SNMP-based monitor and control interface provides a connection to external management systems.



# Technical Specifications

## DVB-S2

Signal format	CCM
Modulation format and FEC rates	<b>QPSK</b> ; FEC rates 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/102 <b>8PSK</b> ; FEC rates 3/5, 2/3, 3/4, 5/6, 8/9, 9/10* <b>6APSK</b> ; FEC rates 2/3, 3/4, 4/5, 5/6, 8/9, 9/10* <b>32APSK</b> ; FEC rates 3/4, 4/5, 5/6, 8/9, 9/10*
Roll-off factor	0.05 to 0.35 with 0.05 resolution *Normal mode only

## DVB-S/DSNG

Modulation format and FEC rates	<b>QPSK</b> ; FEC rates 1/2, 2/3, 3/4, 5/6, 7/8 <b>8PSK</b> ; FEC rates 2/3, 5/6, 8/9 <b>16 QAM</b> ; FEC rates 3/4, 7/8
Roll-off factor	0.05 to 0.35 with 0.05 resolution

## Common

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

## Turbo

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

## Performance

Min. symbol rate (per carrier)	1 carrier 45 Mbaud 8 carrier 5 Mbaud 6 carrier 100 Mbaud
Max. symbol rate (per carrier)	1 carrier 416 Mbaud 8 carrier 72 Mbaud 16 carrier 30 Mbaud
Min. symbol rate step	1Baud
User packet size	188 bytes

## Input Interface

DVB-ASI <sup>1</sup>	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 Frequency Reference	50 Ω BNC-Female
Power	Male IEC 320 100-120 VAC, 220-240 VAC auto-ranging, 50-60 Hz. Power consumption: 75 W typical

## L-Band Interface

Operating Frequencies	Band 1: 950 MHz to 1450 MHz Band 2: 1250 MHz to 1750 MHz
L-Band Output	950 - 1750 MHz, 1 Hz step 50 Ω SMA-Female +5 to -25 dBm (composite)
Output power step	0.1 dB
Output power stability	± 0.5 dB
Output power accuracy	± 0.5 dB (Single Carrier)
Monitor Output	50 Ω BNC - Female 950 - 1750 MHz -32 dBc, ±3 dB
Return Loss	Minimum 14 dB
Spurious	-55 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

## Environmental

Operating Temp.	0°C to 50°C
Storage Temp.	-10°C to 55°C
Operating Humidity	10% to 80% relative humidity 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:

- 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.

## Contact Peter today.

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