(Euro)-DOCSIS 3.0 Cable Modem Termination System C 2200 Product information







Applications:

- Full-DOCSIS 3.0 Features & 3.0 GOLD qualified
- Separate Downstream & Upstream Modules
- Integrated CMTS & Video QAM
- High Density & Cost Effectiveness
- Full Downstream & Upstream MAC Flexibility
- Best Multi-channel RF performance
- Extended Frequency Range

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- Full-DOCSIS 1.1 and 2.0 Compatible
- Rich Operational Features

Overview

Full Docsis 3.0

The C2200 Cable Modem Termination System is a new class of cable edge device that combines 3rd generation DOCSIS CMTS (the only Full-DOCSIS 3.0 certified CMTS on the market) and an MPEG Video Edge-QAM in a single compact 1RU platform. The broadband over cable market has experienced two generations of DOCSIS CMTS, this products are originally either first or second generation CMTS that can be characterized by fixed downstream to upstream ratio, instantaneous bandwidth per subscriber limited to a single RF channel, low downstream channel density per rack unit and high cost per unit bandwidth.

The first or second generation "Legacy" CMTS do not have any MPEG video processing capability and thus makes it necessary to implement two parallel platforms plus access networks for MPEG video and DOCSIS IP. With those limitations, the Legacy CMTS is not economically viable in the new market of high bandwidth applications such as B2B, Web2.0, IPTV or IP video delivery anymore.

As a third generation CMTS, the C2200 has several unique capabilities beyond DOCSIS 3.0 features:

Full flexibility

First, the C2200 supports complete separation of downstream channel capacity and upstream channel capacity in a single physical chassis and thus provides flexible downstream to upstream channel ratio. Cable operators can add downstream channels and upstream channels completely independently.

Business users may require more symmetric downstream to upstream traffic ratio. Residential broadband access has more asymmetric traffic patterns. For IPTV or video-over-IP applications, significantly more downstream traffic is required than the upstream traffic which is mostly for control plane applications.

Highest Density

The C2200 has significantly higher channel density than a second generation CMTS. The C2200 can support up to 48 downstream QAM channels in 1RU while second generation CMTS typically has 1 or 2 downstream channels in 1RU. The extremely high downstream channel density makes it economical to provide video-over-IP service today.

MPEG/DVB - support

The C2200 can support both DOCSIS and MPEG/DVB traffic in a single platform. This unique feature is very important for cable operators to manage their HFC spectral resources in a single platform. It also allows the spectral resources to be shared dynamically between MPEG video, DOCSIS business users and DOCSIS residential users. For example, more bandwidth can be allocated to DOCSIS business traffic during the day while more bandwidth can be allocated to MPEG/DVB video traffic at night to efficiently utilize the spectral resource.

Full DOCSIS 3.0 including Multicast- Support

The C2200 has the most extensive DOCSIS 3.0 features on the market today. It offers the highest channel bonding capability in both downstream and upstream on the market today. The revolutionary DOCSIS bandwidth capacity and cost per-bit of DOCSIS bandwidth of the C2200 provides an unprecedented opportunity for cable operators to costeffectively provision highbandwidth IP services such as IPTV in addition to traditional broadband access and VoIP services.

VOD / I-TV Support

The integrated MPEG video capacity of the C2200 provides cable operators the flexibility to offer MPEG or DVB-based broadcast digital cable TV, video-on-demand (VOD), and interactive services in the same platform. The flexibility, multi-functionality and economics of the platform eliminate the need to deploy multiple parallel systems for MPEG TV, IPTV bypass and DOCSIS broadband access.

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Modular and Flexible Architecture

The C2200 CMTS comes in a compact 1RU form factor. It is based on a modular architecture that gives cable operators the flexibility in tailoring their networks according to the requirements of their services.

The C2200 consists of a base system with built-in L2/L3 switch and 4 GbE (SFP) ports and four slots for DOCSIS interface modules (downstream modules or upstream modules). Any combination of downstream modules and upstream modules are supported by the platform. This enables flexible downstream to upstream channel ratio.

Integrated High Perfomance Up-Converter

The DOCSIS QAM Module (DQM) is a complete DOCSIS downstream unit that includes DOCSIS packet processing and QoS, DOCSIS downstream MAC, PHY, and RF upconversion. The DOCSIS Control and Upstream module (DCU) is a complete DOCSIS upstream unit that includes DOCSIS packet processing, DOCSIS upstream MAC and burst mode receivers. Each downstream QAM channel can be configured to support DOCSIS or MPEG/DVB-C. In the minimum configuration, C2200 can have one DQM downstream module and one DCU upstream module

Extensive DOCSIS 3.0 Features / Channel Bonding in Downstream AND Upstream up to 16 channels!

As a Full Certified DOCSIS 3.0 CMTS, the C2200 offers the highest channel bonding capability on the market today. In the downstream direction, up to 16 QAM channels can be bonded yielding up to 800Mbps of instantaneous bandwidth per subscriber (Annex A).

In the upstream direction, up to 16 channels can be bonded to yield 480Mbps instantaneous bandwidth (64QAM) depending on the Cable modem used. The C2200 also supports IPv6 for Cable modems and BPI+ / AES encryption.

High Performance DVB Video "EdgeQAM" included for free

The C2200 downstream channels can also function as a Full MPEG or DVB-C compliant MPEG video Edge-QAM for digital video applications such as broadcast digital cable TV, video-on-demand, interactive TV, and network DVR. The CMTS receives MPEG-2 over IP/Ethernet packets in multiple program transport streams (MPTS) or single program transport streams (SPTS) through its multiple Gigabit Ethernet ingress interfaces, it then demultiplexes MPTS and routes the native MPEG-2 packets to its egress QAM interfaces.

At the egress interfaces, the remultiplexing function generates multiple program transport streams (MPTS) for the designated cable channels. The C2200 performs PSI/SI table processing, PID filtering and substitution, and PCR de-jittering and supports both CBR traffic and VBR traffic for narrowcast applications and broadcast applications.

The C2200 is the only product that can make the most efficient use of the RF bandwidth and maintains video quality at the same time through concurrent use of tools such as statistical multiplexing of all MPEG video traffic and DOCSIS traffic, and dynamical scheduling of MPEG and IP traffic.

Rich Operational Features

The C2200 supports industry standard Command Line Interface (CLI) and SNMP for configuration and management.

A separate 100T- Mangement- Port is included at the Front. Standard Operational features such as show cable modem, show ARP, flap list, spectral management, CPU and memory resource reporting, user privilege management are available.

Extensive IP features such as DHCP Relay and option 82, multiple DHCP servers, proxy ARP, IP subnet bundling, IGMP snooping, IGMP v2 and v3, access control list (ACL) are also available in the current release. The C2200 is functioning as a Layer 3 routing device. Static routes and default route are supported, for route redundancy, multiple default routes can be configured.

All widely required features are already realized and deployed like Layer 2 bridging, VLAN, RIP, OSPF, or PIM-SM. Additional features have been and can be added easiliy via Software-Upgrade.

As there are so many different features please ask us if you have some specific demands.

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CMTS C 2200



Specifications

System	Management		Output step size	0.1 dB
12x2 Gbps switching capacity	RS232 Serial port (DB9)		Output stability	± 0.3 dB
MPEG switching from any port to any port	10/100BaseT management port		Return Loss	48 ~ 870 MHz, 14 dB
CLI and SNMP management	Command Line Interface (CLI)			870 ~ 1002 MHz, 10 db
Four DOCSIS interface slots per system	Telnet		Modulation Error Rate	43 dB (equalized)
1~3 Downstream modules per system	SNMPv1, v2, and v3		Wideband Noise	-73 dBc
1~3 Upstream modules per system	Standard DOCSIS and IETF MIBs		DOCSIS Control and Upstream (DCU)	
DOCSIS Features	IPDR		Number of ports	4 or 8
DOCSIS 3.0 downstream & upstream	Casa Systems Enterprise MIBs		Number of channels	4, 8, 16
channel bonding (up to 16 channels) both	Event logging through Syslog		Modulation	QPSK, 8, 16, 32 & 64 QAM
Firmware upgradeable to AES encryption	Electronic mail notification		Data rate per channel	0.32 – 30.72 Mbps
and IPv6 for CM	Resource usage reporting		Input frequency range	5 – 42 MHz (DOCSIS)
Complete DOCSIS 1.1 features	GbE Interfaces			5 – 65 MHz (EuroDOCSIS)
DOCSIS 2.0 A-TDMA	4-port copper or fiber SFP		Connector	F-type, 75 Ω
Load balancing	CWDM		Input range	-4 to 26 dBmV
Spectral Management	Full line-rate support		Mechanical	
IP Features	DOCSIS QAM Module (DQM)		Form Factor	1RU, rack mount
DHCP Relay and option 82	Number of ports	4	Dimension (HxWxD)	1.75 x 19 x 23.5 inch
Multiple DHCP servers	Number of channels	8 or 16 channels		44.4 x 482 x 597 mm
Proxy ARP	QAM modulation	Annex A, B or C	Weight (fully loaded)	30 lbs / 13.62 kg
IP subnet bundling	OAM constellations	64, 128, & 256 OAM	Front Panel	LED power, alarm, I/O status
Static IP routing	Data Rates (DOCSIS)	27 Mbps @ 64 QAM 38 Mbps @ 256 QAM	Environmental	
IGMP snooping, IGMP v2 and v3			Operating temperature	0° to 50° C
Multiple default routes	Data Rates (EuroDOCSIS)	36 Mbps @ 64 QAM 51 Mbps @ 256 QAM	Storage temperature	-40° to 70° C
Access Control List			Operating humidity	5% to 95%, non-condensing
MPEG Stream Processing	Connector	F-type, 75 Ω	Power supply AC	100 to 240 V
MPEG re-multiplexing	Frequency range (center)	48 to 999 MHz	(Option) DC	-40 to –60 V (redundant)
Unicast to multicast conversion	Frequency step size 5 kHz		Power consumption	< 400 W (nominal)
PAT and PMT extraction and regeneration	Channel width	6 to 8 MHz (tunable)	Regulatory Compliance	
PID filtering and remapping	Maximum output power	61 dBmV @ 1-ch/port 56 dBmV @ 2-ch/port 52 dBmV @ 4-ch/port	Safety:	UL/IEC/CSA 60950-1
PCR jitter removal and re-stamping	Per Channel		EMC:	FCC Part 15 Class A
SI table generation and insertion				and CISPR Class A
DVB Simulcrypt scrambling			Immunity:	EN61000-4
Session-based Encryption				

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