

## Cisco D9854 Advanced Program Receiver

### Description

The Cisco® D9854 Advanced Program Receiver is designed for satellite content distribution applications requiring DVB-S and DVB-S2 reception capabilities with advanced digital outputs for digital tier program distribution. A built-in decoder is capable of decoding an MPEG-2 or MPEG-4 AVC High Definition (HD) program for analog monitoring, or Standard Definition (SD) down-conversion for composite. Decoding of an MPEG-2 or MPEG-4 AVC SD program is also available for analog and SDI output. A high-quality SDI or HD-SDI output version of the D9854 is available for re-encode applications.

**Figure 1.** Cisco D9854 Advanced Program Receiver



### Digital Program Distribution

The ASI transport output or the optional MPEGoIP output provides a number of output modes, including the capability of carrying a decrypted program for digital tier distribution. This helps ensure that compressed video programs are efficiently distributed to households equipped with digital set-top boxes.

### Digital Program Mapping

Digital Program Mapping allows programmers to transparently substitute programs at the uplink. It maintains predictable and compliant transport output during service replacement, Network Information Table (NIT) retune, and channel changes, including force tunes. This feature remaps the packet identifier (PID) information from the primary service to an alternate service, allowing downstream devices to continue to operate without headend operator intervention. This helps ensure availability of alternate programming in the digital tier.

### Digital Ad Insertion

Digital Program Insertion (DPI) information is available along with the video and audio PIDs for external ad insertion in compressed digital format.

### Key Features

- Four L-band inputs
- DVB-S QPSK demodulation
- DVB-S2 QPSK/8PSK demodulation
- PowerVu® conditional access with DES or DVB descrambling
- Supports Basic Interoperable Scrambling System (BISS) conditional access
- DVB-CI support for CAM-based conditional access

### Key Features (continued)

- 4:2:0 HD MPEG-4 AVC and MPEG-2 1080i and 720p decoding
- 4:2:0 SD MPEG-4 AVC and MPEG-2 decoding
- Aspect ratio conversion (4:3, 16:9, 14:9) with Active Format Descriptor (AFD) control for SD programs
- AFD support for down-conversion of HD programs with aspect ratio conversion
- Closed Captioning support for EIA-608 and EIA-708
- MPEG and Dolby® Digital audio decoding
- DVB or Imtext subtitling
- Four audio outputs providing either two stereo pairs or four mono channels of balanced, audio each with the ability to use part of their output for applications such as SAP, cue tones, etc.
- Utility data up to 38.4 kbps via RS-232
- Uplink addressable decoder output control (VBI, audio routing, DPI, and ASI output)
- Fingerprint trigger
- Field upgradeable software and security
- SNMP for setup, control, and monitoring
- Front panel LCD for control & monitoring
- Web browser interface for easy setup, control, and monitoring
- DVB-VBI and SCTE-127 support
- CAM Interface software
- DTMF cue tone and cue trigger outputs for ad insertion
- Digital Program Mapping providing uplink control for service replacements in blackout areas

### Optional Features

- MPEGoIP output only available on the digital transport model
- User-switchable redundant ASI, SDI, or HD-SDI outputs
- SDI or HD-SDI video output with embedded audio
- AES-3id digital audio output

## Specifications

**Table 1.** Product Specifications

Parameter	Value
<b>System</b>	
Standards	MPEG-2/DVB Compatible EN 300 421, EN 300 468
Demodulation	DVB-S QPSK, DVB-S2 QPSK and 8PSK
<b>Tuner</b>	
Number of RF Inputs:	4 (1 active at a time)
Input Level	-25 dBm to -65 dBm per carrier
Frequency Range	950 MHz to 2150 MHz
Symbol Rate Range:	DVB-S: 1.0 to 45 MSymbols/s DVB-S2: 10.0 to 30 MSymbols/s 1.0 to 10 MSymbols/s - contact Cisco
Carrier Capture Range	$\geq \pm 3.0$ MHz (1-10 Msymbols) $\geq \pm 5.0$ MHz (10-30 Msymbols)
Satellites	C-band and Ku-band
Input Impedance	75 $\Omega$
<b>Analog HD Video Output</b>	
Number of Channels	1
Video Decompression Type	MPEG-2 4:2:0 and MPEG-4 AVC 4:2:0
Video Standard	1080i @ 29.97, 1080i @ 25, 720p @ 59.94, 720p @ 50
Horizontal Video Resolutions	1080i: 1920, 1440, 1280 720p: 1280, 960, 640
<b>Analog SD Video Output</b>	
Number of Channels	One (2 identical outputs)
Video Decompression Type	MPEG-2 4:2:0 and MPEG G -4 AVC 4:2:0
Video Standard	NTSC and PAL B/G/I/D/M/N
Maximum Video Resolution	720x480/576 Digital Audio/Video Output (future)
<b>Analog Audio Output</b>	
Number of Channels	2 stereo pairs/ or mono channels, 5.1 channel down-mix
Audio Decompression	MPEG or Dolby Digital (AC-3). HE-AAC single stereo pair or Dolby Digital Plus single stereo pair available in anticipated software release.
Output Level	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).
Frequency Response	$\pm 0.5$ dB, 20 Hz to 20 kHz (ref., 100 K $\Omega$ )
Total Harmonic Distortion	< 0.3% at 1 kHz (ref. 100 K $\Omega$ )
Dynamic Range	85 dB (CCIR/ARM weighting)
Crosstalk	80 dB at 1 kHz (typical)
<b>Digital Outputs (optional)</b>	
<b>Digital HD Video Output</b>	
Number of Channels	1
User Selectable Output Ports	2
Output Type	BNC
Output Format	HD-SDI, SMPTE 292M

Parameter	Value
Embedded audio	2 audio programs, PCM or pass-through 2 Digital Audio Outputs (1 stereo channel each) BNC, AES-3id, SMPTE 276M
<b>Aspect Ratio</b>	
Display Aspect Ratios	4:3, 16:9
Aspect Ratio Conversions for Down-Conversion	<b>4:3</b> : 16:9 Letterbox, 14:9 Letterbox, Center Cutout <b>16:9</b> : Center Cutout
Aspect Ratio Conversions for SD Programs	<b>4:3</b> : 16:9 Letterbox, 14:9 Letterbox, Center Ctout, None <b>16:9</b> : Scale to 16:9
<b>VBI</b>	
NTSC	Lines 10 to 22 fields 1 and 2 Line 21 closed captions NABTS, AMOL I and II (Neilsen), VITC, WSS
PAL	Lines 7 to 22 fields 1 and 2 WST, WSS, VPS, VITC
<b>Data Outputs</b>	
RS-232 asynchronous data	
Rates	300, 1200, 2400, 4800, 9600, 19,200, 38,400 b/s
Ethernet Output for IP data	
Connector	RJ-45, 10/100BaseT
Rates	Up to 10 Mbps
<b>Conditional Access</b>	
PowerVu CA	DES or DVB
DVB Descrambling	BISS Mode 1/E
<b>DVB-CI</b>	
Interface	2 CI slots – EN 50221
CA Method	Multicrypt, Simulcrypt
CAS	Irdeto, Viaccess, Nagravision, Conax MediaGuard, Cryptoworks available in an anticipated future software release
<b>Other Outputs</b>	
<b>MPEG-2 Transport Input</b>	EN50083-9, DVB-ASI coaxial, 188/204 byte packets
<b>MPEG-2 Transport Output</b>	
Physical	RJ-45
Ethernet	10/100/1000BaseT
Output Modes	UDP Raw, RTP
Ethernet Output for Control and Monitoring	RJ-45, 10/100/1000BaseT
<b>MPEG-2 Transport Output</b>	EN 50083-9, DVB-ASI coaxial, 188 byte packets
<b>Programmable Relay Output</b>	Alarm or configurable to one of the 8 open collector outputs
<b>Cue Tone Output</b>	
<b>Balanced audio Output</b>	-3.0 dBu ±3 dB, 600 Ω
Output Impedance	< 50 Ω
<b>Cue Trigger Outputs</b>	
Number of Outputs	8
Type	Open Collector
<b>Environmental Specifications</b>	
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage	-20°C to 70°C (-4°F to 158°F)

Parameter	Value
<b>Chassis Mechanical Specifications</b>	
Height	1.72 in. (4.37 cm) 1 RU high, 19 in. EIA rack mountable
Width	17.35 in. (44.07 cm)
Depth	13.78 in. (35.0 cm)
Weight	10 lbs (4.5 kg) approx.
<b>Power</b>	
Voltage Range	100 V to 240 VAC
Line Frequency	50/60 Hz
Power Consumption	37 W max.
LNB Power on satellite input	+13 V/+18 V @ 400 mA max.

Figure 2. Cisco D9854 Advanced Program Receiver (Base model)

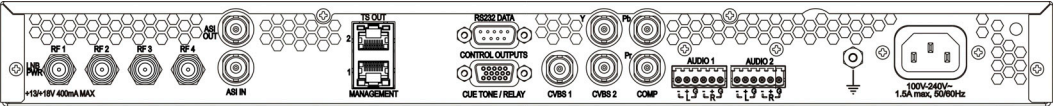
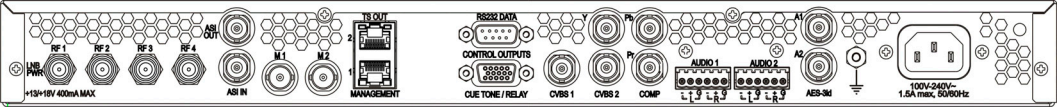


Figure 3. Cisco D9854 Advanced Program Receiver (SDI model, with SD/HD-SDI and AES outputs)



Ordering Information

Table 2. Ordering Information

Cisco D9854 Advanced Program Receiver	Part Number
<b>Configured Model Base PowerVu Default</b>	
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD MPEG-2/H.264, PowerVu Default	4019438010600XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD MPEG-2/H.264, PowerVu Default	4019438010700XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD MPEG2/H.264, PowerVu Default	4019438011400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD MPEG-2/H.264, PowerVu Default	4019438011500XX <sup>1</sup>
<b>Configured Model Base FTA/DVB-CI Default</b>	
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD MPEG-2/H.264, DVB-CI/FTA Default	4019438010601XX <sup>1</sup>
D9854 4RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD MPEG-2/H.264, DVB-CI/FTA Default	4019438010701XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD MPEG-2/H.264, DVB-CI/FTA Default	4019438011401XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD MPEG-2/H.264, DVB-CI/FTA Default	4019438011501XX <sup>1</sup>
<b>Configured Model Base PowerVu Default, NAP<sup>2</sup></b>	
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD MPEG-2/H.264, PowerVu Default, (NAP <sup>2</sup> ISE)	4019438050600XX <sup>1</sup>

<sup>1</sup> The last two digits of part number denote the power cord. When ordering, refer to the table for your country-specific power cord and replace 'XX' with the part number for your country-specific power cord.

Cisco D9854 Advanced Program Receiver	Part Number
<b>Configured Model Base PowerVu Default, NAP<sup>2</sup></b>	
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD MPEG-2/H.264, PowerVu Default, (NAP ISE)	4019438050700XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD MPEG-2/H.264, PowerVu Default, (NAP ISE)	4019438051400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD MPEG-2/H.264, PowerVu Default, (NAP ISE)	4019438051500XX <sup>1</sup>
<b>Configured Model SDI FTA/DVB-CI Default</b>	
D9854 4 RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2, DVB-CI/FTA Default	4019438030001XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2, DVB-CI/FTA Default	4019438030101XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2, DVB-CI/FTA Default	4019438030201XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD-SDI MPEG-2, DVB-CI/FTA Default	4019438030301XX <sup>1</sup>
D9854 4RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438030401XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438030501XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438030601XX <sup>1</sup>
D9854 4RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438030701XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG-2, DVB-CI/FTA Default	4019438030801XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, DVB-CI/FTA Default	4019438030901XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG-2, DVB-CI/FTA Default	4019438031001XX <sup>1</sup>
D9854 4RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, DVB-CI/FTA Default	4019438031101XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438031201XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438031301XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438031401XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, DVB-CI/FTA Default	4019438031501XX <sup>1</sup>
<b>Configured Model SDI PowerVu Default</b>	
D9854 4 RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2, PowerVu Default	4019438030000XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2, PowerVu Default	4019438030100XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2, PowerVu Default	4019438030200XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD-SDI MPEG-2, PowerVu Default	4019438030300XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2/H.264, PowerVu Default	4019438030400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2/H.264, PowerVu Default	4019438030500XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2/H.264, PowerVu Default	4019438030600XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD-SDI MPEG-2/H.264	4019438030700XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG-2, PowerVu Default	4019438030800XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, PowerVu Default	4019438030900XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG-2, PowerVu Default	4019438031000XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, PowerVu Default	4019438031100XX <sup>1</sup>

<sup>2</sup> NAP – North American Pool

Cisco D9854 Advanced Program Receiver	Part Number
<b>Configured Model SDI PowerVu Default</b>	
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG-2/H.264, PowerVu Default	4019438031200XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, PowerVu Default	4019438031300XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG-2/H.264, PowerVu Default	4019438031400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, PowerVu Default	4019438031500XX <sup>1</sup>
<b>Configured Model SDI PowerVu Default, NAP<sup>2</sup></b>	
D9854 4 RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438070000XX <sup>1</sup>
D9854 4RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438070100XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438070200XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438070300XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438070400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438070500XX <sup>1</sup>
D9854 4RF Inputs, DVB-S/S2, ASI In, SD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438070600XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP out, SD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438070700XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG2, (NAP ISE), PowerVu Default	4019438070800XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438070900XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438071000XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2, (NAP ISE), PowerVu Default	4019438071100XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, SD/HD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438071200XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438071300XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, SD/HD-SDI MPEG2/H.264, (NAP ISE), PowerVu Default	4019438071400XX <sup>1</sup>
D9854 4 RF Inputs, DVB-S/S2, ASI In, MPEGoIP Out, SD/HD-SDI MPEG-2/H.264, (NAP ISE), PowerVu Default	4019438071500XX <sup>1</sup>

Cisco D9854 Advanced Program Receiver	Part Number
<b>Common Interface Modules</b>	
Aston Professional CAM <sup>3</sup> , for Descrambling CONAX (maximum 12 Services)	4016669
Aston Consumer CAM for Descrambling CONAX (maximum 2 Services)	4016670
CAM for Descrambling CryptoWorks	V9523361
Aston Professional CAM for Descrambling Irdeto (maximum 12 Services)	4016671
Aston Consumer CAM for Descrambling Irdeto (maximum 2 Services)	4016672
Aston Professional CAM for Descrambling MediaGuard (maximum 12 Services)	V9528197
Aston Consumer CAM for Descrambling MediaGuard (maximum 2 Services)	V9528198

<sup>3</sup> CAMs for Nagra have to be purchased from Conditional Access System vendors or the program provider. Cisco does not guarantee the operation of CAMs not sold by Cisco.

Cisco D9854 Advanced Program Receiver	Part Number
<b>Common Interface Modules</b>	
Aston Professional CAM for Descrambling Viaccess (maximum 12 Services)	V9528199
Aston Consumer CAM for Descrambling Viaccess (maximum 2 Services)	V9528240

### Country-Specific Power Cords

**Table 3.** Ordering Information – Country-Specific Power Cords

Cisco D9854 Advanced Program Receiver	Part Number
No power cord	00
North American (NA)	01
Japan	02
China	03
Australia	04
European (EU)	05
Russia	06
Brazil	07
Chile	08
India	09
South Africa	10
Israel	11
Mexico	12
Argentina	13
UK	14
Ireland	15
Singapore	16
Taiwan	17
Switzerland	18
Korea	19



Cisco, Cisco Systems, the Cisco logo, the Cisco Systems logo, and PowerVu are registered trademarks or trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

Dolby and the double-D symbol are trademarks of Dolby Laboratories.

The DVB logo is a registered trademark of the DVB Digital Video Broadcasting Project.

*All other trademarks mentioned in this document are the property of their respective owners.*

Specifications and product availability are subject to change without notice.

© 2009 Cisco Systems, Inc. All rights reserved.

1-800-722-2009 or 678-277-1120

[www.cisco.com](http://www.cisco.com)

Part Number 7012680 Rev F

October 2009