

SPECIFICATIONS

CBM-803A module

Version 1.0

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Shenzhen Digital Video Technology Co.,LTD.

1. Introduction

CBM-803A is IEEE P1901 compliant, high speed, low power communication module.

First fully IEEE P1901 compliant (wavelet MAC/PHY) communication module, backward compatible with 1st, 2nd HD-PLC system

High-speed OFDM modem with up to 432 carriers within 2-28MHz band. Maximum PHY rate is 240Mbps

Very low power consumption, ~1.5W under full speed operation

Advanced LDPC-C error correction

Ensuring the security and easy connection by data encryption using AES-128

Dynamic adjustment of modulation for each sub-carrier based on communication channel characteristics

Optional mask of sub-carriers, only technology can meet EU, Japan and China EMI/EMC regulation

Small footprint, 25*65 mm with minimum pin out

Very easy to use, 'direct connection style' communication module. No need to change any software

Support co-existence with ITU-T G.hn

2. Features

Great Features for Enhancing Home Entertainment, PLC IP security ,Coax IP security, UTP

Ethernet extender

- **Excellent Utility:** Can be used anywhere that has a power line, coax ,phone line.
 - The HD-PLC Ethernet Adaptor turns every power outlet in the house into an Internet access point. Just like plugging an electric cord into the outlet, you insert the HD-PLC Ethernet Adaptor plug and you are ready to log on to the Internet. It's a super-easy home network, no need for complicated cables.
- **Easy Set-up --- No PC Required:** setting are easy for anybody to make.
 - There's no tricky installation or complicated settings. Just take one HD-PLC Ethernet Adaptor and set it as the master unit, set the other as a terminal unit.
- **High-Speed Communication:** Fast, comfortable communication of high-volume data.
 - Fast, comfortable communication of high-volume data. At a theoretical maximum transmission speed of 190Mbps, the system is faster than a wireless LAN system, even when comparing actual system speeds.
- **Economy - No Wiring Needed:** No need to drill holes in the wall or use unsightly cables.
 - No need to drill holes in the wall or use unsightly cables. Because you can use your existing electrical wiring and power outlets, you save the expense of wiring.

You also don't need to extend any cable modem or router cables to your PC, so there is no need to drill holes or run cables along the floor or wall. In addition to being economical, this preserves the room's appearance.

- **High Reliability:** Superb security features without complicated settings.
 - The HD-PLC Ethernet Adaptor comes standard with AES* 128-bit encryption, and the security settings are made automatically without any need for a PC. This easy set-up ensures a high level of safety and no setting mistakes. Also, because it uses household power outlets, data communication is not blocked by obstacles like walls as it is with wireless LAN systems, so you enjoy smooth and easy network communication.

3. Specifications

Descriptions:

◆ HD-PLC is packed into a small-sized module that enables high-speed communication using power lines, Coax, Phone line.

◆ HD-PLC System is a Wavelet OFDM based technology which efficiently uses frequencies and minimizes circuitry size.

Besides, this system not only enables high-speed communication but also saves the space and reduces power consumption (down to 1.6W or so).

This system also adapts a deep notch filter to avoid interference on any unused frequency range.

Advantages:

- ◆ HD-PLC Technology is adapted, enabling space-saving and power-saving(down to 1.6W or so).
- ◆ Easy mounting of this system by integrated AFE, Ethernet, PHY, and other components.
- ◆ High-Speed communication(up to 210Mbps at max.)
- ◆ More stable communication by accurately following any changes on the transmission path.
- ◆ Various customization is possible through open and external API.
- ◆ Reliable security is ensured by AES 128bit encryption.
- ◆ Easy installation and easy start-up just by power-on.
- ◆ Easy connectivity setup without Personal Computer.
- ◆ Flexible Notch function is available. Easy to adjust to your desired frequency.
- ◆ Enough communication distance(200m) is secured even on household power lines.
- ◆ High-Quality transmission of voices, other data is possible by use of Priority Control Function(*1).
- ◆ Adaptable for IPTV(IP Multicast Delivery Service)

(*1)For details of Priority Control function, please contact us.

Application:

- ◆ Bridge between Ethernet/USB and HD-PLC
- ◆ Mutual Bridge between Ethernet/Wi-Fi and HD-PLC

- ◆ Easy integration of this system into electric home appliances.
- ◆ Triple Play(IPTV,IP camera, IP Phone and Data)Communication Systems
- ◆ Communication Systems for Internet/Network Games
- ◆ Help the networking of electric home appliances if this system is integrated into them.
- ◆ EoC (Ethernet over Coax) Adaptor
- ◆ IP Transmission System by using of existing power lines, coax, phone line

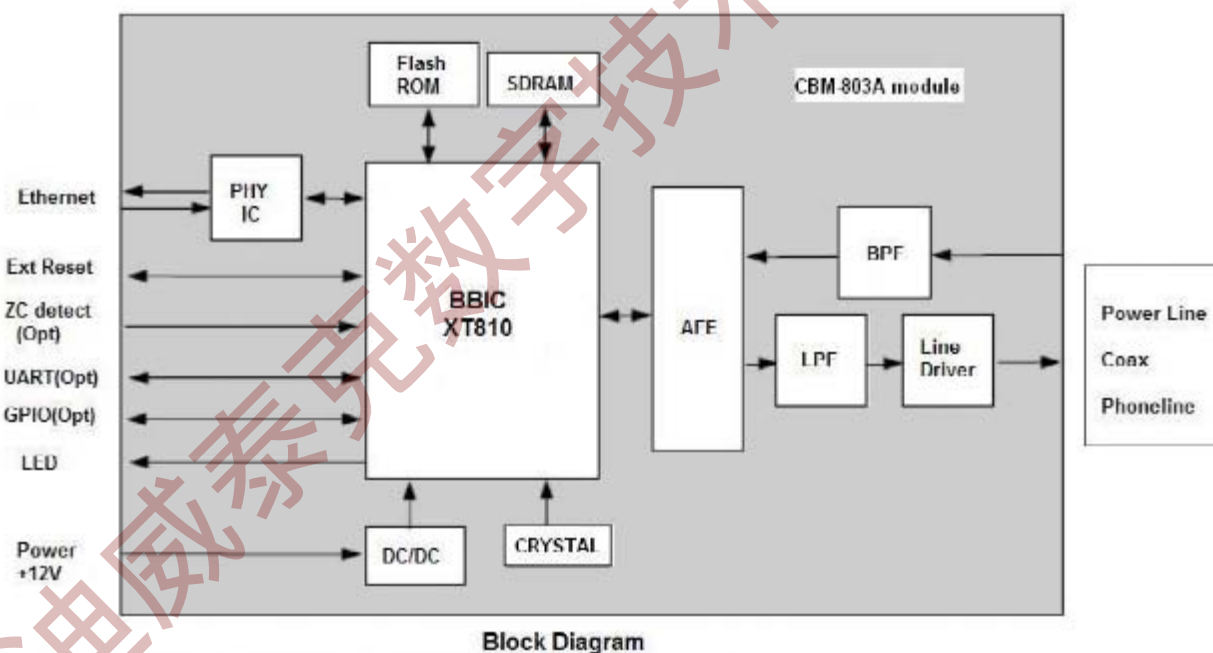
Specifications of CBM-803A		
PLC Interface	Applicable Frequency Band	2MHz - 28MHz
	Modulation	Wavelet-OFDM Method
	Transmission(Physical)Speed	Up to 210 Mbps at max.
	Error Correction	Convolution Code and Reed-Solomon Code
	Actual Transmission Speed	UDP: 91Mbps at max using coax
		TCP: 91Mbps at max using coax
	Security	AES 128-bit encryption
	Nos. of Modules which can be connected with the Network	Up to 16 modules (Recommended No.)
		Including 1 Master Unit and 15 Terminal units.
LAN Interface	Physical Standard	Compliant with IEEE 802.3 / IEEE 802.3u
	Communication Mode	Compliant with IEEE 802.3 (10Base-T, 100Base-TX).
		As for Duplex Mode, automatic recognition by Auto-Negotiation
	Nos. of Networking Systems which can be connected with the network.	Up to 8 systems
	Applicable Frames	Compliant with Ethernet II (DIX)
		Compliant with IEEE802.3
		Compliant with IEEE802.1Q
		Compliant with PPPoE(RFC2516)
		Frame of 64-1522 bytes(including FCS)
	Compliant with IPTV	High-Speed Transfer Function by IGMPv2(RFC2236)-Snooping
		High-Speed Transfer Function by MLDv2(RFC3810)-Snooping
Operation	Temperature	0 degree C - 70 degree C

	Humidity	20% - 85% (No Dews)
Dimensions / Power Consumption	Dimensions	25mm X 65mm
	Weight	10g
	Voltage	DC 12V
	Power Consumption	About 1.6W
Outer Interface	I/F Connector (30pin:PHY, GPIO 4pin: PLC)	TD+/-,RD+/-,GPIO, UART
		PLC SIGNAL +/-,AC ZERO CROSS

4. Ordering Information

Model	Description
CBM-803A-C	HD-PLC module (Commercial)
CBM-803A-I	HD-PLC module (Industrial)

5. Module Block Diagram



6. Electrical Specifications



Operation Specification			
PARAMETER	Minimum	Typical	Maximum
3.3V Power Supply	3.0V	3.3V	3.6V
1.2V Power Supply	1.08V	1.2V	1.32V
12V Power Supply	9V	11V	12V



Performance	
Plc mode	
Null-modem	84Mbps *
Through 120m wire	63Mbps *
Through one pair of air breakers	46Mbps *
Coax mode **	
Null-modem	91Mbps
2 Nodes,1000M	82Mbps
8 Nodes,1000M	50Mbps
UTP mode ***	
Null-modem	91Mbps
2 Nodes,1000M	65Mbps
2 Nodes 1500M	41Mbps
2 Nodes,2000M	25Mbps

*** The throughput of TCP traffic. The maximum PHY range of HD-PLC module is 240Mbps**

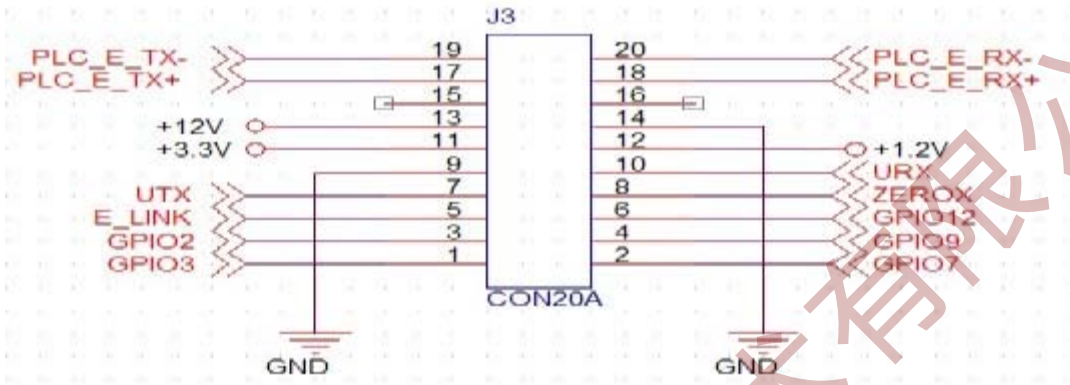
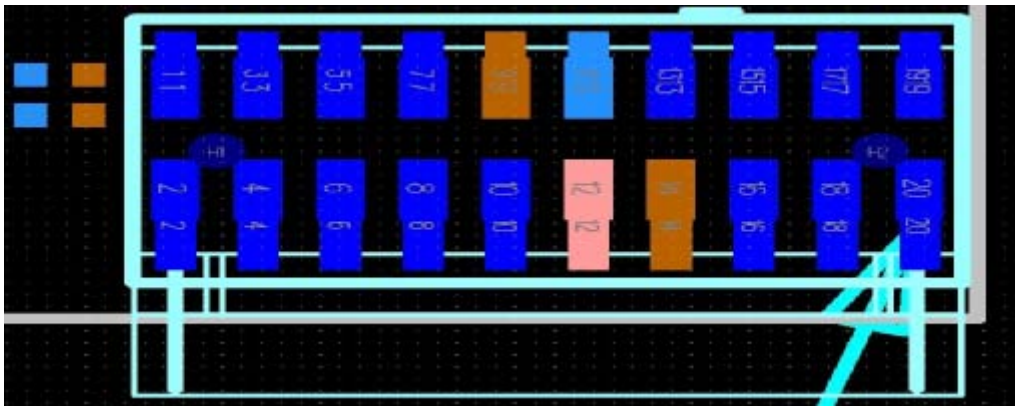
**** In Power Line Communication (PLC) mode, the performance depends seriously on working environment, including noise from home appliance/power line length and so on. The results below are from real environment in China. For more information about the test environment, please contact local sales**

***** In COAX mode, the performance is rather stable. It also depends on the COAX used and termination method. SVY75-5-96 is used for the results below. 75ohm terminators are added at the two ends of the cable**

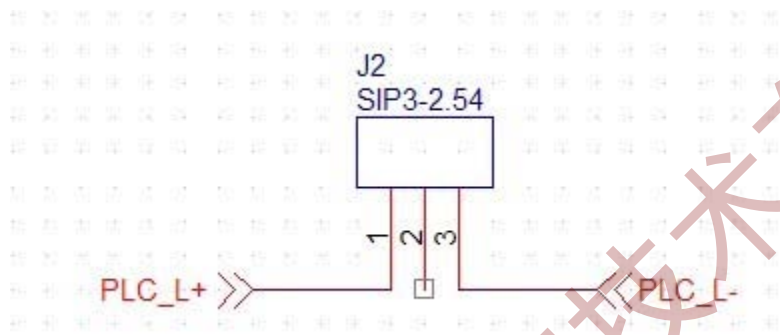
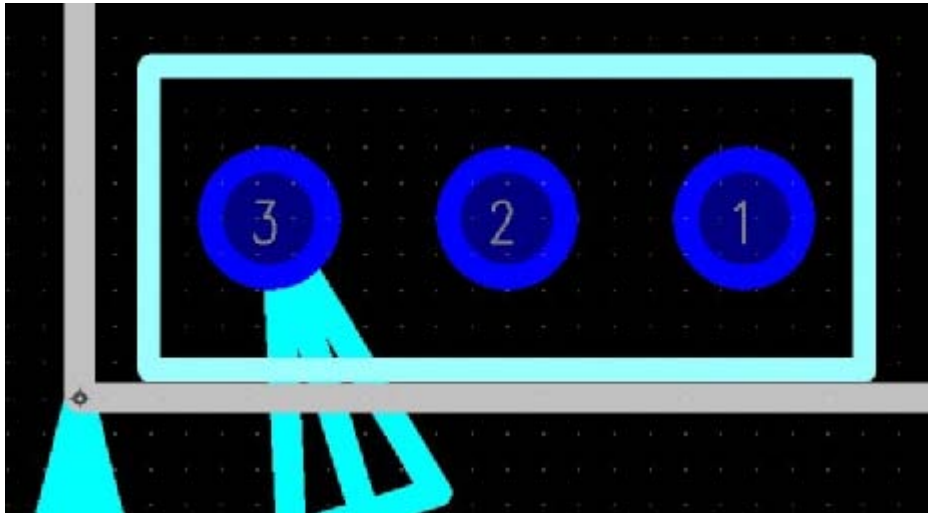
****** 8 nodes are attached on one 1000-meter cable. The length of the cable between the two nodes under test is 1 meter**

******* 8 nodes are attached on one 1000-meter cable. The length of the cable between the two nodes under test is 1000 meter**

迪威泰克数字技术有限公司



5. E_LINK: 以太网工作指示灯, 低有效---接 LED 负极
- 9, 14 两个脚接地 17, 18, 19, 20, 四脚为以太网信号线 15, 16 为空脚. 未启用
1. GPIO3 配对键, 对地生效. (软件实现了自动配对, 此脚可不用)
2. GPIO7 为 COAX 连接指示灯. 高有效, 接 LED 正极. 连接成功时亮, 不成功时不亮
- 3, GPIO2 主机从机选择口. 上拉到 3.3V 时为主机, 悬空或接地时为从机. 注: 上电前设置才有效. 上电后设置无效
- 4, GPIO9 MASTER(主机)指示灯, 高有效, 接指示灯正极. 主机亮从机不亮
6. GPIO12 系统复位键. 对地 2 秒生效
- 7, 10 为串口, 调试用. 做板时可以不用
- 13, 12V 输入, $\pm 0.5V$ 纹波在 50mV 以内, 电流 200mA 以上
- 8, 过零信号检测, 未启用
- 11, 3.3V 输出, 接到底板供 LED 和网络变压器用。



- 1, 3 脚为信号传输脚, (输入和输出)
2 脚为空脚

定位孔及连接器坐标标识图 (顶视底面图)

