

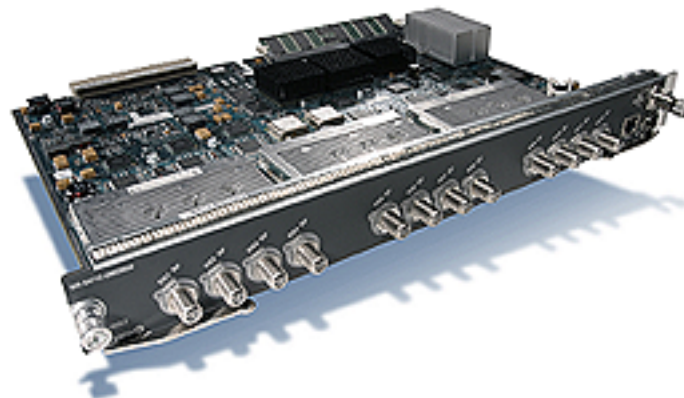
Cisco uMG9850 QAM Module

The Cisco® uMG9850 QAM Module provides the most versatile solution for Gigabit Ethernet-based digital video networks integrating switching, optics, and quadrature-amplitude-modulation (QAM) functions on one platform—the Cisco Catalyst® 4500 Series Switch—to simplify network architectures delivering video-on-demand (VoD) services. Performing as the IP-to-MPEG-2 gateway between the Gigabit Ethernet transport network and the hybrid fiber-coaxial (HFC) cable network, the Cisco uMG9850 QAM Module provides high-performance operation for QAM modulation and upconversion of digital video. The Cisco uMG9850 QAM Module consists of 12 RF ports generating two QAM channels per port for a total of 24 QAMs per module.

Optimized for Gigabit Ethernet Networking

The Cisco uMG9850 QAM Module is optimized for Gigabit Ethernet technology, accepting full line-rate Gigabit Ethernet video transport feeds to provide optimum efficiency. There is no longer a need to daisy-chain QAM devices, eliminating the single point of failure present in the first QAM device in the chain. Configuring multiple Cisco uMG9850 QAM modules into a single chassis provides the ability to switch any video stream from an outgoing Gigabit Ethernet video server port to any QAM channel, fully utilizing the capabilities of Gigabit Ethernet networking. The Cisco uMG9850 QAM Module also lowers distribution hub capital expenditures (CapEx) and reduces the number of devices to be managed.

Figure 1
uMG9850 QAM Module



Flexible Modular Design

The modularity of the Cisco Catalyst 4506 and 4507R Switches accommodates up to five Cisco uMG9850 QAM modules, offering a maximum of 120 QAM channels. This modular solution enhances the scalability by making it easy to add more QAM channels as VoD service grows through the building-block design of the platform. Customers can now purchase spare QAM modules only, rather than an entire fixed-configuration system, lowering the total cost of ownership for in-service video QAM equipment. The Cisco uMG9850 QAM Module also can be mixed with other Cisco Catalyst 4500 Series line cards, further adding to the flexibility of the solution.

High-Availability

The platform supports hot-swappable QAM modules on active systems in operation by taking advantage of the high-availability features built for the system. This accommodates future growth and maintenance, while minimizing costly service outages and maximizing uptime. The platform also offers redundant power supplies, cooling fans, and central processing engines.

Integrated Solution

Integrating switching, optics, and QAM intelligence into a modular chassis simplifies network design and reduces operational costs. Customers can achieve greater investment protection through the flexibility of the product to evolve as service and capacity requirements increase. The Cisco uMG9850 QAM Module reduces the number of devices needed and provides better manageability than multiple standalone QAMs.

As Cisco Systems® continues to develop intelligent video edge solutions for current and future video services, the Cisco uMG9850 and the Cisco Catalyst 4500 Series provides the foundation for the next-generation digital video network.

Key Features

- 24 QAMs channels per line card, 12 ports carrying up to 2 QAMs each
- 64 and 256 QAM modulation
- Two switched GigE ports per module (RJ-45, SFP)
- Network jitter reduction—Up to 200 ms, user configurable
- MPEG-2 remultiplexing—PID filtering and remapping, PSI generation and insertion, PCR restamping
- Video session management—Session timers and statistics
- Network management—Cisco Command-Line Interface (CLI), SNMPv1, SNMPv2c ; Cisco Video MIB
- Software-configurable ASI video monitor port

Specifications

Table 1 Operational / Environmental / Safety / Regulatory

Features	Specifications
Operating temperature	32° to 104°F (0° to 40°C)
Nonoperating temperature	-55° to 125°F (-48° to 52°C)
Nonoperational altitude	Sea level to 15,748 ft (4800 m)
Input voltage	100 to 240 VAC
Input frequency	40 to 70 Hz
Input current	16A or 7A

Features	Specifications
Dimensions (H x W x D)	1.75 x 15 x 10 in. (4.45 x 38.1 x 25.4 cm)
EMI standards	CFR47: 2000, FCC Part 15, Subpart B for Class A; Industry Canada ICES-003 for Class A
Safety standards	UL 60950 (US); CAN/CSA C22.2, No. 60950 (Canada)

Table 2 Inputs

Features	Specifications
Input interface	1 Small Form-Factor Pluggable (SFP) port connector, 1 RJ-45
LAN protocol	IEEE 802.3z
Data rate per port	1000 Mbps (SFP), 10/100/1000 Mbps (RJ-45)
Data format	UDP datagram encapsulation of MPEG-2 single-program transport stream (SPTS) <ul style="list-style-type: none"> • Maximum of 600 MPEG-2 SPTS encapsulated in UDP/IP • Up to 15 PIDs per program (including ECM PID) • Up to seven 188-byte MPEG-2 packets per UDP datagram • 3 to 4 Mbps per SPTS (nominal)

Table 3 Processing Features

Features	Specifications
Function capability	<ul style="list-style-type: none"> • PID remapping • PID filtering • MPEG-2 re-multiplexing • PCR re-stamping • MPEG-2 PSI extraction, generation, and insertion • Input network jitter buffer (user-settable latency; maximum 200 ms)

Table 4 Network Management

Features	Specifications
Management connectors	<ul style="list-style-type: none"> • 1 RJ-45 connector: via supervisor module
Management protocols	<ul style="list-style-type: none"> • SNMPv1, SNMPv2c • Telnet • Command-line interface

Table 5 Radio Frequency Output Specifications

Features	Specifications
QAM modulation	64 and 256 QAM
Framing structure, channel encoding, modulation	Compliance with ITU-T Recommendation J.83 Annex B
MER (before equalizer)	> 35 dB
MER (after equalizer)	> 42 dB
BER	1e-13 (pre-FEC)
Output interface	F Connector, nominal impedance 75 ohms
Frequency range	53 to 860 MHz
Frequency step size	12.5 kHz
Output level	+45 dBmV to 53 dBmV per QAM channel
Output level step size	0.1dB
Return loss	14 dB, in channel

Table 6 Ordering Information

Table 6 gives ordering information for the Cisco uMG9850 QAM Module.

Part Number	Description
WS-X4712-UMG9850	Cisco Catalyst 4500 QAM Module, 12 RF ports, 24 QAM channels, Annex B



Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems Europe
11 Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France
www-europe.cisco.com
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

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