

## Model D9850 Program Receiver

### Description

The PowerVu® Model D9850 Program Receiver is designed for satellite content distribution applications requiring 4:2:0 video decoding. The receiver offers the capability to receive digitally encrypted video, audio, utility data, and Vertical Blanking Interval (VBI).



### Analog Cable Program Distribution

Composite video and balanced audio outputs can be connected to analog modulators for analog cable distribution. Four mono audio channels or two stereo pairs are available for primary audio programs and/or secondary audio programs (SAP). For example, primary program audio could be carried on one of the stereo pairs, while SAP audio is carried on the other stereo pair.

### Digital Cable Program Distribution

An uplink-addressable transport output provides MPEG program streams for digital tier program delivery. This ensures that the highest quality video programs are efficiently distributed to households equipped with digital cable set-top boxes.

### Digital Program Replacement

Digital program replacement allows PID re-mapping in the transport output to a secondary uplink service in blackout applications. This ensures availability of alternate programming in the digital tier without operator intervention.

### Cable Headend Ad-insertion

To support flexibility in ad-insertion configurations, this receiver provides four types of outputs:

- Dual Tone Multi-Frequency (DTMF) cue tone
- Cue trigger support, consisting of eight open collector outputs
- One contact closure
- Digital Program Insertion (DPI) messaging via ASI output

### Low-speed Data Output

An asynchronous utility data up to 38.4 kb/s is available via RS-232 interface.

### IP Data Output

IP data can be received and output at rates up to 10 Mbps (up to 50 Mbps optional).

### Key Features

- PowerVu conditional access with DES or DVB de-scrambling
- Supports Basic Interoperable Scrambling System (BISS) conditional access
- 4:2:0 NTSC & PAL (B/G/I/D/M/N) video decoding
- Aspect ratio conversion (4:3, 16:9 and 14:9) with Active Format Descriptor (AFD) control
- MPEG & Dolby® Digital (AC-3) audio decoding
- Four audio outputs providing either two stereo pairs (four mono channels) of balanced audio each with the ability to use part of their output for applications such as SAP, DTMF, etc.
- Line 21 closed caption and V-chip support
- Utility data via RS-232
- IP Data output via Ethernet (up to 10 Mbps)
- DVB VBI (WST, WSS and VPS)
- PowerVu VBI - including North American Broadcast Teletext Standard (NABTS) and World System Teletext (WST)
- DVB or Imitext™ subtitling
- Digital Program Replacement providing uplink control of program replacement in blackout areas
- DTMF cue tone & cue trigger outputs for ad-insertion

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## Features, continued

- Fingerprint Trigger
- Field upgradeable software and security
- Front panel LCD for control & monitoring
- 64 user-editable preset configurations
- Uplink addressable transport output via DVB-ASI
- SNMP setup, control and monitoring
- Web browser interface for easy setup, control and monitoring

## Optional Features

- 4 RF inputs
- ASI input (up to 68.5 Mbps)
- SDI video output with embedded audio
- AES-3id digital audio output
- IP data output (up to 50 Mbps)

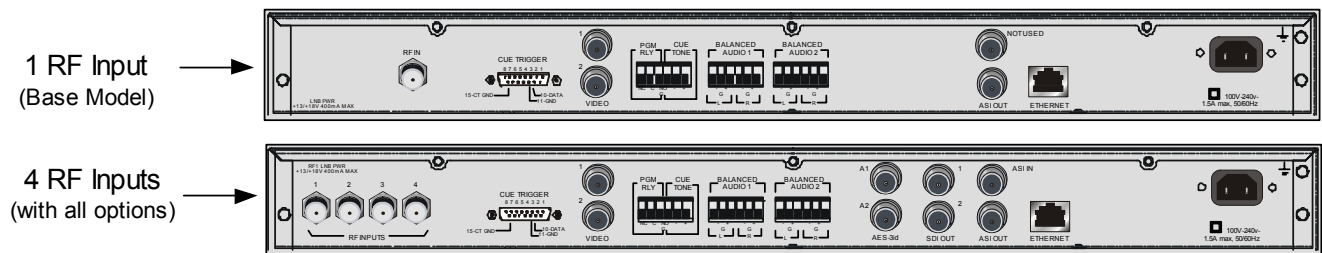
## Specifications

| Features              | Description  |   |
|-----------------------|--|---|
| <b>System</b>         | MPEG-2/DVB Compatible<br>EN 300 421, EN 300 468  | <b>De-modulation:</b> QPSK<br><b>FEC:</b> Variable (1/2, 2/3, 3/4, 5/6, or 7/8)   |
| <b>Tuner</b>          | <b>Input Level:</b> -25 dBm to -65 dBm per carrier<br><b>Frequency Range:</b> 950 MHz to 2150 MHz<br><b>Tuning Step Size:</b> 125 kHz<br><b>Symbol Rate Range:</b> 1.0 to 45 Msymbols/s  | <b>Carrier Capture Range:</b> $\geq \pm 3.0$ MHz (5-45 Msym)<br><b>Satellites:</b> C-band and Ku-band<br><b>Input Impedance:</b> 75 $\Omega$  |
| <b>Analog Outputs</b> | <b>Analog Video Output</b><br><b>Number of Channels:</b> One (two identical outputs)<br><b>Video Decompression Type:</b> MPEG-2 4:2:0<br><b>Output Level:</b> 1.0Vpp $\pm$ 5%<br><b>Output Impedance:</b> 75 $\Omega$<br><b>Video Standard:</b> NTSC & PAL B/G/I/D/M/N<br><b>Frequency Response:</b><br>NTSC: 0.0-4.2 MHz $\leq$ +0.5 dB/-0.75 dB<br>PAL: 0.0-5.0 MHz $\leq$ +0.5/-1.25 dB<br><b>Maximum Video Resolution:</b> 720x480/576<br><b>Maximum Video Bit rate:</b> 15 Mb/s<br><b>Chroma-luma Delay:</b> $\pm$ 30 ns<br><b>Field Time Distortion:</b> $\leq$ 3%<br><b>Line Time Distortion:</b> $\leq$ 3%<br><b>Luminance Non-linearity:</b> $\leq$ 5%<br><b>Differential Gain:</b> $\leq$ 3%<br><b>Differential Phase:</b> $\leq$ 3°<br><b>Signal-to-Noise Ratio:</b> $\geq$ 55 dB | <b>Analog Audio Output</b><br><b>Number of Channels:</b> Two stereo pairs/ four mono channels<br><b>Audio decompression:</b> MPEG or Dolby Digital (AC-3)<br><b>Output Level:</b> Balanced, adjustable audio outputs are factory set for unity gain (0 dBm out over 600 $\Omega$ for 0 dBm in). Output is adjustable at the front panel by $\pm$ 6.0 dB (ref., 100 K $\Omega$ ). Factory calibrated to +18 dBu (at full scale).<br><b>Frequency Response:</b> $\pm$ 0.5 dB, 20 Hz to 20 kHz (ref., 100 K $\Omega$ )<br><b>Total Harmonic Distortion:</b> < 0.3% at 1 kHz (ref. 100 K $\Omega$ )<br><b>Dynamic Range:</b> 85 dB (CCIR/Arm weighting)<br><b>Crosstalk:</b> 80 dB at 1 kHz (typical) |
| <b>VBI</b>            | NTSC lines 10 to 22 fields 1 and 2<br>Line 21 closed captions<br>NABTS, AMOL I and II (Nielsen)  | PAL lines 7 to 22 fields 1 and 2<br>WST, WSS, VPS   |

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| Features                       | Description  |  |
|--------------------------------|--|--|
| <b>Data Outputs</b>            | RS-232 asynchronous data at rates up to 38.4 kb/s<br><b>Rates:</b><br>300/1200/2400/4800/9600/19,200/38,400 b/s  | <b>Ethernet Output for IP data</b><br>RJ-45, 10/100BaseT, up to 10 Mbps (up to 50 Mbps optional)   |
| <b>Other Outputs</b>           | <b>Cue Trigger Outputs</b><br><b>Number of Outputs:</b> 8<br><b>Type:</b> Open Collector<br><br><b>Cue Tone Output</b><br><b>Balanced audio output:</b> -3.0 dBu ±3 dB, 600Ω<br><b>Output Impedance:</b> < 50Ω | <b>Ethernet Output for Control &amp; Monitoring</b><br>RJ-45, 10/100BaseT<br><br><b>MPEG-2 Transport Output</b><br>EN 50083-9, DVB-ASI coaxial, 188 byte packets<br><b>Programmable Relay Output</b><br>Alarm or configurable to one of the 8 open collector outputs |
| <b>Optional Inputs/Outputs</b> | 4 RF inputs<br><br><b>MPEG-2 Transport Input</b><br>EN50083-9, DVB-ASI coaxial, 188/204 byte packets   | <b>Two SDI Video Outputs (with embedded audio, 1 video channel)</b><br>BNC, SMPTE-259MC<br><br><b>Two Digital Audio Outputs (one stereo channel each)</b><br>BNC, AES-3id  |
| <b>Environmental/Physical</b>  | <b>Operating Temperature:</b> 0°C to 50°C (without SDI option)<br>(32°F to 122°F)<br><b>Storage Temperature:</b> -20°C to 70°C (-4°F to 158°F)   | <b>Physical Dimensions:</b> 1.75 in. H x 19.0 in. W x 15 in. D (4.4 cm H x 48.3 cm W x 38.1 cm D) 1RU high, 19 in. EIA rack mountable<br><b>Weight:</b> 10 lbs (4.5 kg) approx.  |
| <b>Power</b>                   | <b>Voltage Range:</b> 100V to 240V AC<br><b>Line Frequency:</b> 50/60 Hz   | <b>Power Consumption:</b> 50W max.<br><b>LNB Power on RF#1:</b> +13V/+18V @ 400 mA max.  |



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## Ordering Information

| Part Number | Description   |
|-------------|---|
| 6996968     | 1 RF Input, 10 Mbps IP, NA power cord   |
| 4003152     | 1 RF Input, 10 Mbps IP (NAP ISE), NA power cord   |
| 4006900     | 1 RF input, 10 Mbps IP, EU power cord   |
| 4006901     | 1 RF input, 10 Mbps IP, indicate country-specific power cord                                    |
| 4005966     | 4 RF Inputs, 50 Mbps IP, NA power cord  |
| 4005967     | 4 RF Inputs, 50 Mbps IP (NAP ISE), NA power cord  |
| 4006898     | 4 RF inputs, 50 Mbps IP, EU power cord  |
| 4006899     | 4 RF inputs, 50 Mbps, indicate country-specific power cord                                      |
| 4005964     | 4 RF Inputs, 50 Mbps IP, SDI video, AES-3id audio, ASI In, NA power cord                        |
| 4005965     | 4 RF Inputs, 50 Mbps IP, SDI video, AES-3id audio, ASI In (NAP ISE), NA Power cord              |
| 4006896     | 4 RF Inputs, 50 Mbps IP, SDI video, AES-3id audio, ASI In, EU power cord                        |
| 4006897     | 4 RF Inputs, 50 Mbps IP, SDI video, AES-3id audio, ASI In, indicate country-specific power cord |

NA - North American  
EU - European  
NAP - North American Pool



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