

Professional Satellite Modulator

SMD 989



The SENCORE SMD 989 professional satellite modulator is ideal for MPEG Transport Stream transmission using DVB-S/S2/S2X or Broadcom TurboPSK modulation. Leveraging the latest modulation technology, the SMD provides high-value solution with unmatched signal quality.

Support for DVB-S2X Modulation ensures the SMD 989 will be ready for the future of S2 modulation. Integrated processing features such as TR 101 290 error checking and BISS scrambling make the SMD 989 an ideal solution for video delivery.

The optional, built-in L-Band upconverter enables the SMD 989 to provide an IF or L-band output. This eliminates the need for multiple pieces of equipment and provides a compact solution for facilities housing multiple modulators or for insertion into L-band inter-facility links.

The chassis has two bays allowing for a variety of configurations, including two independent modulators for density, redundant power supplies for reliability, or DC BUC power for truck installs.

APPLICATIONS

- **News Gathering**
 - Quick to boot, easy-to-use, robust platform
 - Support for stored presets
 - Carrier ID (DVB-CID) standard
 - Built-in BISS scrambling
 - Support for all advanced modulation (16APSK/32APSK/64APSK)
- **Uplink Facility Deployment**
 - State-of-the-art S2 and S2X modulation technology
 - TR 101 290 failover for redundant encoder support
 - Available dual power supply option for high reliability
 - High modulation efficiency with 8/16/32/64APSK modes
 - Full control and monitoring via SNMP

KEY FEATURES

- Super-efficient S2X modulation schemes and roll off factors
- Broadcom TurboPSK modulation modes
- L-band and IF outputs
- Optional diplexed 10MHz and DC power on L-band
- Front panel and web GUI for easy configuration
- ASI and IP inputs
- Available with dual, redundant power supply

SPECIFICATIONS

Professional Satellite Modulator SMD 989

INPUTS

SWITCHING

Automatic failover and failback between any two inputs
Triggered on: TS Sync Loss (Standard)
TR 101 290 P1 Errors (with License)

ASI

Connector: 2x BNC
Impedance: 75Ω
Packet format: Auto detect 188/204 byte
TS Bitrate: 0.5 Mbps - 213 Mbps

IP

Ports: 2x RJ45 GbE port
Connector Type: RJ45 10/100/1000 - Auto Negotiating
Input Format: UDP or RTP
FEC Support: SMPTE 2022/COP3
IP Encapsulation: 1 to 7 TS packets per IP packet
Addressing: Unicast and Multicast
IGMP Compatibility: Version 1, 2, and 3
Per TS Bitrate: 0.5 Mbps - 213 Mbps

MODULATION

DVB-CID

Modulation Format: ETSI TS 103 129

DVB-S/DSNG

Modulation Format & FEC rate: QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
8PSK: 2/3, 5/6, 8/9
16QAM: 3/4, 7/8

Symbol rate range: 0.5 - 45 MSps
Roll-off Factor: 0.20, 0.25, 0.35
Spectral Inversion: On / Off

DVB-S2

Modulation Format & FEC rate: QPSK: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10*
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10*
16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10*
32APSK: 3/4, 4/5, 5/6, 8/9, 9/10*
*Normal FECFRAME only
**Short FECFRAME only

Symbol rate range: 0.5 - 45 MSps
Roll-off Factor: 0.05, 0.10, 0.15, 0.20, 0.25, 0.35
Spectral Inversion: On / Off
FEC Frames: Normal (64,800) / Short (16,200)

DVB-S2X

Modulation Format & FEC rate:

QPSK: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10*, 13/45*, 9/20*, 11/20*, 11/45**, 4/15**, 14/45**, 7/15**, 8/15**, 32/45**
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10*, 23/36*, 25/36*, 13/18*, 7/15**, 8/15**, 26/45**, 32/45**
8PSK-L: 5/9*, 26/45*
16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 26/45, 3/5, 9/10*, 28/45*, 23/36*, 25/36*, 13/18*, 7/9*, 77/90*, 7/15**, 8/15**, 32/45**
16APSK-L: 1/2*, 8/15*, 5/9*, 3/5*, 2/3*
32APSK: 3/4, 4/5, 5/6, 8/9, 32/45, 9/10*, 11/15*, 7/9*, 2/3**
32APSK-L: 2/3*
64APSK: 11/15*, 7/9*, 4/5*, 5/6*
64APSK-L: 32/45*

*Normal FECFRAME only

**Short FECFRAME only

Symbol rate range:

Roll-off Factor:

Spectral Inversion:

FEC Frames:

0.5 - 45 MSps
0.05, 0.10, 0.15, 0.20, 0.25, 0.35
On / Off
Normal (64,800) / Short (16,200)

TURBOPSK

Modulation Format & FEC rate:

Turbo QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
Turbo 8PSK: 2/3, 3/4**, 5/6, 8/9
Turbo 16QAM: 3/4
**2.05, 2.10, and 2.20 bits/symbol modes

Symbol rate range:

Roll-off Factor:

0.5 - 30 MSps
0.10, 0.15, 0.20, 0.25, 0.35

REFERENCE

External Reference Input:

Reference Input Level:

Internal Reference:

Reference Output Source:

Reference Output Level:

Reference Output Return Loss:

10 Mhz/50Ω BNC

-3dBm to 7dBm

Ovenized 10MHz Oscillator

Internal or Reconditioned

External

+5dBm

>25 dB

PROCESSING

TS ANALYSIS

Analysis Engines:

Error Checking:

2x (Primary and Backup Inputs)
Full TR 101 290 P1 Analysis
with User-Settable Thresholds

SPECIFICATIONS

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BISS SCRAMBLING

| | |
|------------------------|-----------------------------------|
| Supported Modes: | BISS 1 or BISS E with Injected ID |
| Scrambling Capability: | Single Key, Single TS Scrambling |
| Supported Bitrates: | 0.5 - 145 Mbps |

OUTPUTS

IF OUTPUT MODULE

| | |
|----------------------------------|-----------------------------------|
| Frequency: | 60-180 MHz (5 MHz steps) |
| Level: | -20 dBm to +5 dBm (1 dB steps) |
| Connector: | 75Ω BNC |
| Return Loss: | >20 dB |
| Monitoring Output: | -20 dBc (IF) / -50 dBmV (1100MHz) |
| Spurious Signal Level (typical): | -60dBc @ -10dBm |

L-BAND UPCONVERTER OUTPUT

| | |
|------------------------|---------------------------------|
| Frequency: | 950-2150 MHz (1 KHz steps) |
| Level: | -30 dBm to 5 dBm (0.1 dB steps) |
| Connector: | 50Ω SMA |
| Return Loss: | >15 dB |
| Monitoring Output: | -20 dBc @ main L-band frequency |
| Spurious Signal Level: | -60 dBc @ -10dBm |

DIPLEXED L-BAND OUTPUT

| | |
|----------------------|--|
| Connector: | 50Ω SMA |
| Reference on L-Band: | 10 MHz |
| Reference Source: | Internal or external (auto detect) |
| Reference Level: | +5 dBm |
| DC Power on L-Band: | 24VDC @ 3.1A (optional) 48VDC @ 1.6A (optional) |
| DC Power Source: | Integrated or external supply |
| DC Power Control: | On/Off switching (internal supply) |

MANAGEMENT

| | |
|-------------------------|--|
| Connector: | RJ-45 10/100 - Auto Negotiating |
| Protocols: | HTTP and SNMP |
| User Interfaces: | Full control via web GUI Full control via front panel |
| Automation Interfaces: | Full status and control via SNMP Configurable SNMP traps Web services access to main GUI |
| Contact Closure Alarms: | 2 form C relays (9 pin D-sub) |

DIMENSIONS/POWER

| | |
|--------------|--|
| Height: | 1RU, 1.75" (5cm) |
| Width: | 17.4" (44.2 cm) |
| Depth: | 23" (58 cm) |
| Power: | 100-240 AC 50/60 Hz @ 3 Amps -48 VDC available |
| Supply Type: | Integrated supply (standard) Dual, hot-swappable, redundant load sharing supplies (optional) |

ENVIRONMENTAL CONDITIONS

| | |
|------------------------------|-----------------------|
| Operating Temp: | 0° to 45°C |
| Storage Temp: | -40°C to 65°C |
| Relative Operating Humidity: | <95% (non-condensing) |