Cisco Model EPC3212 EuroDOCSIS 3.0 8x4 Cable Modem with Embedded Digital Voice Adapter

The Cisco® Model EPC3212 EuroDOCSIS 3.0 8x4 Cable Modem with Embedded Digital Voice Adapter (EPC3212) is a high-speed cable modem with an embedded digital voice adapter. The EPC3212 provides a faster connection to the Internet by incorporating eight bonded downstream channels along with four bonded upstream channels. These bonded channels deliver downstream data rates in excess of 440 Mbps. That's up to eight times faster than conventional single-channel EuroDOCSIS™ 2.0 cable modems.

The EPC3212 uses advanced line-interface technology to provide multi-country, toll-quality, telephone service using existing in-home wiring. The EPC3212 features two RJ-11 telephone ports for voice and supports 10 REN total, 5 REN phone loading on each phone line.

Figure 1. EPC3212 EuroDOCSIS 3.0 8x4 Cable Modem with Embedded Digital Voice Adapter (image may vary from actual product and specification)

The EPC3212 is designed to meet EuroPacketCable™ 1.5 and EuroDOCSIS 3.0 specifications as well as being backward compatible with EuroDOCSIS 2.0, 1.1, and 1.0 networks. The EPC3212 fully supports the CODECs specified in EuroPacketCable 1.5. Additional CODECs are available through a software upgrade that includes a high-fidelity CODEC option for toll-quality plus service. Standard VoIP call signaling is compliant with EuroPacketCable (MGCP/NCS) specifications. Software upgrades are available to support Session Initiation Protocol (SIP) call signaling.

Features

EuroDOCSIS

- Eight (8) bonded downstream channels with data rates in excess of 440 Mbps
- Four (4) bonded upstream channels with data rates in excess of 120 Mbps
- Designed to meet EuroDOCSIS 3.0 specifications as well as backward compatibility with existing EuroDOCSIS 2.0, 1.1 and 1.0 networks
- Enhanced packet processing technology to maximize performance

Embedded Digital Voice Adapter

- Two-line embedded digital voice adapter for wired telephony service
- Expanded tuning range, 108-1002 MHz
- Toll-quality, high-compression, and high-fidelity (exceeding toll quality) CODEC options

Connections

- 10/100/1000 BASE-T auto-sensing/auto-MDX Ethernet port
- USB 2.0 data port
- Support for up to 64 users (1 USB port user and up to 63 users on user-supplied Ethernet hubs)

Design and Function

- Attractive, compact design and versatile orientation to stand vertically, lie flat on the desktop or shelf, or mount easily on a wall
- Dual color LEDs on the front-panel provide an informative and easy-to-understand display that indicates the cable modem real-time operational status
- Color-coded connectors and cables for easy installation and setup
- Rugged electronic components for long-term reliability

Management

- Software upgradeable by network download
- Remote manageability using SNMP V1/V2 and V3

Software and Documentation

- CD-ROM containing user guide and USB driver installation software for Microsoft Windows 7, Windows Vista, Windows XP, and Windows 2000 operating systems

Figure 2. EPC3212 Front Panel (image may vary from actual product and specification)

Table 1. Front Panel Features

Feature	Description
Indicators	POWER, DS, US, ONLINE, LINK, TEL1, TEL2
Color	Black case, black face plate, silver text, green/amber LEDs
Branding	Cisco logo and model number

Figure 3. EPC3212 Back Panel (image may vary from actual product and specification)

Table 2. Back Panel Switch and Connections

Feature	Description
POWER Connector Color: Black	Connects modem to the DC output of the AC power adapter
POWER SWITCH	Switches power to the unit (power switch provided on all units carrying the CE mark)
TELEPHONE 1 and 2 Color: Gray	RJ-11 telephone ports connect to home telephone wiring and to conventional telephones or fax machines
ETHERNET Connector Color: Yellow	RJ-45 Ethernet port connect to the Ethernet port on your PC or your home network
USB Connector Color: Blue	USB 2.0 port connects to a USB port on your PC
REBOOT EMTA	Power cycles the modem
CABLE Connector Color: White	F-connector connects to an active cable signal from your service provider

Product Specifications

Table 3. Product Specifications

Specification	Value
Voice Specifications	
Call Signaling Protocol	MGCP/NCS including configurable IPsec encryption. Configurable to support RFC2833 event signaling Supports Bell103 detection: Improves alarm panel and Point of Sale (POS) interoperability by optimizing DSP for Bell103 protocol Software upgradeable to support Session Initiation Protocol (SIP) The following SIP standards are supported • RFC 2617 HTTP Authentication: Basic and Digest Access Authentication • RFC 2976 The SIP INFO Method • RFC 3261 SIP: Session Initiation Protocol • RFC 3262 Reliability of Provisional Responses in Session Initiation Protocol (SIP) • RFC 3263 Session Initiation Protocol (SIP): Locating SIP Servers • RFC 3264 An Offer/Answer Model with Session Description Protocol (SDP) • RFC 3265 Session Initiation Protocol (SIP)-Specific Event Notification • RFC 3420 Internet Media Type message/sipfrag • RFC 3428 Session Initiation Protocol (SIP) Extension for Instant Messaging • RFC 3515 The Session Initiation Protocol (SIP) Refer Method • RFC 3842 A Message Summary and Message Waiting Indication Event Package for the Session Initiation Protocol (SIP) • RFC 3892 The Session Initiation Protocol (SIP) Referred-By Mechanism • RFC 3903 Session Initiation Protocol (SIP) Extension for Event State Publication • Draft-ietf-mmusic-sdp-new-24 SDP: Session Description Protocol (Replacement for RFC 2327) • Draft-ietf-sipping-cc-transfer-01 Session Initiation Protocol Call Control – Transfer • Draft-ietf-sip-session-timer-08 The SIP Session Timer • Draft-ietf-sipping-realtimefax-01 SIP Support for Real-time Fax: Call Flow Examples and Best Current Practices • Draft-ietf-mmusic-sdescription-09 Session Description Protocol Security • Descriptions for Media Streams • Draft-ietf-sip-replaces-02 The Session Initiation Protocol (SIP) "Replaces" Header
Provisioning Modes	• Full EuroPacketCable secure provisioning • Kerberos support with NVRAM ticket caching • Configurable EuroPacketCable-lite (MTA config file provisioning without security) • Configurable for non-EuroPacketCable (MTA configuration using EuroDOCSIS config file)
CODECs	Standard: G.711, T.38 Fax Relay, iLBC and BV16 Software upgradeable to support other CODEC combinations including: • G.711 and G.728 • G.711 and G.729 • G.711 and G.729 a/e • G.711 and BV16 and BV32 (High fidelity – near CD quality) • G.711 and G.723 • G.711 and G.726 Note: Other codec combinations can be downloaded as required.
CODEC Packetization Intervals	10, 20, and 30 mS
CODEC Synchronization	CODEC synchronization to UGS time clock allows slip-free end-to-end sync to PSTN clock (minimizes frame slips that can cause Fax/Analog Modem call failures)
CODEC Encryption	Configurable to support AES-128 encryption or no encryption modes
Hearing Impaired Services Support	TDD support including detection of V.18 including Annex A
Fax and Analog Modem support	DSP based Modem/Fax Tone detection and support for Voice Band Data Mode with auto-CODEC negotiation and auto-control of echo canceller, jitter buffer, and VAD
Jitter Buffer Support	Adaptive dynamically controlled
Latency Control	Configurable min / max jitter buffer size

Specification	Value
Audio Gain Levels	Independently Configurable Tx and Rx audio gains
Silence Suppression	Configurable VAD with comfort noise generation
Packet Loss Concealment	ANSI T1.521-1999
Call Connection Quality Monitoring	RTCP, RFC1889, RFC1890, SNMP MIB for last call quality statistics
Dialing Modes	DTMF and configurable pulse dial support
DTMF Relay	RFC2833 including fast (40mS) DTMF Relay for alarm system signaling compatibility
Layer 2 Quality of Service	• Full EuroPacketCable secure DQOS with GateID including UGS and UGS/AD • DQOS Lite support including UGS and UGS/AD
Layer 3 Quality of Service	Configurable DiffServe/TOS support for Signaling, RTP, and RTCP flows
Payload Header Suppression (PHS)	• Supported for RTP and RTCP packet flows to reduce per-call network bandwidth. • Advanced support for Dynamic Payload Header Suppression using Propane Technology.
Management	SNMPv3, SNMPv2, and SNMPv1, Telnet/SSH with configurable user ID and password, internal log, and external Syslog support
Echo Cancellation	G.168 with extended echo tail support
Call Feature Support	• Caller ID • Call Waiting with Caller ID • Cancel Call Waiting • Call Conferencing (3-way calls) • Configurable hook flash support • Distinctive Ringing (Configurable for up to 11 ring patterns per phone line) • Ring Splash • Stutter Dial Tone • Off hook warning tone • Open Switch Interval support to enhance answering machine compatibility • Configurable star codes • Euro/US hook-flash type • Call transfer • Message Waiting Indicator • Warm Line • Call Forwarding Unconditional • Call Forwarding on Busy • Call Forwarding No Answer • Call return • Redial Call • Automatic redial • Other call features available with compliant CMS or gateway
Telephone Ring Loading	Full 5 REN support on each phone line (10 REN total)
Ring Signal	Configurable balanced ring with configurable DC offset
Max Phone Line Distance	Supports up to 1000 ft of AWG26 wire (0.4mm) on each phone line. Supports operation with typical in-home telephone wiring
Country-Specific Telephone Parameters Supported	United States, Japan, United Kingdom, Germany, France, Belgium, Netherlands, Finland, Italy, Switzerland, Sweden, Denmark, Brazil, Australia, Poland, Czech Republic, Hungary, Romania, ETSI 101 909-18
RF Downstream	
Frequency Range	108 to 1002 MHz
Tuner	(2) Frequency agile block tuners, 32 MHz bandpass each
Demodulation	8 demodulators, 4 per tuner, each demodulator; 64 QAM or 256 QAM
Maximum Data Rate	8 downstream channels, each 8 MHz channel: 55.62 Mbps for 256 QAM and 41.71 Mbps for 64 QAM
Bandwidth	8 or 6 MHz
Operating Level Range	43 to 73 dBµV for 64 QAM 47 to 77 dBµV for 256 QAM

Specification	Value			
RF Upstream				
Frequency Range	5 to 65 MHz			
Modulation	QPSK, 8 QAM, 16 QAM, 32 QAM, 64 QAM / ATDMA, 128 QAM / SCDMA			
Bandwidth	200 kHz to 6.4 MHz			
Maximum Data Rate per channel	Modulation	Channel Bandwidth (MHz)	Raw Data Rate (Mbps)	
	QPSK	1.6	2.56	
	16 QAM	1.6	5.12	
	QPSK	3.2	5.12	
	16 QAM	3.2	10.24	
	32 QAM	3.2	12.8	
	64 QAM	3.2	15.4	
	16 QAM	6.4	20.5	
	32 QAM	6.4	25.6	
	64 QAM	6.4	30.72	
Maximum Operating Level	Modulation	1 Channel	2 Channels	3 or 4 Channels
TDMA	QPSK	+121 dBµV	+118 dBµV	+115 dBµV
	8 QAM	+118 dBµV	+115 dBµV	+112 dBµV
	16 QAM	+118 dBµV	+115 dBµV	+112 dBµV
	32 QAM	+117 dBµV	+114 dBµV	+111 dBµV
	64 QAM	+117 dBµV	+114 dBµV	+111 dBµV
SCDMA	QPSK	+116 dBµV	+113 dBµV	+113 dBµV
	8 QAM	+116 dBµV	+113 dBµV	+113 dBµV
	16 QAM	+116 dBµV	+113 dBµV	+113 dBµV
	32 QAM	+116 dBµV	+113 dBµV	+113 dBµV
	64 QAM	+116 dBµV	+113 dBµV	+113 dBµV
	128 QAM	+116 dBµV	+113 dBµV	+113 dBµV
Other				
Input Voltage	15 VDC / 1 A			
Power Consumption (Modem Module)	~9.6 Watts			
Data Ports	Ethernet 10/100/1000BASE-T (Auto-sensing with Auto-MDIX): RJ-45 Ethernet (1) USB 2.0: USB Type B (1)			
RF	Female “F” type			
Impedance	75 ohms			
Mechanical				
Dimensions (W x D x H) (approximate)	Not including “F” connector: 17.6 cm x 14.5 cm x 5.0 cm (6.9 in. x 5.7 in. x 1.96 in.)			
Weight (approximate)	~0.39 kg (13.7 oz)			
Operating Temperature	0˚ to 40˚C (32˚ to 104˚F)			
Operating Humidity	0 to 90% RH non-condensing			
Storage Temperature	-20˚ to 60˚C (-4˚ to 140˚F)			
Standards and Approvals				
Designed to Comply with the Following Standards	EuroPacketCable 1.5, 1.0 EuroDOCSIS 3.0, 2.0, 1.1, 1.0			
Regulatory and Safety Approvals	As required per country where the EPC3212 will be used			

Ordering Information

Table 4. Ordering Information

Description	Part Number
5-65/108-1002 MHz diplex filter	
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 230 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe • Ethernet cable • USB cable • CD-ROM containing user guides and USB driver ***Europe***	4027676
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 230 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe • Ethernet cable • No USB cable • Two (2) telephone cables • CD-ROM containing user guides and USB driver ***Europe (Customer-specific configuration)***	4035138
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 230 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe • Ethernet cable • USB cable • CD-ROM containing user guides and USB driver ***Europe (Customer-specific configuration)***	4038907
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 230 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe • Ethernet cable • USB cable • CD-ROM containing user guides and USB driver ***Europe (Customer-specific configuration)***	4039646
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 230 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe • Ethernet cable • USB cable • CD-ROM containing user guides and USB driver ***Europe (Customer-specific configuration)***	4038906
EPC3212 EuroDOCSIS 3.0 Cable Modem with Embedded Digital Voice Adapter. Includes: • USB 2.0 port • 240 VAC / 50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Australia • Ethernet cable • USB cable • CD-ROM containing user guides and USB driver ***Australia (Customer-specific configuration)***	4033407

Replacement Components

Table 5. Replacement Components

Description	Part Number
Power supply - Class 2 Linear Switching	
230 VAC/50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Europe	4015455
240 VAC/50-60 Hz, 15 VDC/1 A, wall-mount linear switching power supply, Australia	4020503
Power supply - Class 2 Switching Regulated	
100-240 VAC / 50-60 Hz, 15 VDC / 1.5 A Wall-mount switching power supply, UK	4034527
Data Cable	
Ethernet cable, 1.2 meters	740580
Ethernet cable, 2.0 meters	4018790
USB cable, 1.0 meter	740579
Telephone Cable	
TAE adapter	4025299
CD-ROM	
CD-ROM with user guides	4029648

Cisco Systems, Inc.
800 722-2009 or 678 277-1120
www.cisco.com

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