

## EOC All-In-One



### Product Overview

The C-Data All-In-One product is designed to provide Internet Service to subscriber's home through the existing coaxial access network. With EPON/GPON, EOC and HFC technology, the All-In-One product meets the CATV broadcasting, VOD and Internet Service requirement of cable operators for FTTB/FTTC. It build with EPON/GPON ONU, EOC master and Optical Receiver module in one housing.

The Optical Receiver module received the optical signal from the Optical Transmitter of HFC network, and the signal processed by the PD, Amplifier, EQ and AGC to a stable RF output. The output level will be up to 108dBuV( 4\*RF output) or 112dBuV (2\*RF output). Ethernet data is delivered to ONU through the EPON or GPON network form the OLT.

The EOC Master module meets Home-plug AC standards, is designed based on Qualcomm AR7410 chip-set with high anti-jamming capability OFDM technology. It will modulate the Ethernet data into EOC RF signal in the 7.5-65MHz .The EOC signal and CATV signal (87~860MHz) can run on one coaxial cable without interference. The EOC Master can provide high speed data service at 600Mbps PHY Layer speed, the MAC Layer throughput is up to 320Mbps.

## **Function Features**

### **Standards**

- Complies with EPON or GPON standards
- Complies with HomePlug AV international standards and IEEE 1901 Standard

### **Product Configuration**

- Configurations available with 1 EPON or GPON ONU module
- Configurations available with 2 or 4 HomePlug AV EOC Master modules
- Configurations available with 1 HFC Optical Receiver
- Configuration available with WDM inside or not
- RF output configurations with 2 or 4 outputs
- Mains Power (from 90 to 264 VAC) or Line Power (40-90VAC) optional
- 35/47, 42/54, 65/87 type High/Low Filter optional to meet your network

### **CATV RF Features**

- Supports higher RF output: 112dBuV@2\*RF output, 108dBuV@4\*RF output
- AGC (from -6 to 0dBm) function for stable RF output

### **Data Transportation in Coaxial Cable**

- Supports data throughput of greater than 300 Mbps per EOC Master module
- Supports Max . link loss greater than 85 dB (40Mbps throughput in lab)
- Recommend 40~50dB link loss for about 300 throughput

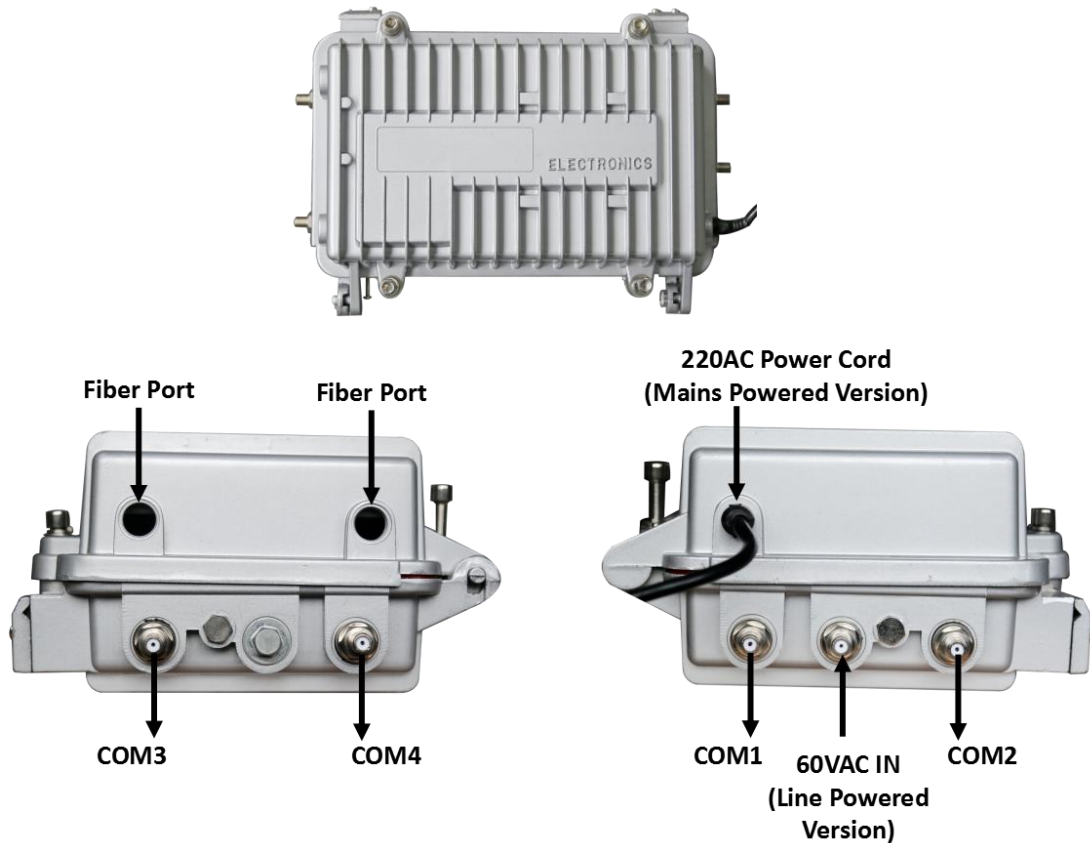
### **Network Management**

- CLI, SNMP management for ONU module
- WEB, SNMP management for EOC module
- Optical Receiver status monitor and control by PON system

### **Other Features**

- IP67 Housing, aluminum alloy die casting shaping
- Line Power 60AC feed in and out

**Product Pictures and Ports Overview**



**Specification**

Item	Parameters	Specification
<b>Main Functional Module Configuration</b>	ONU	1 x GPON or 1* EPON ONU
	EOC Master	2*EOC Master or 4*EOC Master
	CATV	1 x CATV Optical Receiver with WDM or not
<b>External Interface</b>	Fiber Port	5/8" type, 2 port, for Fiber Optic Pigtail input
	COM Port	F-Type female, 4 output port for mixed EOC and CATV signal
	Power Input Port	F-Type female, line power(40-90VAC) input version Power cord with China plug, Mains Powered (90-264VAC) version
<b>Uplink</b>	Broadcast CATV (optional with WDM or not)	With WDM version, 1*CATV/PON optical input, SC/APC, 1*PON output, SC/PC, connected with ONU input
		Without WDM Version, 1*CATV optical, SC/APC

		Ethernet Data (EPON or GPON optional)	1*EPON PX20+, SC/PC (EPON Version) 1*GPON Class B+, SC/PC (GPON Version)
<b>Specification of ONU Parts</b>			
<b>EPON</b>	Standard compliance	IEEE 802.3ah	
	Optical Interface	1 x EPON PX20+, SC/PC	
	Transmission Rate	Upstream: 1.25Gbps, Downstream: 1.25Gbps	
	Transmission Distance	20Km@1:32	
	Optical Fiber Type	9/125um, Single Mode, Single Fiber	
	Wavelength	Upstream 1310nm, Downstream 1490nm	
	Optical Power Tx	0dBm to 4dBm (PX20+)	
	Receiving Sensitivity	-27 dBm	
<b>GPON</b>	Standard compliance	ITU-T G.984.X	
	Optical Interface	1 x GPON CLASS B+, SC/PC	
	Transmission Rate	Upstream: 1.244Gbps, Downstream: 2.488Gbps	
	Transmission Distance	20Km@1:64	
	Optical Fiber Type	9/125um, Single Mode, Single Fiber	
	Wavelength	Upstream 1310nm, Downstream 1490nm	
	Optical Power Tx	+0.5dBm to +5dBm(Class B+), +0.5dBm to +5dBm(Class C+)	
	Receiving Sensitivity	-27 dBm(Class B+), -30 dBm(Class C+)	
<b>Indicator</b>	Indicator Description	PWR: Power up or down PON: ONU registered LOS: Optical Link Status ETH: Link Status of ONU Ethernet port to EOC master	
<b>Network Management</b>	Management Mode	Support IEEE802.3 QAM (EPON) Support ITU-T G.984.X OMCI (GPON) Support Remote management through SNMP Support Remote Management via Telnet	
	Function	Status monitor, Configuration management, Alarm management, Log management	
<b>Specification of OR</b>			
<b>Optical Specifications</b>	Wavelength	Without WDM version: 1100~1600 nm With WDM version: 1540~1560nm (CATV), 1260-1500nm(PON)	
	Optical Power Input Range	-8 ~ +2 dBm	
	Recommend optical Power Input Range	-6 ~ 0dBm	

	Optical Input Return Loss	≥45 dB
<b>RF Specifications</b>	Bandwidth	45~860 MHz
	Flatness	≤±1.5 dB
	Nominal RF Output Level	108 dBuV (4*RF Output )
	Impedance	75 Ohm
	Return Loss	≥14 dB
	CNR	≥51 dB
	CSO	≥60 dBc
	CTB	≥60 dBc
	<i>Note: CNR, CSO, CTB parameter testing environment is in 1550nm directly modulation transmitter, optical input -1dBm, OMI=3.2%, 59CH PAL-D signal load.</i>	
<b>Optical and temperature AGC</b>	Stability of RF Level under optical AGC	≤±1 dB
	AGC Scope	-6 ~ 0dBm
<b>LED Indicator</b>	<b>Indicator Description</b>	OPT-L: Optical power is lower OPT-M: Optical power is nominal RF1: Status of Output 1 of optical receiver module RF2: Status of Output 2 of optical receiver module

### Specification of EOC Master

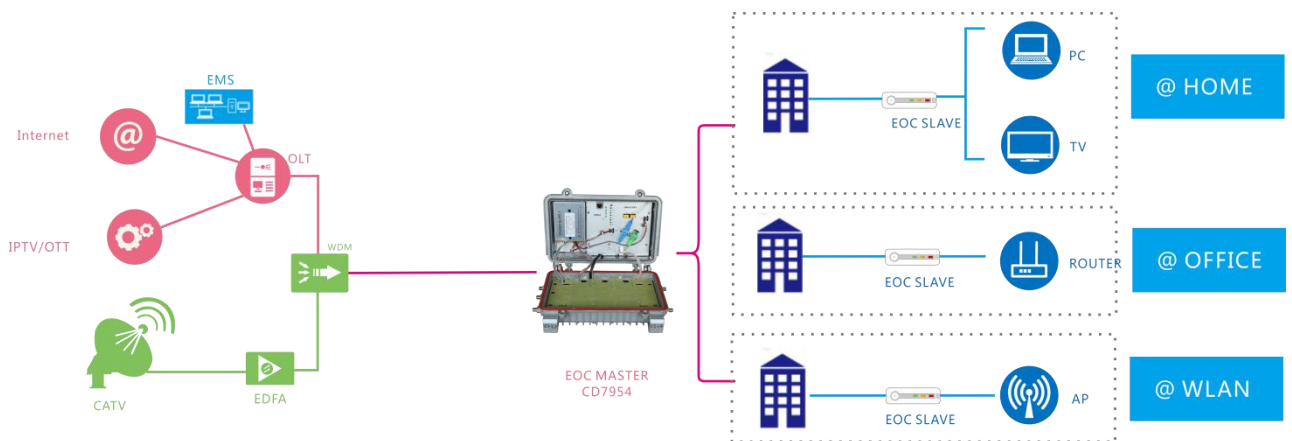
<b>Interface</b>	Management Port	1 * 10/100/1000M auto-negotiation, RJ45
<b>LED Indicator</b>	LED Indicator	PWR: Power Supply Status LINK: CABLE Link Status indicator ETH1: Ethernet Ports Status connected as uplink ETH2: Ethernet Ports Status connected as downlink
<b>Performance Parameters</b>	RF Parameters	Frequency Band :7.5-65MHz RF Output Level: 110±5dBuV @4 RF output port (4 EOC master version) 105±5dBuV @4 RF output port (2 EOC master version) Receive sensitivity: 45dBuV
	Transmission	PHY Layer: 600Mbps Throughput on MAC Layer: 320Mbps
	Modulation Mode	OFDM2690 carriers, 4096/1024/256/64/16/8 QAM, QPSK, BPSK, ROBO
	Working Mode	TDMA/CSMA
	Encryption Mode	AES-128
<b>Standard</b>	EOC Standard	IEEE P1901(Draft) , HomePlug AV
	Ethernet Standard	IEEE 802.3, IEEE 802.3x, IEEE 802.3u IEEE802.1P, IEEE802.1Q
<b>Software</b>	Network Management	WEB, CLI, SNMP
	Software Features	VLAN, QOS, Bandwidth Control, Broadcast storm limitation

Physical Features		
Physical Features	Power supply	Mains Power(90-264VAC) line power(40-90VAC) optional
	Power Consumption	Consumption: <45 W (4 EOC master Version) Consumption: <36 W (2 EOC master Version)
	Size	Dimension: 290×220×120mm
	Net weight	4.2kg (4 EOC master Version) 3.7kg (2 EOC master Version)
	Environment Attribute	Working Temperature: -20 ~ 65℃ Storage Temperature: -40 ~ 85℃ Working humidity: 10% ~ 90%non-condensing Storage humidity: 10% ~ 90% non-condensing

### Typical Application

- CATV
- Internet Access
- VOD
- IPTV
- Camera monitor system

### Application Illustration



**CD7954 Application Illustration**


**Order Information**

Product	Item	Description
EOC All-In-One (ONU+OR+4*EOC)	CD7954-R1-220VAC	Built-in one EPON ONU Module, one OR module and four 74 series chipset EOC Modules; One EPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 90-264VAC power supply. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
EOC All-In-One (ONU+OR+4*EOC)	CD7954-R1-60VAC	Built-in one EPON ONU Module, one OR module and four 74 series chipset EOC Modules; One EPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 40-90VAC line power supply feed in and out. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
EOC All-In-One (ONU+OR+4*EOC)	CD7954-R1-G-220VAC	Built-in one EPON ONU Module, one OR module and four 74 series chipset EOC Modules; One GPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 90-264VAC power supply. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
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EOC All-In-One (ONU+OR+4*EOC)	CD7954-R1-WDM-220VAC	Built-in one EPON ONU Module, one OR module with WDM and four 74 series chipset EOC Modules; One EPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 90-264VAC power supply. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
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EOC All-In-One (ONU+OR+4*EOC)	CD7954-R1-WDM-G-220V AC	Built-in one EPON ONU Module, one OR module with WDM and four 74 series chipset EOC Modules ; One GPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 90-264VAC power supply. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
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EOC All-In-One (ONU+OR+2*EOC)	CD7934-R1-220VAC	Built-in one EPON ONU Module, one OR module and two 74 series chipset EOC Modules ; One EPON uplink port, one CATV optical input, four TV+data mixed output port, CATV RF output 108dBuv@each port. Outdoor waterproof designed. 90-264VAC power supply. 65/87 H/L filter is default, 35/47, 43/52 H/L filter is optional.
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