

# Hi-Density CMTS

**JH-CK6-3416B**
**DOCSIS3.0**

## Summary



JH-CK6-3416B is a 19 inches, 3U form factor Rack-mountable CMTS from D3-B families. It is designed for Headend access network, dedicated for indoor deployment. It contains 1 Controller board and up to 6 expansion slots for CMC boards. The CMC boards are responsible for handling the DOCSIS 3.0 protocol while the Controller is responsible for CMC management, data forwarding and routing. JH-CK6-3416B allows users to choose the number of CMC boards (Online Insertion and Removal) according to the number of clients. JH-CK6-3416B can provide bandwidth up to 4.8 Gigabit per second with DS (downstream), and 960 Megabit per second with US(upstream), which allows maximum of 3,000 users online simultaneously.

JH-CK6-3416B is a highly cost effective CMTS perfect for medium to large access network. With pay as you grow performance, JH-CK6-3416B allows you to increase the bandwidth capacity when needed. By offering dual redundant AC power supply and hot-plugging cooling fans, it minimizes the possible system outage duration.

## About D3-B Series

D3-B family is the upgrade version of D3 family, running DOCSIS 3.0 and C-DOCSIS protocol. The D3-B family includes the following forms of CMTS: compact rack-mountable type (1U), high-density type(3U) and D-node type(outdoor).

The benefits of D3-B family over D3 family are listed as follows:

- Upgrade from Dual core to Quad core processor for data forwarding;
- Upgrade from DDR2 to DDR3 RAM;
- Improved power management;
- Migrate to Linux operating system;

With these changes, the D3-B family provides faster forwarding capabilities and larger throughput for IP packet (especially smaller size packet or fragment packet are optimized).

All D3-B family products implement CMTS channel bonding technology, providing up to 16 QAM channels with total 1Gbps for DS (Down-Stream), and up to 4 QPSK/QAM channels with total 160 Mbps for US (Up-Stream). The DS can be easily configured to run as either data channel or IPQAM channel. It provides both electrical (RJ45) and optical (SFP, 1.25Gbps) connection for data forwarding. D3-B family also implements layer 3 routing function, QoS, DHCP/TFTP services, and DHCP relay. Users have 2 management methods, including CLI with Telnet and Web interface.

- Users can use CLI by login with Telnet (direct connection to the CMTS).
- Users can remote login to the CMTS embedded web interface through internet.

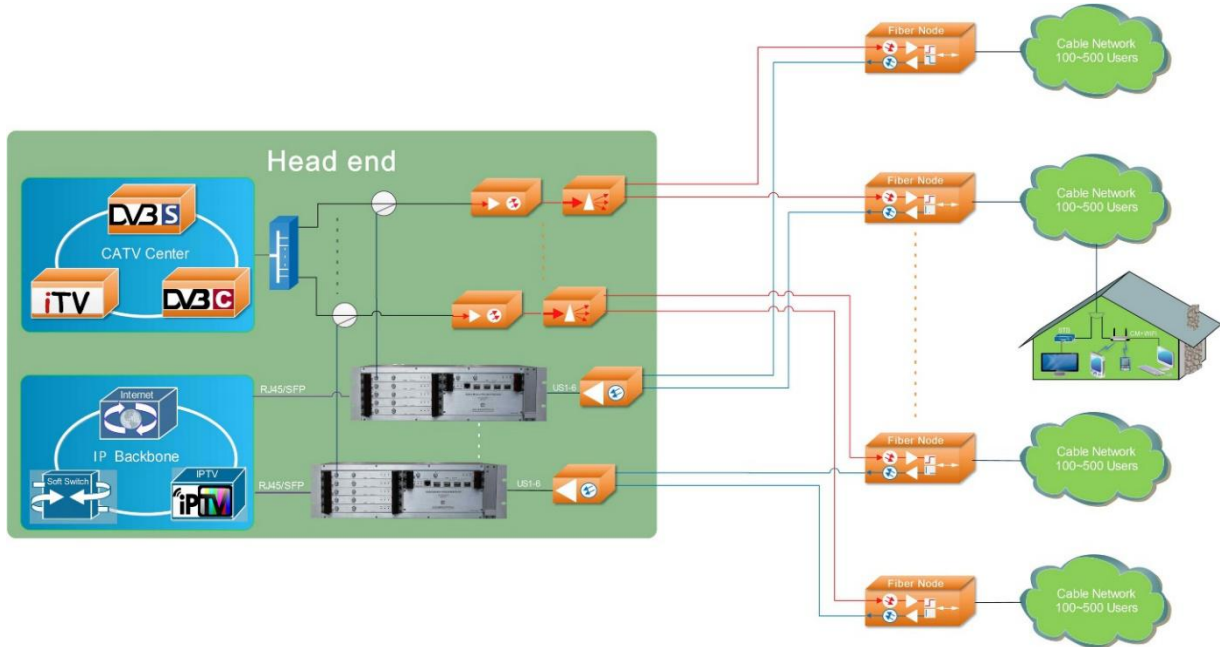
D3-B family is capable to run with DOCSIS 3.0/2.0 client cable modems, set-top boxes (built-in with modems) and eMTA.

## Feature

- Fully compactable with DOCSIS 3.0, C-DOCSIS, supports both EURO-DOCSIS and DOCSIS, works with DOCSIS cable modems
- Pay as you grow performance, easily expand your bandwidth
- For each CMC board, users are free to configure the 16 DS channels bonding together, with 64/256/1024 QAM, with maximum 1.0Gbps @ 1024 QAM
- For each CMC board, users are free to configure the 4 US channels bonding together, with QPSK/3~8 orders QAM, with maximum 160Mbps
- For each CMC board, it supports maximum 500 clients (Cable modem) online simultaneously
- Supports layer 3 routing, static route, policy route, VLAN, L2VPN, ACL
- Built-in DHCP/TFTP service, supports DHCP relay, CPE subnet arrangement. Support Option 82, Option 60
- Network interface has 4 x 1.25Gbps optical port (SFP), 1 RJ45 port
- Load balancing mechanic for both DS and US, based on the number of clients (static) or data flow (dynamic)
- Supports IPv6, multicast, remote-query, Flap (DOCSIS signal quality jitter diagnosis), etc
- Uses US and DS service flow classifier, QoS based on service flow ensures bandwidth and latency needs for various services
- Secures network transmit via BPI+, CM identification, anti-DOS attack, user isolation and IP source checking
- Supports US channel spectrum parameter analysis on web management.
- Two management methods, including CLI with Telnet and Web interface.
- CMC board Online Insertion and Removal, cooling fan hot-plugging and dual redundant AC power supply, making sure system running 7x24

## Application scenario

### Deployment in Headend



### Suggestions:

- Each optic will connect to only one CMC board, in order to implement downstream channel frequency reuse.
- For optical transmitter, we suggest using system with 1310nm, following 4~8 optical (fiber) nodes, then each node directly connects to the client with cables, without amplifier.
- To increase the clients for each CMC board, and considering not every clients may go online simultaneously, we suggest each CMC board handle 500~1000 physical connections.

## Specification

CMC Board								
		Down Stream		UP Stream				
		Euro-DOCSIS	DOCSIS	ATDMA/S-CDMA				
Modulation Mode		64/256/1024QAM*		8~256QAM/QPSK				
Frequency Range(MHz)		88~1002	88~1002	5~65				
Channel Bandwidth(MHz)		8	6	Channel Bandwidth(MHz)	6.4	3.2	1.6	
Bonding Channel Quantity		16		4				
Max. Total Data Rate (Mbps)		1000	858	160				
Single Channel Data Rate (Mbps)	64QAM	41.7	30.3	Single Channel Data Rate (Mbps)	256QAM	40.96	20.48	10.24
					128QAM	35.84	17.92	8.96
	256QAM	55.6	42.9		64QAM	30.72	15.36	7.68
					32QAM	25.60	12.80	6.40
	1024QAM*	69.5	53.6		16QAM	20.48	10.24	5.12
					8QAM	15.36	7.68	3.84
Single Channel Symbol Rate (Msyms)	64QAM	6.952	5.056941	Single Channel Symbol Rate (Msyms)		10.24	5.12	2.56
	256QAM	6.952	5.360537			5.12	2.56	1.28
	1024QAM*	6.952	5.360537					
Output Level (dBmV)		10~48 (1dB step)		Receive Level(dBmV)		-13~+23		
RF Interface		F type Socket (Imperial)		F type Socket (Imperial)				
Return Loss (dB)		> 12		> 14				
Output Impedance (Ω)		75		Input Imedance(Ω)		75		
Board Size				Connect Type		Gold Finger SGMII		
Controller Board								
WAN Uplink		1.25G SFP ×4		Max. Data Rate		4Gbps		
Console		RJ45		Quantity OF CMC		1~6		
Management Methods		CLI: after log in by telnet; NMS: based SNMP from third party; Embeded Web: by remote log in						
Supported Protocols		Euro-DOCSIS/DOCSIS3.0/2.0, CDOCSIS,TCP/IP , ARP , L2VPN , ICMP , ACL , VLAN, Multicast, DHCP-rely, SNMP, .....						
Board Size				Connect Type		Gold Finger SGMII		
Back Board								
Slot Quantity		7		Switching Capacity		6Gbps		
Connect Type		Gold Finger SGMII		Board Size				
Miscellaneous								
Input Votage		AC100~240V,50/60Hz		Consumed Power		< 200W		
Redundant Power Supply		1U, Output DC12V, Dual Power Supply , Hot-swappable		Power Supply Failure Warning		Sound Warning		
Cooling Way		Hot-plug 80mm Dual Fans		Working Environment		Temp: 0~40℃; Hum: <90%		
Net Weight		8.5 (Kg)		Dimension (W×H×D)		430×133×355 (mm)		

\*Requet CM support 1024QAM

## Order Information

Item	Model	Describe
Host	JH-CK6-3416B	Include: Chassis, Back Board, Controller Board, Dual Power Supply, Dual Fans, System Software
CMC Board	CMC-3416B	DS/US RF Port Each, Support 500 CMs on-line Simultaneously
1U Redundant Power Supply	LSAC360R3-12V	Input Voltage AC100~240V, 50/60Hz. Output DC12V, 360W. Hot-plug
Cooling Fans	JH-FS802-12	80mm, DC12V Dual Fans, Hot-plug
SFP Module	FTCS-Bxx12-20DL	FTCS-B1312-20L/FTCS-B1512-20L, Each one becomes a pair

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