PowerVu®

Model D9223
Commercial Satellite Receiver

Description

The PowerVu® Commercial Satellite Receiver is one of a series of Scientific-Atlanta MPEG-2/DVB digital compression products designed for broadcast and cable headend applications.

Scientific-Atlanta's PowerVu Commercial Satellite Receiver is optimized to receive broadcasts using state-of-the-art MPEG-2 digital compression technology. The receiver offers features such as the capability to receive digitally encrypted video and audio, utility data, VBI, teletext, and conditional access.

Single or Multiple Channel Per Carrier Operation

With variable RF frontend, the PowerVu Commercial Satellite Receiver is configured to receive a program from either an SCPC or MCPC signal. This provides a migration path from analog to digital services without the need for expensive equipment changeouts.

Features

- MPEG-2/DVB digital video and audio signals in 525- or 625-line systems
- Single- or multiple-channel per carrier operation
- Variable symbol rates from 3.0 Msymbols/s to 30.8 Msymbols/s
- Selectable Viterbi Forward Error Correction rates of 1/2, 2/3, 3/4, 5/6 or 7/8 (installer selectable or down-loadable over satellite)
- PowerVu conditional access with DES or DVB scrambling
- Two pairs of balanced audio outputs with detachable connectors for easy installation
- Non-encrypted utility data output at rates up to 38.4 kb/s
- Separate text and video output, allowing the operator to access diagnostics menus without disrupting the decompressed video signal output
- Supports VBI reinsertion of NABTS, AMOL I and II (Nielsen), and WST data
- Supports reinsertion of VBI lines 10 to 22 in NTSC fields 1 and 2 or PAL lines 7 to 22, fields 1 and 2
- Eight programmable open collector outputs and one Form C contact closure for control of external devices such as VTRs and transmitters
- Downloadable software capability via the satellite uplink providing site upgradeability
- Smart card receptacle for field-upgradable security
- Remote serial interface for monitoring diagnostics and tuning control
- Dual L-Band inputs providing simplified signal selection
- Cue tones feature provides real-time control of external ad-insertion devices

MPEG-2 Video Decompression
The PowerVu Commercial Satellite Receiver is equipped with an MPEG-2 video decom-pression processor that allows the receiver to decompress either MPEG-1 or MPEG-2 video information streams. Once decompressed, the receiver automatically detects the line rate of the original video and returns it to its original 525-line NTSC or 625-line PAL format. The video is then output for redistribution on a BNC connector to facilitate connection to other broadcast equipment.

Video Standard
The Model D9223 receiver is capable of receiving 525-line or 625-line video formats and displaying them as either NTSC, PAL-M, PAL-B, or PAL-N respectively.

MPEG-2 Audio Channels
The PowerVu receiver is equipped with an MPEG (Musicam) audio decompressor. Audio is output on 600 ohm balanced screw terminals suitable for audio redistribution. Unbalanced audio outputs are also provided for connection to standard TVs. Output levels for each balanced channel are adjustable on the rear panel. An additional four mono channels or two stereo pairs are available as an option.

Search and Find
The search and find feature provides ease of installation. The find function is used to force the receiver to search for a digital channel when the downlink frequency is not known. This can be activated locally and is especially useful when installing the receiver. Search is used to reacquire a digital channel broadcast by the network. If enabled previously, search mode will start automatically upon loss of signal.

Dual L-Band Inputs
Users can switch between inputs with ease, using the dual L-Band inputs. Switching is done through simple menu commands, with no rewiring or reconnecting required.

Monitor Video Output
A separate monitor output is provided as a standard feature for monitoring the receiver's diagnostics and performance without interrupting the video services. This output also provides video.

Enhanced Security
The receiver is equipped with a smart card slot in the front panel of the unit. Smart cards may be used to renew the security and identity of the receiver if piracy of the signal is suspected.

Cue Trigger Output
The receiver provides control outputs to drive external devices for real-time switching. This feature can be used to aid in the insertion of local advertisements at the headend.

Cue Tones
The receiver provides balanced, low output impedance, standard DTMF tones for realtime control of external ad-insertion equipment.

Easy Installation and Channel Tuning
All information needed for proper installation and set up of the PowerVu receiver can be found in one of three places: the easy-to-follow guide supplied with each unit; the front panel display; or the separate on-screen menu text display. When the unit is turned on and tuned to the correct downlink frequency in either the C- or Ku-band range, the frequency plan, virtual channel map, and conditional access information are transmitted to the receiver where they are stored in nonvolatile memory. Virtual channels are then used to select the authorized services. Flexibility for defining these channels, as well as other services, is provided by the PowerVu Command Centre.

Subtitling
The receiver is capable of supporting multilingual subtitling within the PowerVu system. Implementation of subtitling is independent of the character type and thus can be displayed in any language. Subtitles can appear as either white or yellow text against a variety of user selected backgrounds.

MPEG-2 Input and Output
If the receiver is equipped with the optional MPEG-2 input, it can be used to monitor a PowerVu uplink signal before transmission. Alternatively, the input can be used in terrestrial applications to receive and display a SWIF signal from a PowerVu Telco Interface Unit (TIU).

The MPEG-2 transport output is useful for applications where signals are to be remultiplexed and transmitted over multiple satellite hops. PowerVu MetroMux® software is applicable for this system transmission application, retaining the same video and audio quality as the original source signal. Please contact Scientific-Atlanta for more information on this PowerVu software product.

Additional Outputs
The PowerVu receiver offers a non-encrypted asynchronous utility data port with selectable data rates up to 38.4 kb/s. Eight open-collector outputs are also provided for remote control of transmitters, VTRs, or other external devices. These eight outputs can be set on the front panel or controlled from the uplink.

Two relay contacts are provided on the receiver. The first indicates authorization while the second is controlled by any one of the eight remote control pins. These relay contacts can be enabled or disabled on the front panel or via an RS-232 terminal.

An AGC output is provided to aid in signal peaking (dish antenna alignment).

A remote control port allows access to the receiver's front panel functions via an RS-232 terminal. This allows monitoring of key receiver parameters for diagnostics control

Specifications

System - MPEG-2/DVB Compatible
Modulation: QPSK
Inner FEC: Variable (1/2, 2/3, 3/4, 5/6, or 7/8)
Outer FEC: Reed Solomon, T = 8
MPEG-2 Transport

Tuner
Input Level: -30 dBm to -65 dBm per carrier
Frequency Range: 950 MHz to 2050 MHz
Tuning Stepsize: 250 kHz
Symbol Rate Range: 3.0 Msymbols/s to 30.8 Msymbols/s
Stepsize: 100 symbols/s
Carrier Capture Range: ± 1.5 MHz
Carrier Acquisition Time: < 2 seconds
Satellites: C-band and Ku-band
Impedance: 75Ω

Video Output
Video Decompression Type: MPEG-2
Level:
100 IRE ± 5% (NTSC)
1.0 V p-p ± 5% (PAL)
Frequency Response:
-2 dB at 5.0 MHz, 704 x 480/576 sample density
-2 dB at 3.0 MHz, 544 x 480/576 sample density
Maximum Video Resolution: 704 x 576
Chroma-luma Delay: ± 26 ns
Field Time Distortion:
≤ 3 IRE (NTSC)
≤ 2% (PAL)
Line Time Distortion: ≤ 1%
Short Time Distortion: ≤ 2%
Luminance Nonlinearity: ≤ 5%
Differential Gain:
≤ 4 IRE (NTSC)
≤ 4% (PAL)
Differential Phase: 2°
Signal-to-Noise Ratio: ≥ 56 dB

Audio Outputs
Number of Channels: Two stereo pair or four mono channels
Output Level: Balanced, adjustable audio outputs are factory set for unity gain (0 dBm out for 0 dBm in). Range is adjustable ±6 dB, providing a maximum output of up to +18 dBm into 600Ω.
Frequency Response: ± 2.0 dB, 20 Hz to 20 kHz
Unbalanced Stereo Output: 1.265 Vrms @ 10 KΩ max.
Total Harmonic Distortion: < 0.3% at 1 kHz
Dynamic Range: 75 dB (CCIR/Arm weighting)
Crosstalk: 60 dB

Expansion Port
Utility Data: RS-232 asynchronous data at rates up to 38.4 kb/s
Settings: 300, 1200, 2400, 4800, 9600, 19,200, and 38,400 b/s

MPEG-2 Output
Scientific-Atlanta SWIF link. MPEG-2 transport format with multiplexed video, audio, and data. Only available in DES scrambled systems.

Options

Additional Two Stereo Pairs or Four Mono Channels: 600Ω balanced
Digital Video Output (D1) and Digital Audio Output
Serial Interface:
Video: SMPTE 259M
Audio: AES/EBU format
MPEG-2 Input: Scientific-Atlanta SWIF link. MPEG-2 transport format with multiplexed video, audio, and data
High-Speed Data: RS-422 synchronous data at rates from 9.6 kb/s to 2048 kb/s
Settings: 9.6 K, 19.2 K, 38.4 K, 57.6 K, 64 K, 76.8 K, 96 K, 115.2 K, 128 K, 192 K, 256 K, 384 K, 512 K, 1.024 M, 1.536 M, and 2.048 Mb/s

Environmental
Operating Temperature: 0°C to 50°C (32°F to 122°F)
Storage Temperature: -40°C to 60°C (-40°F to 140°F)
Relative Humidity: 5% to 95% non-condensing

Physical
Dimensions:
3.5 in. H x 19.0 in. W x 13.3 in. D
(8.9 cm H x 48.3 cm W x 33.8 cm D)
Chassis is two units high, capable of rack Mounting in an EIA standard 19 in. wide rack
Weight: 10 lbs. (4.5 kg) approx.
Power Requirements
Voltage Range: 100V to 240V ac nominal ±10%
Line Frequency: 47 Hz to 63 Hz
Power Consumption: 63W max.
LNB Drive Voltage:
Three position slide switch
Position 1 - +19V dc @ 450 mA max.
Position 2 - off
Position 3 - +13V/+19V @ 450 mA max.
H/V controlled output for dual polarity
LNB applications

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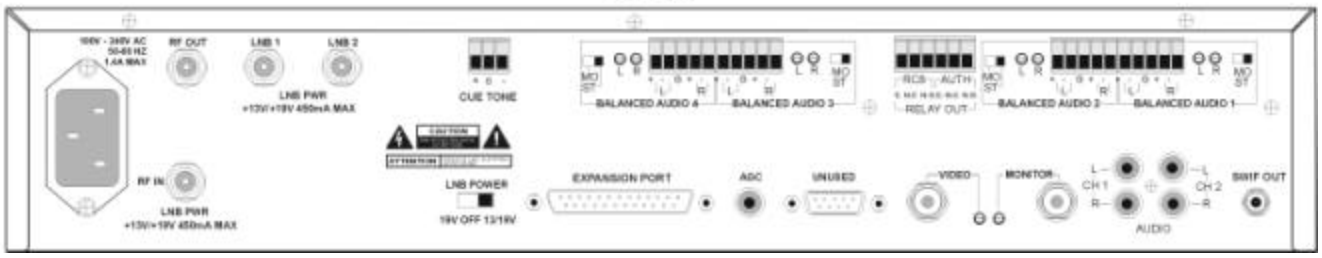
Ordering Information

HOW TO ORDER	
STEP	DIRECTION
1	Select the product part number (e.g., 803-313)
2	Select the AC cable kit for the applicable country (e.g., 773-500 for U.S.)

PART NUMBER	803-310	803-311	803-312	803-313	803-314	803-376
OPTIONS						
4-pair audio			X	X		
High-speed data (9.6K to 2.048 Mb/s)		X		X	X	
Digital output					X	
SWIF IN				X	X	
Cue Tones			X	X		X
Dual input tuner			X			

AC Cable Kits
Country-specific AC cable kits are available at time of order.

803-312



Base model equipped with 4-pair audio + dual input tuner + cue tone options

Scientific-Atlanta, Inc.
1-800-722-2009 or 770-236-6900
www.scientificatlanta.com

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