LX200V30 500M Broadband Power Line Communication Module Datasheet V1.1

Catalogue

I. Introduction....3
II. Characteristics....3
III. Application Fields....4
IV. Picture of LX200V30 Module....4
V. Definition of LX200V30 Module Pin and Size of PCB LAYOUT....5
VI. Pin function Descriptions....6
VII. Installation Methods....8
VIII. Electrical Descriptions....8
IX. Picture of WisPLC PRO of LX200V30 baseplate....8
X. Schematic of WisPLC PRO of LX200V30 Baseplate....9
XI. Size of PCB LAYOUT of LX200V30 baseplate....11
XII. Matters Needing Attention during PCB Cabling....12

I. Introduction

LX200V30 is a new type of data transmission product based on OFDM (Orthogonal Frequency Division Multiplexing). The maximum transmission rate of power lines can reach 500Mbps, and standard Ethernet ports, as well as the two interfaces of twisted pair and coaxial cable are provided. Support 128-bit AES encryption, communicate via frequency band of 2-68MHz, and the existing CATV signal or wired broadcasting is not affected. It can be put into work after the wiring is completed without any user configuration. This will advance the product's time-to-market and increase the flexibility of product functionality.

II. Characteristics

1) Media (multiple transmission media are supported)

- Power line: Complete the last 300 meters of IP access.
- Twisted pair: Complete the last 600 meters of IP access.
- Coaxial cable: Complete the last 2,000 meters of IP access.

2) Speed

- Transmission rate can reach up to 500Mbps;
- Smooth transmission of IPTV, HDTV and other audio and video signal.

3) Reliable

- 128 bit AES encryption is supported to protect network communication security.
- Communicate via frequency band of 2-68MHz, and the existing CATV signal or wired broadcasting is not affected.
- Follow the IEEE 1901 and HomePlug AV standard, and a maximum of 7 modules can be carried.

4) Simple

- It can be used after the completion of cable-connecting without user configuration.
- There is special management configuration software, making it easy for network division and networking.
- Modular design makes it easy to integrate into customer products

and accelerates the cycle of market launch.

III. Application Fields

LX200V30 can be widely used in the industry and smart home systems, and is a good complement to Ethernet and WIFI, so as to achieve the purpose of hybrid networking and seamless networking. At present, it plays a great role in smart home, monitoring, medical equipment networking and other scenarios.

✓ Smart instrument ✓ Energy management system ✓ Automobile electronics - charging pile	✓ Smart home ✓ Medical system ✓ Industry

Table 1: Application areas of LX200V30 module

IV. Picture of LX200V30 Module

As shown in Figure 1, LX200V30 module is small in size which is 40x30mm. It can be used with WISPLC PRO backplane to transmit at a physical layer rate of up to 500Mbps. It is easy to connect with a product in design through the network cable, which will speed up the time-to-market and the flexibility of product functionality.

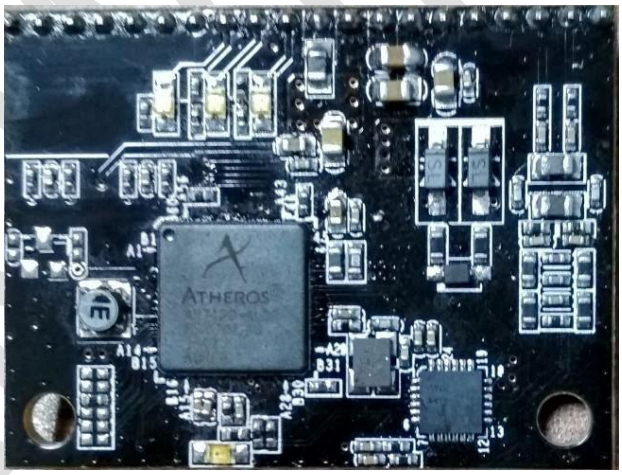

Figure 1: Front view of LX200V30 module

V. Definition of LX200V30 Module Pin and Size of PCB LAYOUT

The definition of pin is as shown in Figure 3. LX200V30 module schematic.

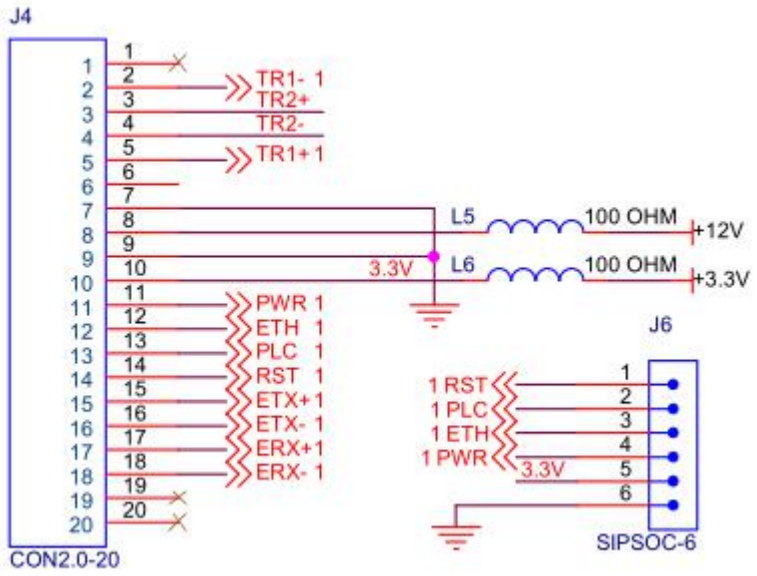

Figure 2: The definition of pin is shown in LX200V30 module schematic

In the PCB LAYOUT of LX200V30 module, From top view, the leftmost is Pin “1” and the rightmost is Pin “20”, as shown in Figure 3:

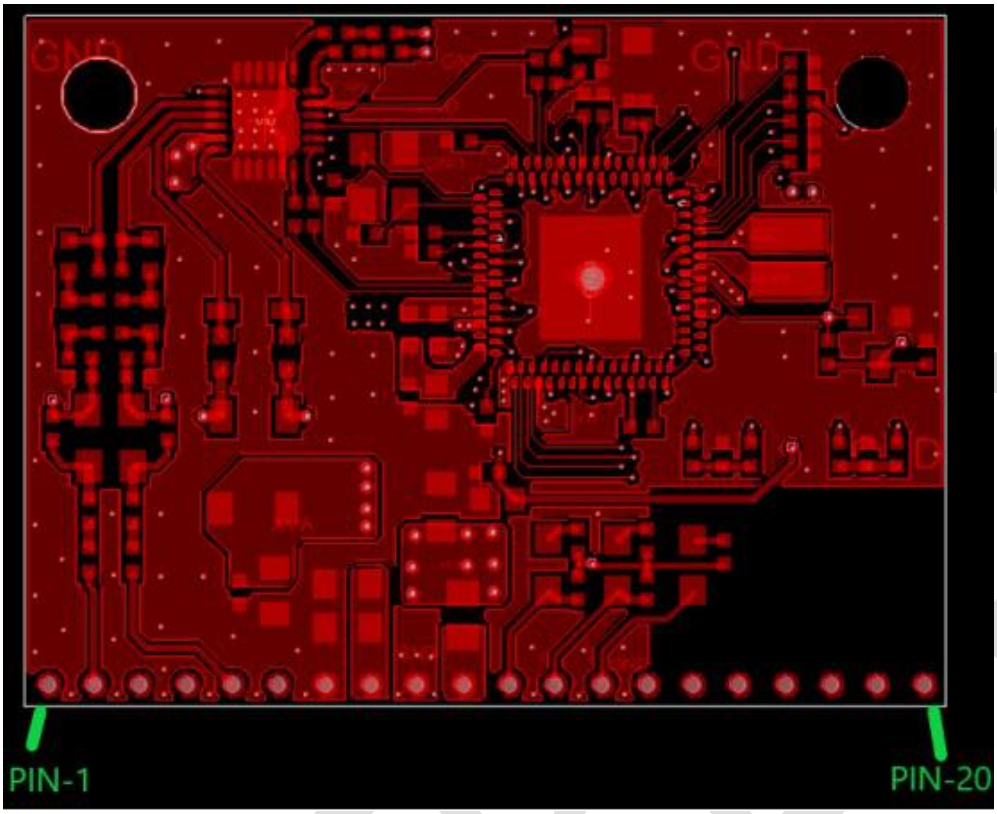

Figure 3: Size of PCB LAYOUT of LX200V30 Module

VI.Pin function Descriptions

Pin No.	Pin Definition	Pin function Descriptions
1	NC1	NC
2	TR1-	Coupling signal sending Negative
3	NC2	NC
4	NC3	NC
5	TR1+	Coupling signal receiving Positive
6	NC4	NC
7	GND	Ground
8	IN 12V	12V input operating voltage
9	GND	Ground
10	IN 3.3V	3.3V input operating voltage

11	PWR	Power indicator
12	ETH	Net-port ACT light: flashing when there is data flow
13	PLC	Signal transmission indicator light
14	RST	Reset
15	ETX+	Network sending signal +
16	ETX-	Network sending signal -
17	ERX+	Network receiving signal +
18	ERX-	Network receiving signal -
19	NC5	NC
20	NC6	NC

Table 2: Descriptions on pin functions of LX200V30 module

VII. Installation Methods

LX200V30 is led out by 20 pin headers which are ordinary ones with 2.0mm of pin spacing. From top View, the leftmost is Pin “1” and the rightmost is Pin “20”, and it is connected with the baseplate by means of pinning.

VIII. Electrical Descriptions

	Minimum value	Typical value	Maximum value	Unit
12V operating voltage	11.15	12	12.85	V
3.3V operating voltage	3.15	3.3	3.45	V
Operating current	125	130	145	mA

Table 3: Electrical descriptions for LX200V30 module

IX. Picture of WisPLC PRO of LX200V30 baseplate

The external interface circuits required by LX200V30 backplane WisPLC PRO when connecting the module include +7V~+28V, 3.3V BUCK, DC power connector, Ethernet RJ45, PLC coupling transmission transformer and other coupling parts and their interfaces. This section is mainly the interface. The structure of each product is different. The auxiliary interface test board is designed to be convenient for testing. When customers design products, changes will be made according to different structure of products.

The picture of baseplate WisPLC PRO and the interface description are shown in Figure 4:

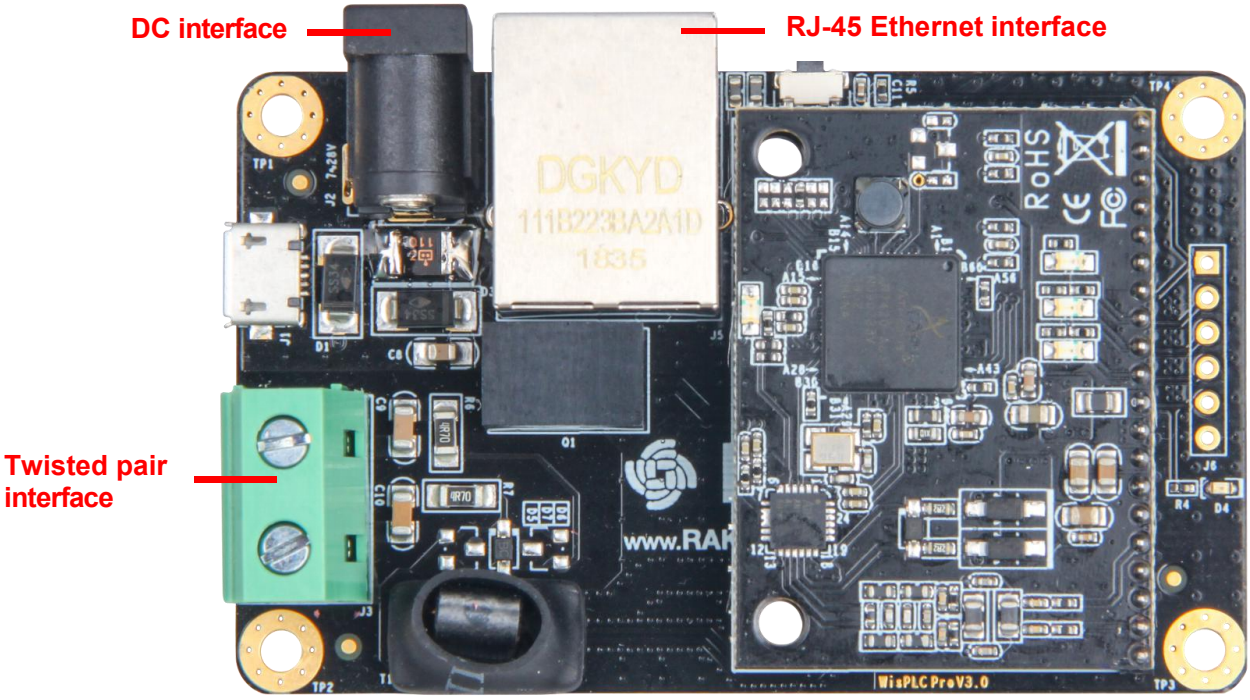

Figure 4: Picture of WisPLC PRO of LX200V30 baseplate

X. Schematic of WisPLC PRO of LX200V30 Baseplate

The schematic of WisPLC PRO of LX200V30 baseplate mainly covers the following circuits:

1) LX200V30 backplane WisPLC PRO interface circuit, i.e., interface circuit connecting with the LX200V30 module interface, as shown in Figure 5:

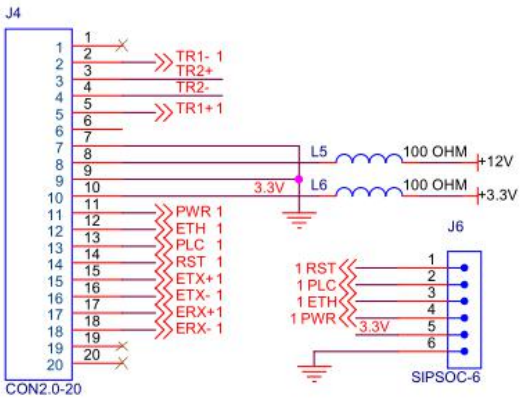

Figure 5: LX200V30 backplane LX-PB interface diagram

2) The Ethernet interface circuit is shown in Figure 6:

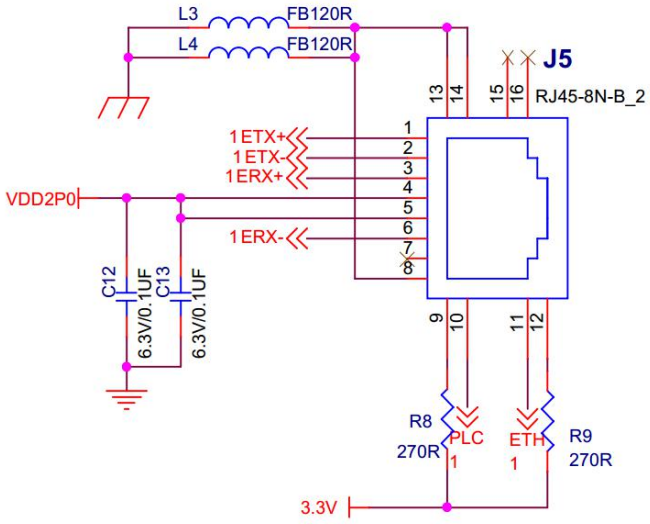

Figure 6: Ethernet interface circuit

3) The signal receiving circuit is shown in Figure 7:

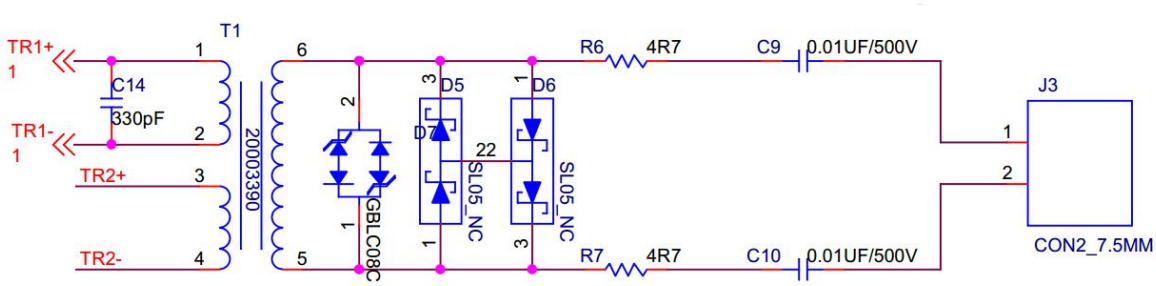

Figure 7: Signal receiving circuit diagram

4) The circuit diagram shown in Figure 8 includes signal indicator circuit, factory parameter restoring circuit and various filtering circuits.

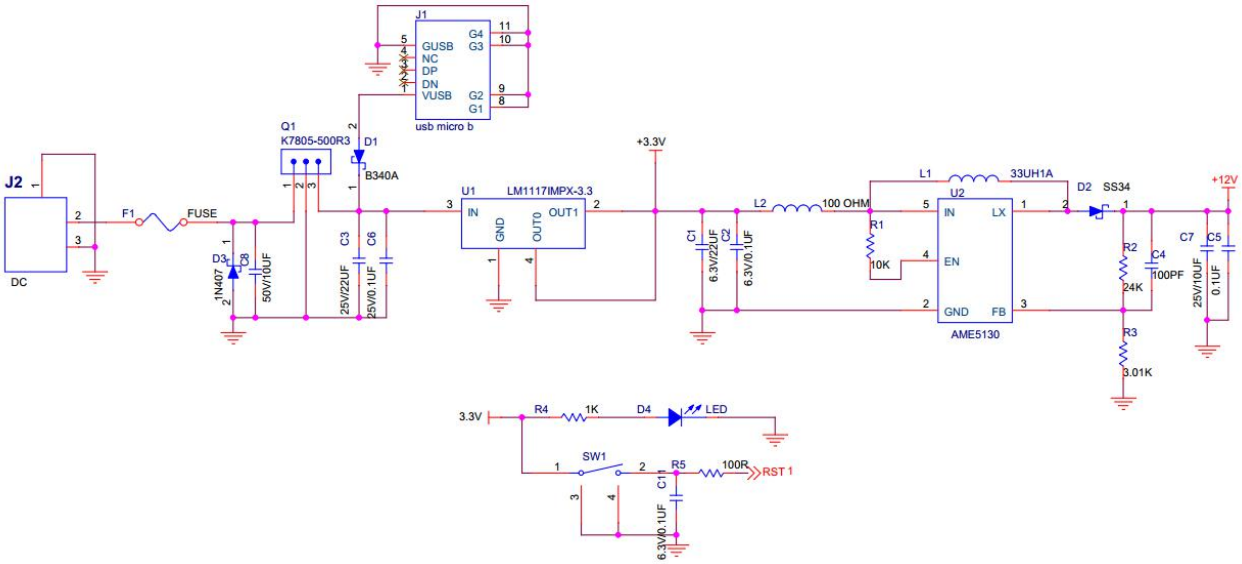

Figure 8: Signal indicators, factory parameter restoring circuit and all kinds of filter circuits

XI. Size of PCB LAYOUT of LX200V30 baseplate

There are three main interfaces on LX200V30 baseplate WisPLC PRO: RJ-45 Ethernet interface, +7V~+28V DCDC interface and twisted pair interface. The baseplate size is 100mm x 58mm, as shown in Figure 9:

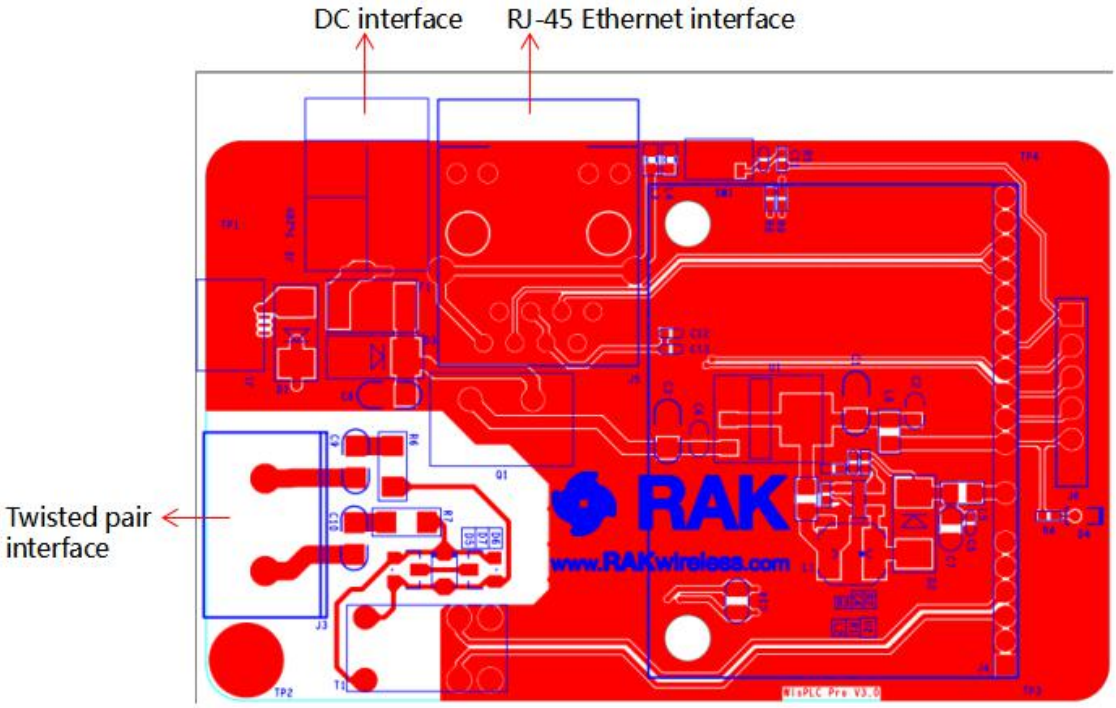

Figure 9: Diagram of LX200V30 baseplate WisPLC PRO

XII. Matters Needing Attention during PCB Cabling

The signals RX+ and RX-, TX+ and TX-, PERX_P and PERX_N, PETX_P and PETX_N all use differential signal lines and the cabling should follow the rules for differential signal.

1) The width of RX+ and RX-, TX+ and TX- lines is not less than 20mil, and the total line length shall not exceed 15cm.