

# CMTS Module

JH-M31032C

DOCSIS3.0



## About D3-C Series

The D3-C series are the third generation of Jinghong DOCSIS 3.0 CMTS platform. There are various product forms build for indoor, outdoor (D-node), mini front-end and modular type to meet various deployment scenarios.

Compared with its predecessor, the D3-C series are equipped with the latest MAC/PHY chips and an upgrade, more powerful Broadcom multi-core network processor. D3-C series have doubled the bandwidth with 3Mbps packet throughput, while maintaining all features from its predecessor. It can support 1000 CMs online simultaneously.

Bundled with 32 QAM channels for downstream (sharing one RF port), the data rate can reach up to 2Gbps. The downstream can be easily configured as data channels or IPQAM channels. It also supports multicast capabilities.

Bundled with 10 QPSK/QAM channels for upstream (sharing one RF port), the data rate can reach up to 400Mbps. It also provides the upstream spectrum analysis function.

D3-C can run in L3 or L2 mode. It has perfect QoS mechanism, built-in DHCP/TFTP/ToD servers, supports DHCP relay, and supports IPv6. It can be adapted to varieties of operation environment for different requirements.

There are three ways to manage the D3-C series: 1) Login through Telnet on the local machine with command line (CLI) for configuration management; 2) Embedded Web mode which can be remotely connected; 3) Network management software based on SNMP protocol which supports network management software from third parties.

D3-C series are compatible with DOCSIS 3.0/2.0 standard cable modems, as well as cable modem built-in the set-top box, eMTA and other terminal equipment.

## Summary

The JH-M31032C is a modular CMTS designed for manufacturers of HFC transmission equipment. It can be used to form products such as outdoor CMTS, D-node, and virtual front end device.

The module is combined with an optical receiver to upgrade the traditional fiber node equipment and achieve a revolutionary breakthrough in functionality. It becomes a full-service optical station that integrates CATV and IP data hybrid transmission, which can greatly increase the added value of the product.

It combines with an optical receiver/optical transmitter to form an outdoor virtual front-end device that can be deployed outdoors to save on the cost of renting a equipment room.

The JH-M31032C has a full CMTS function with a compact housing and the necessary interfaces. It is small in size and easy to install and fix.

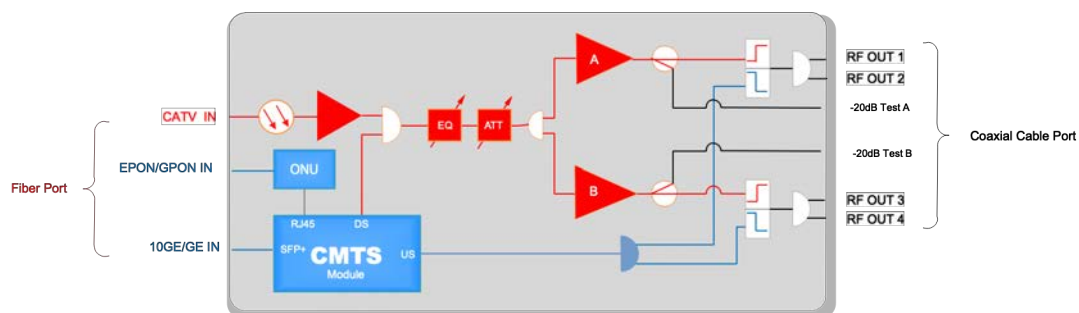
Jinghong offers whole solution for various tailor made requests from cooperative partners.

## Feature

- Compliant with DOCSIS3.0/Euro-DOCSIS3.0/C-DOCSIS standards.
- DS×32, it can be easily configured to 64/256/1024QAM modulation mode with a maximum data rate of 2Gbps@1024QAM.
- US×10, it can be easily configured to QPSK/3~8 order QAM modulation mode, with the maximum a data rate of 400Mbps@256QAM.
- The number of channel bundles can be easily changed to facilitate the operator's planning and utilization of frequency resources.
- Maximum 1000 CMs simultaneous online.
- Supports layer 3 routing, static route, policy route, VLAN, L2VPN, ACL etc.
- Built-in DHCP/TFTP/ToD server, supports for DHCP relay, and multiple subnet subnets under CPE. Option 82/60 is supported.
- Both US and DS channels can achieve load balancing based on CM quantity (static) or traffic (dynamic) to ensure effective utilization of bandwidth resources.
- Supports IPv6, multicast, remote-query, Flap (DOCSIS signal quality jitters diagnosis), etc.
- The US/DS service classifiers are used to implement the service flow-based QoS mechanism to ensure the bandwidth and delay requirements of various services.
- Security: BPI+, CM authentication, anti-DoS attack, user isolation, IP source address check, and more.
- Upstream channel spectrum analysis.
- Three ways to manage: CLI, embedded web, SNMP.
- Support remote management and update.

## Application

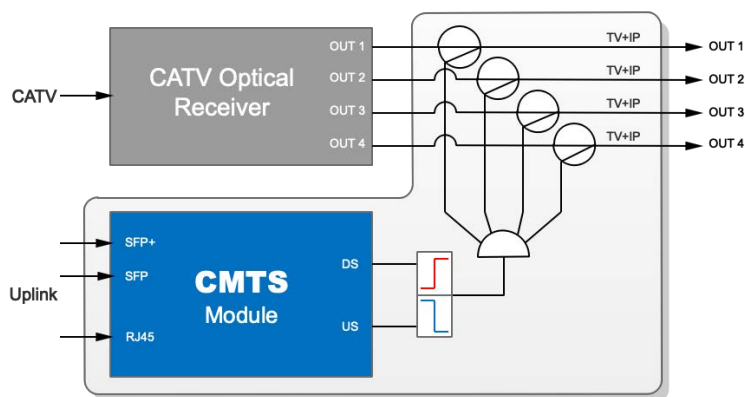
## To Form D-node (All in One)



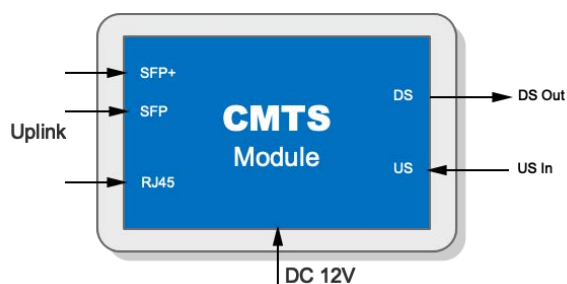
## To Form Virtual Headend



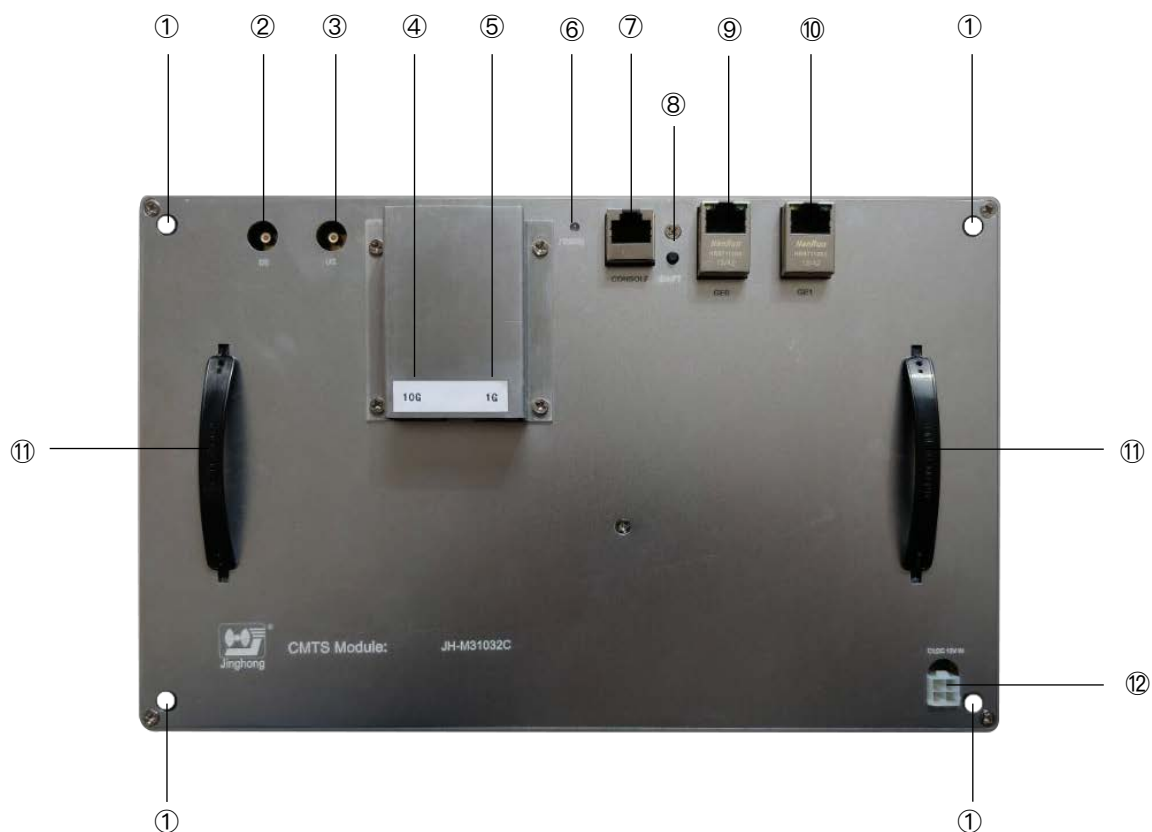
### To Form Outdoor CMTS ( 4 in / 4 out )



### To Form Outdoor CMTS ( DS/US Separate Output )



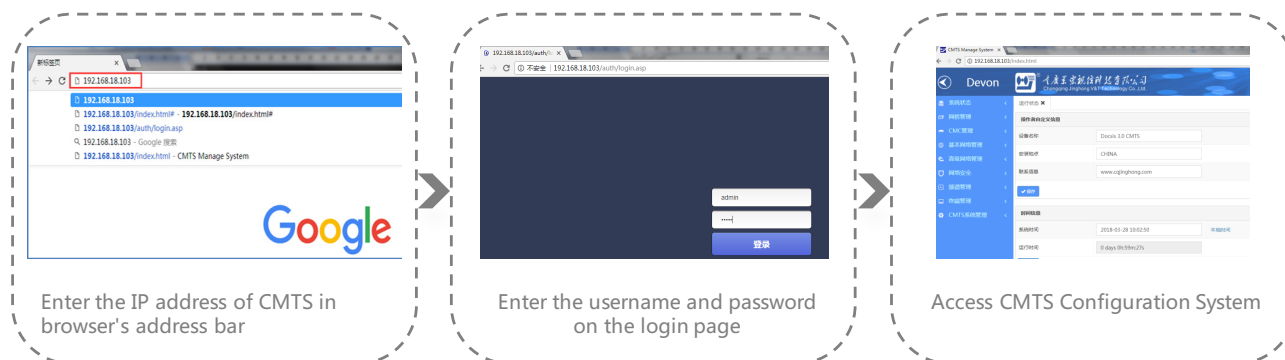
## Appearance



- |                           |   |
|---------------------------|---|
| ① Fixed hole              | ⑦ Console Port                              |
| ② DS Port                 | ⑧ Shift Button (Switching Series Interface) |
| ③ US Port                 | ⑨ GbE0                                      |
| ④ SFP+                    | ⑩ GbE1                                      |
| ⑤ SFP                     | ⑪ Handle                                    |
| ⑥ Alarm (Statues) Display | ⑫ DC 12V In                                 |

## Configuration & management

### Embedded Web



#### System Status

Run state  
Power  
Environment

#### Uplink Port Management

IP parameter  
Uplink port

#### CMC Management

CMC 1  
...  
CMC 20

#### Basic Network Management

Static route  
Built-in DHCP scope  
CPE Class set  
ARP list

#### Advance Network Management

IP-Bundle set  
VLAN set  
VLAN-Bundle set  
Multicast management



#### Security Management

Parameter set  
Fire wall  
ACL rules

#### Spectrum Management

Spectrum rules  
Frequency hopping Log

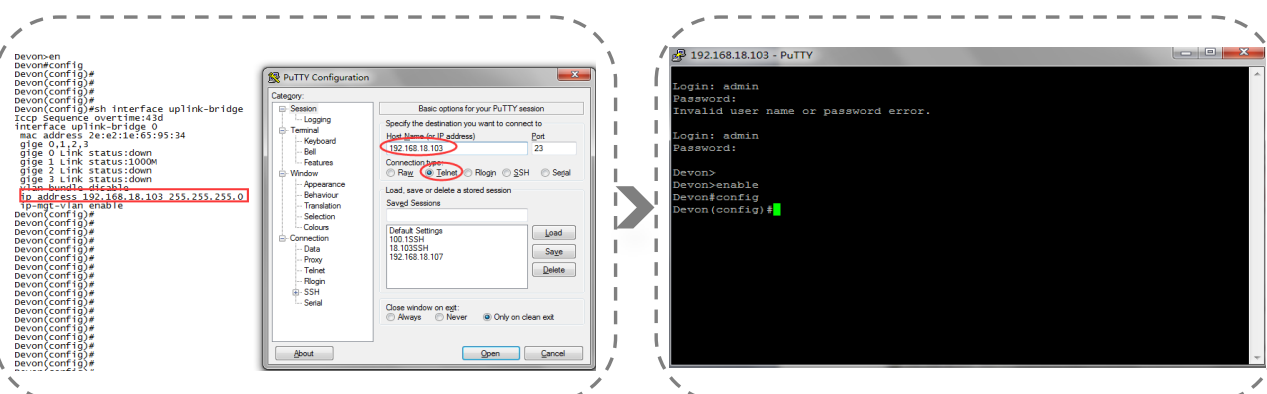
#### Terminal Management

CM list  
CPE list  
CM authority  
CM speed limit  
Cable Modem Flap

#### CMTS System Management

Remote Query  
Device management  
User management  
Key management  
Configuration management  
Update  
Log management

### Login via Telnet and manage with CLI



## Managed by SNMP network management software

172.16.0.1-DEVON-CMT - SNMP NMS

File View Window Help

CMTS View

All Area

172.16.0.1-DEVON-CMT

CM Manage

Get CM Status Get CM Verbose Total CM: 305 Online: 294 Update: Status(305) Verbose(0) 2018-06-11 15:14:07

CM Address	IP Address	Status	US	US RxFwr	US SNR	US TxPwr	US Flow	DS	DS RxFwr	DS SNR	DS FL...	CPE IP Address	Update Time
:24:D1:4C:F7:C0	172.16.1.99	Online	1	0.0	0.0			11				172.16.11.11	2018-06-11 15:10:07
:87:E2:BB:44:4A	172.16.1.216	Online	1	0.0	0.0			1				172.16.11.137	2018-06-11 15:10:06
:87:E2:BB:44:4E	172.16.1.211	Online	1	-0.2	0.0			1				172.16.11.154	2018-06-11 15:10:07
:87:E2:BB:44:52	172.16.1.236	Online	1	0.0	0.0			1				172.16.11.49	2018-06-11 15:10:08
:87:E2:BB:44:56	172.16.1.187	Online	1	0.0	0.0			1				172.16.11.204	2018-06-11 15:10:07
:87:E2:BB:44:5A	172.16.2.19	Online	1	0.0	0.0			1				172.16.11.37	2018-06-11 15:10:07
:87:E2:BB:44:5E	172.16.1.222	Online	1	0.2	0.0			5				172.16.11.68	2018-06-11 15:10:07
:87:E2:BB:44:66	172.16.1.215	Online	1	0.0	0.0			1				172.16.11.73	2018-06-11 15:10:06
:87:E2:BB:44:6A	172.16.1.224	Online	2	0.0	0.0			1				172.16.11.33,...	2018-06-11 15:10:07
:87:E2:BB:44:72	172.16.2.26	Online	1	0.0	0.0			1				172.16.11.17,...	2018-06-11 15:10:08
:87:E2:BB:44:76	172.16.2.43	Online	1	-0.2	0.0			1				172.16.11.138	2018-06-11 15:10:07
:87:E2:BB:44:7A	172.16.2.49	Online	1	0.0	0.0			1				172.16.11.191	2018-06-11 15:10:07
:87:E2:BB:44:82	172.16.2.42	Online	3	-0.3	0.0			1				172.16.11.52	2018-06-11 15:10:07
:87:E2:BB:44:86	172.16.2.23	Online	2	0.0	0.0			10				172.16.11.10,...	2018-06-11 15:10:07
:87:E2:BB:44:8A	172.16.1.185	Online	1	0.0	0.0			1				172.16.11.71,...	2018-06-11 15:10:08
:87:E2:BB:44:92	172.16.1.223	Online	4	0.0	0.0			1				172.16.11.166	2018-06-11 15:10:06
:87:E2:BB:44:9A	172.16.1.166	Online	1	0.0	0.0			14				172.16.11.36,...	2018-06-11 15:10:07
:87:E2:BB:44:A2	172.16.2.50	Online	1	0.0	0.0			1				172.16.11.70	2018-06-11 15:10:08
:87:E2:BB:44:A6	172.16.2.35	Online	2	0.2	0.0			1				172.16.11.188	2018-06-11 15:10:08
:87:E2:BB:44:AA	172.16.1.184	Online	1	-0.2	0.0			1				172.16.11.20,...	2018-06-11 15:10:07
:87:E2:BB:44:AE	172.16.1.231	Online	1	0.0	0.0			1				172.16.11.14,...	2018-06-11 15:10:08
:87:E2:BB:44:B2	172.16.1.210	Online	3	0.0	0.0			1				172.16.11.14	2018-06-11 15:10:07
:87:E2:BB:44:B6	172.16.1.182	Online	1	0.0	0.0			1				172.16.11.205	2018-06-11 15:10:07
:87:E2:BB:44:BA	172.16.2.28	Online	1	0.0	0.0			1				172.16.11.11,...	2018-06-11 15:10:08
:87:E2:BB:44:C2	172.16.1.217	Online	2	0.0	0.0			1				172.16.11.176	2018-06-11 15:10:07
:87:E2:BB:44:C6	172.16.2.14	Online	1	0.0	0.0			1				172.16.11.75	2018-06-11 15:10:07

Output

Priority	DateTime	Facility	Content
Warning	2018-06-11 15:11:13	172.16.0.1-DEVON-CMT	Manual get CM verbose failed, SNMP++: SNMP request timed out, -140
Notice	2018-06-11 15:13:18	172.16.0.1-DEVON-CMT	Modify user information CM(00:24:D1:4C:F7:C0) ( Lisa ( jiangbei ) ( 023-68697358 )
Notice	2018-06-11 15:13:56	172.16.0.1-DEVON-CMT	Modify user information CM(87:E2:BB:44:4A) ( zhangsan ( wulidian ) ( 028-3333222 ) ( 2018-06-11 ) ( 2018-06-30 )
Information	2018-06-11 15:14:08	172.16.0.1-DEVON-CMT	Get 305 CM status, 0 CM verbose, New add 0, Update 9, Save 0
Error	2018-06-11 15:14:08	172.16.0.1-DEVON-CMT	Pool CM verbose SNMP++: SNMP request timed out, -140, Pool timeout 240 seconds
Notice	2018-06-11 15:14:49	172.16.0.1-DEVON-CMT	Modify user information CM(87:E2:BB:44:4E) ( lisi ( chongqing ) ( 023-11011025 ) ( 2018-06-05 ) ( 2018-06-08 )
Notice	2018-06-11 15:14:49	172.16.0.1-DEVON-CMT	Change CM 87:E2:BB:44:4E forward status is "Forbid"

File View Window Help

MIS View

All Area

172.16.0.1-DEVON-CMT

CM Manage

Get CM Status Get CM Verbose Total CM: 305 Online: 294 Update: Status(305) Verbose(0) 2018-06-11 15:14:07

DS RxFwr	DS SNR	DS FL...	CPE IP Address	Update Time	Config ...	Model	User Name	Permit	Address	Telephone	Begin Date	Expire Date	Remark
5			172.16.11.11	2018-06-11 15:10:07			Lisa	Allow	jiangbei	023-68697...			
			172.16.11.137	2018-06-11 15:10:06			zhangsan	Allow	wulidian	028-33332...	2018-06-11	2018-06-30	
			172.16.11.154	2018-06-11 15:10:07			lisi	Forbid	chongqing	023-11011...	2018-06-05	2018-06-08	
			172.16.11.49	2018-06-11 15:10:08				Allow					
			172.16.11.37	2018-06-11				Allow					
			172.16.11.68	2018-06-11				Allow					
			172.16.11.73	2018-06-11				Allow					
			172.16.11.33,...	2018-06-11				Allow					
			172.16.11.17,...	2018-06-11				Allow					
			172.16.11.138	2018-06-11				Allow					
			172.16.11.191	2018-06-11				Allow					
			172.16.11.52	2018-06-11				Allow					
			172.16.11.10,...	2018-06-11				Allow					
			172.16.11.71,...	2018-06-11				Allow					
			172.16.11.166	2018-06-11 15:10:06				Allow					
			172.16.11.36,...	2018-06-11 15:10:07				Allow					
			172.16.11.70	2018-06-11 15:10:08				Allow					
			172.16.11.188	2018-06-11 15:10:08				Allow					
			172.16.11.20,...	2018-06-11 15:10:07				Allow					
			172.16.11.14,...	2018-06-11 15:10:08				Allow					
			172.16.11.14	2018-06-11 15:10:07				Allow					
			172.16.11.205	2018-06-11 15:10:07				Allow					
			172.16.11.11,...	2018-06-11 15:10:08				Allow					
			172.16.11.176	2018-06-11 15:10:07				Allow					
			172.16.11.75	2018-06-11 15:10:07				Allow					

## Specification

		Down Stream		Up Stream					
		Euro-DOCSIS3.0	DOCSIS3.0						
Modulation Mode		64QAM/256QAM/1024QAM		256QAM/128QAM//64QAM/32QAM/16QAM/8QAM/QPSK					
Frequency Range (MHz)		108~1002/1218		5~85/65					
Single Channel BW (MHz)		8	6	Single Channel BW (MHz)	6.4	3.2	1.6		
Number of Bounding Channels		32		10					
Maxim Total Data Rate (Mbps)		2000	1600	400					
Single Channel Data Rate (Mbps)	64QAM	41	27	Single Channel Data Rate (Mbps)	256QAM*	40.96	20.48	10.24	
	256QAM	55	38		128QAM*	35.84	17.92	8.96	
					64QAM	30.72	15.36	7.68	
					32QAM	25.60	12.80	6.40	
	1024QAM*	69	53		16QAM	20.48	10.24	5.12	
					8QAM	15.36	7.68	3.84	
					QPSK	10.24	5.12	2.56	
Output Level (dBmV)		20~45 Adjustable, 1dB Step		Receive Level (dBmV)		-13~+23			
Single Channel Symbol Rate (Msyms)	64QAM	6.952	5.056941	Single Channel Symbol Rate (Msyms)	5.12			2.56	1.28
	256QAM	6.952	5.360537						
	1024QAM*	6.952	5.360537						
Number of RF Port		1		1					
Reflection Loss (dB)		> 12		> 14					
Output Impedance (Ω)		75		Input Impedance (Ω)		75			
Management Method		1) Telnet Login, CLI Operate; 2) Network Management Software Based on SNMP; 3) Embedded Web, remote login							
Supported Protocols		Euro-DOCSIS/DOCSIS3.0/2.0, CDOCSIS, TCP/IP, ARP, L2VPN, ICMP, ACL, VLAN, Multicast, DHCP-rely, SNMP, etc.							
Physical Parameter									
WAN Port	Optical	1.25G SFP; 10G SFP+		Power Supply		DC 12V			
	Electronic	1000M Base-T ×2		Consume Power		< 43W			
RF Port		SMB socket ×2		Net Weight		1.5Kg			
Console Port		RJ45 socket ×1		Working Environment		Temp.-25~55℃; HUM<90%			
Status Display		LED		Size (L×W×H) (mm)		286×180×26			

\* CM is also needed to synchronize support  
Jinghong reserves the final explanations rights