PTS-DR200L Clock Server Hardware Installation Manual

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KYLAND

Disclaimer: Kyland Technology (Yichang) Co., Ltd. strives to make the information in this manual as accurate and up-to-date as possible. However, we cannot guarantee that this manual is completely free of any technical or clerical errors and reserve the right to modify it without notifying the user.

Instructions for safe use

This product has good and reliable performance within the designed range of use, but it is necessary to avoid man-made damage or destruction to the device. Please read the manual carefully before using the device to ensure the safety of users and device. Please keep this manual properly after reading it for future reference. Our company does not assume any responsibility for personal injury or device damage caused by violation of safety instructions.

- Do not place or install the device near the water source or in a wet place, and keep the relative humidity around the device in the range of 5% ~ 95% without condensation.
- Do not place or install the device in places with high magnetism, strong earthquake or high temperature, and keep the working and storage temperature of the device within the specified range.
- Keep the device safely placed to prevent falling; Keep the device installed tightly to prevent slippage.
- Keep the device and surrounding environment clean, and wipe it with dry soft cotton cloth if necessary.
- Please do not place sundries on the device or cables, and keep the heat dissipation of the device smooth and the cables smooth without knots.
- Wear anti-static gloves or take other safety precautions when operating device.
- Avoid bare metal wires when wiring, and prevent metal wires from oxidizing or connecting at high temperature.
- Device shall be installed in accordance with national and local electrical regulations.
- Before power-on, it is necessary to confirm the power supply specifications supported by the device to prevent the device from being damaged by excessive voltage.
- Keep the power plug and other device connectors firmly connected to prevent adverse contact effects on use.
- Do not plug and unplug the power supply with wet hands, and do not touch the device and its supporting parts with wet hands before power failure.
- Before operating live device, please remove jewelry (rings, bracelets, watches, necklaces, etc.)

or other metal objects to prevent electric shock or scalding.

- Do not operate device or connect or disconnect cables in lightning weather.
- Please use connectors and cables approved by our marketing personnel or technical support personnel to avoid affecting module functions due to non-compliance of connectors and cables.
- Please do not disassemble the device by yourself. If the device fails or is suspected to fail, please consult our marketing personnel or technical support personnel.
- When device parts are lost, please purchase replacement parts under the guidance of our marketing personnel or technical support personnel, and it is strictly forbidden to select them without permission.
- It is necessary to scrap device in accordance with relevant national regulations to reduce environmental pollution.

Under the following circumstances, please disconnect the power supply immediately and get in touch with our company.

- Device is flooded.
- The device is broken or the casing is broken.
- Abnormal operation or performance change of device.
- The device produces peculiar smell, smoke or abnormal noise.

Directory

1 Product Overview

PTS-DR200L card rail clock server product is a set of clocks and switching functions in one device.

The board supports guideway/wall-mounted installation, and supports at most 2 100-megabit SFP+ 2 10/100 Base-T (X) ports +1 10/100/1000Base-T (X), 1 BNC interface, 1 optical signal input port FI and 2 serial interfaces. The specific configuration is shown in the following figure;

Table1 PTS-DR200L Configuration Table

Product model	**PTS-DR200L-1111-HV**	**PTS-DR200L-1111-L2**
Code definition	Code selection	Code selection
Port	Two 100-megabit SFP, two 10/100 Base-T (X) ports, one 10/100/1000Base-T (X) port, one BNC interface, two serial interfaces and one optical signal input port FI	Two 100-megabit SFP, two 10/100 Base-T (X) ports, one 10/100/1000Base-T (X) port, one BNC interface, two serial interfaces and one optical signal input port FI
Power input	220VAC(85-264VAC/77-300VDC), single input	24VDC (18 ~ 72V), single input

Description:

For the product information in the above table, our company has the right to make changes without informing the user. For the latest information, please consult our marketing staff or technical support staff.

2 Structure and Interface

- **Device port figure**

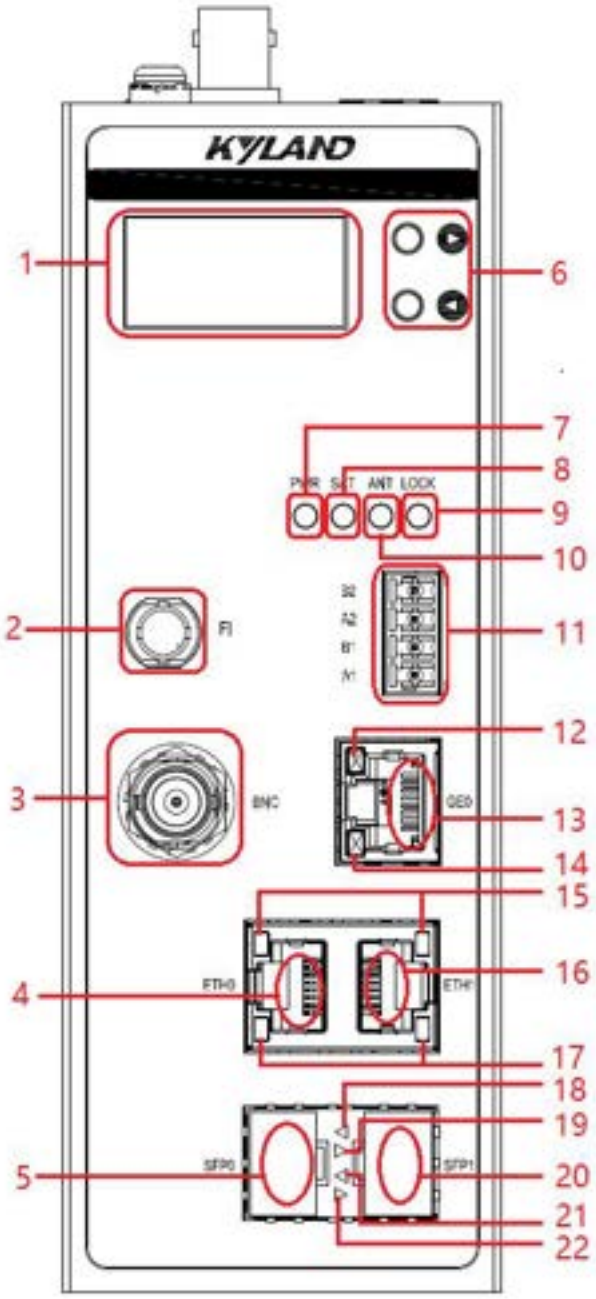


Figure1 Device Front Port Label Figure

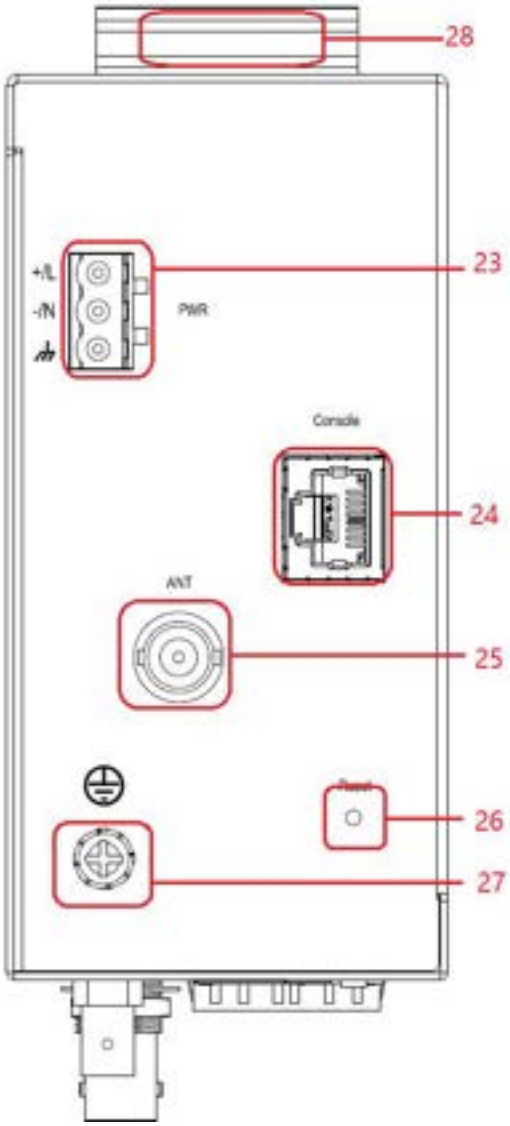


Figure2 Label Figure of Side Port of Device

Table2 Device port Label Description

Serial number	**Describe**
(1)	Display screen
(2)	Device optical signal input port FI
(3)	BNC port of device output signal
(4)	100-megabit electrical ports ETH0
(5)	100-megabit optical ports SFP0
(6)	Query button
(7)	Power indicator lamp

(8)	Star search indicator light
(9)	Satellite lock indicator
(10)	External antenna indicator
(11)	Two-way RS485
(12)	Interface gigabit port connection status indicator (green)
(13)	Gigabit port
(14)	Gigabit port rate indicator (yellow)
(15)	100-megabit electrical port connection status indicator (green)
(16)	100-megabit electrical port ETH1
(17)	100-megabit electrical port rate indicator (yellow)
(18)	100-megabit SFP1 interface rate indicator (yellow)
(19)	100-megabit SFP1 interface connection status indicator (green)
(20)	100-megabit optical port SFP1
(21)	100-megabit SFP0 interface rate indicator (yellow)
(22)	100-megabit SFP0 interface connection status indicator (green)
(23)	Power interface
(24)	Console port
(25)	External antenna BNC interface
(26)	Reset button
(27)	Grounding screw
(28)	Clip rail seat

- **Device description Figure**

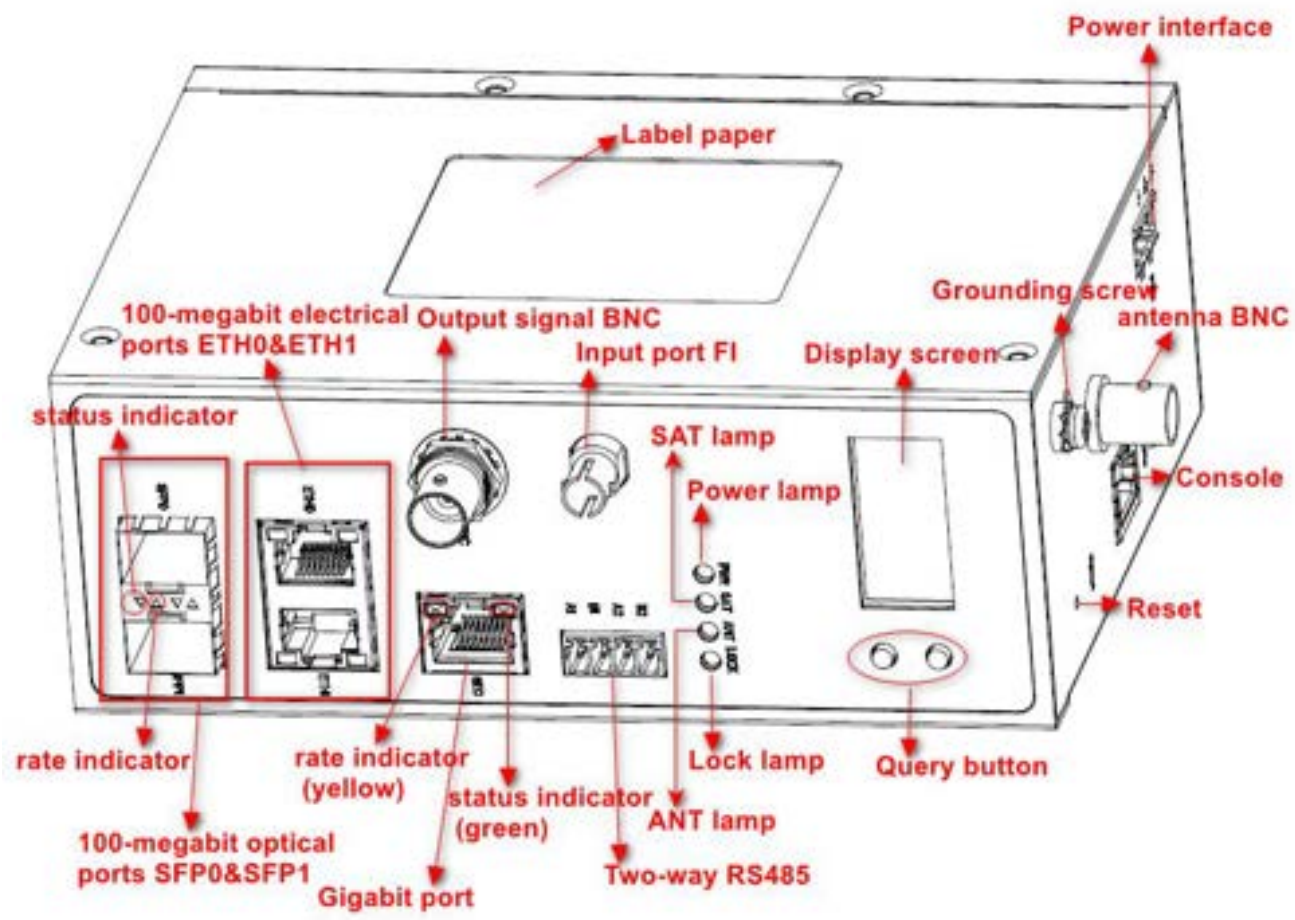


Figure3 Device Annotation Figure

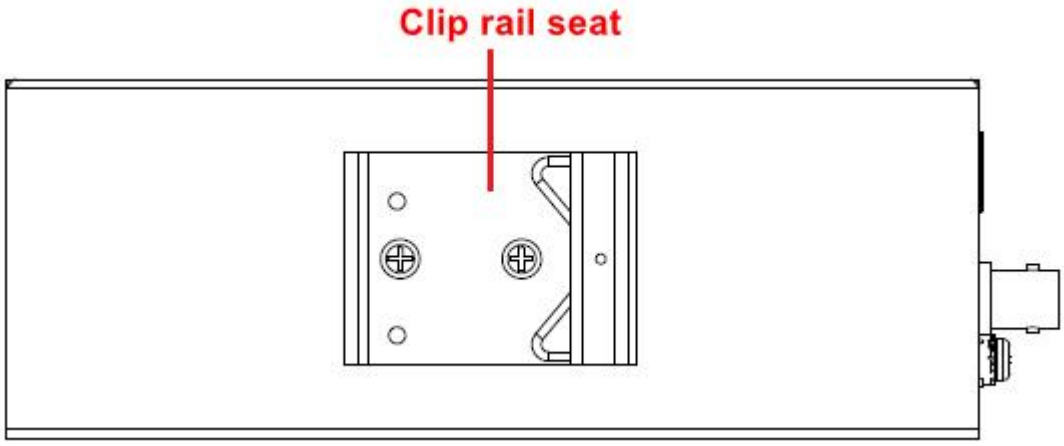


Figure4 Supplement Of Device Annotation Figure

3 Dimension Figure

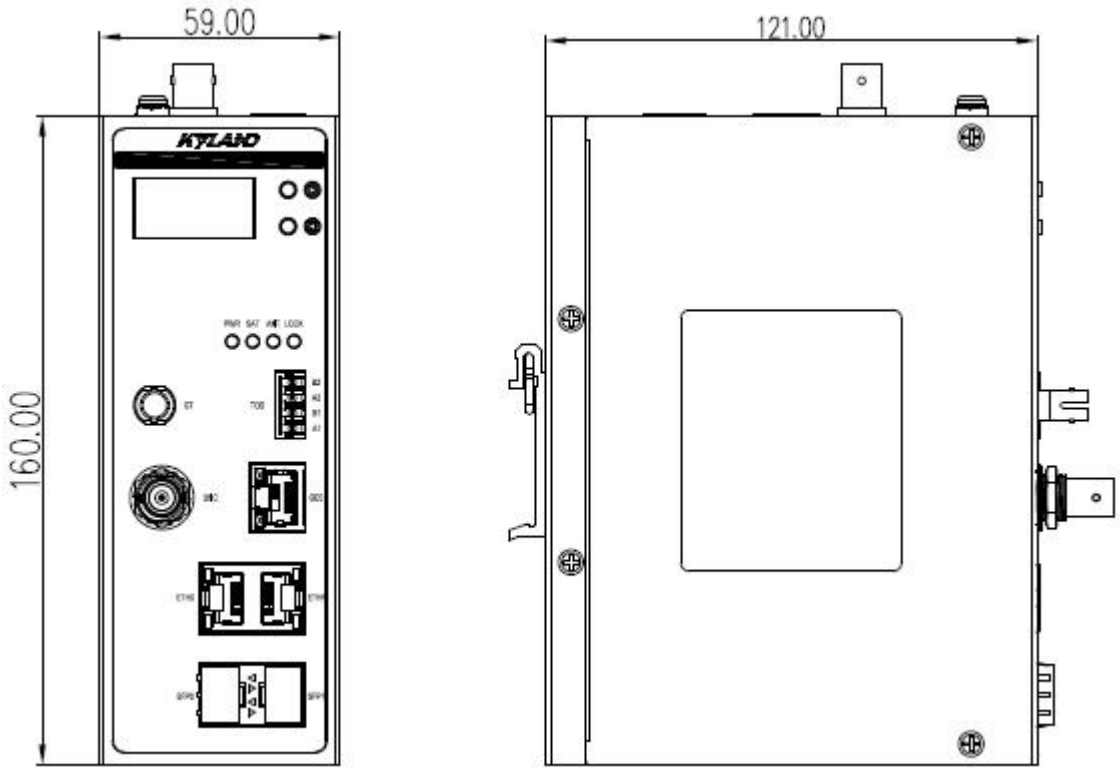


Figure 5 Dimension Figure (Unit: mm)

Note:

- Device casing is a part of the heat dissipation system of the whole machine. The casing will heat up when working normally. Please do not cover the casing when working.
- The pictures in this manual are schematic figures. Please refer to the real objects for details.

4 Wiring

4.1 10/100/1000Base-T (X) And 10/100 Base-T (X) Ethernet Interfaces

10/100/1000Base-T (X) and 10/100 Base-T (X) Ethernet interfaces adopt standard RJ45 connectors, which have adaptive functions and can be automatically configured to 10M/100M/1000M or 10M/100M/state and full-duplex/half-duplex operation mode, and support MDI/MDI-X self-identification function of cables, that is, connect with terminal device and network device using direct network cable or cross network cable.

- Interface definition

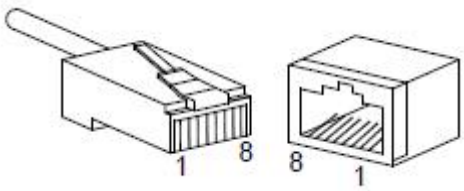


Figure6 RJ45 Interface Pin Number

Table3 10/100 Base-T (X) RJ45 Interface Pin Definition

Pin	MDI-X	MDI
1	Send/receive data (TRD1 +)	Send/receive data (TRD0 +)
2	Send/receive data (TRD1-)	Send/receive data (TRD0-)
3	Send/receive data (TRD0 +)	Send/receive data (TRD1 +)
4 (100-megabit electrical port not used)	Send/receive data (TRD3 +)	Send/receive data (TRD2 +)
5 (100-megabit electrical port not used)	Send/receive data (TRD3-)	Send/receive data (TRD2-)
6	Send/receive data (TRD0-)	Send/receive data (TRD1-)
7 (100-megabit electrical port not used)	Send/receive data (TRD2 +)	Send/receive data (TRD3 +)
8 (100-megabit electrical port not used)	Send/receive data (TRD2-)	Send/receive data (TRD3-)
Description: "+" and "-" stand for level polarity.		

- Joint line sequence

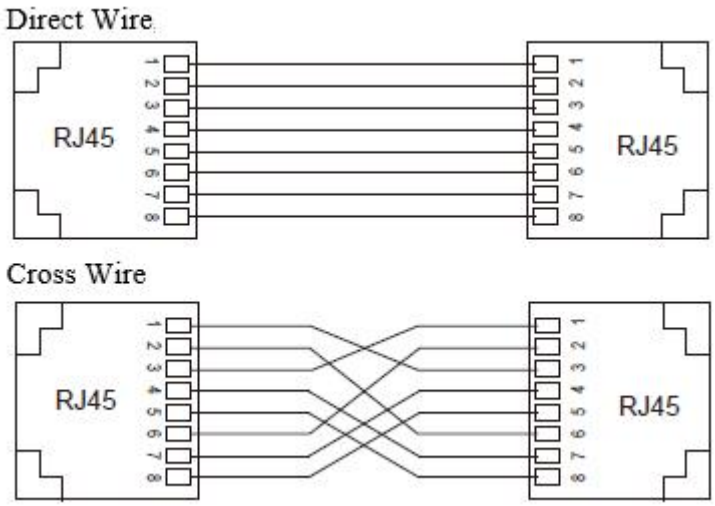


Figure 7 10/100 Base-T (X) RJ45 Connector Direct Wire, Cross Wire Interconnect

Description:

RJ45 connector wiring according to standard 568B (1-orange white, 2-orange, 3-green white, 4-blue, 5-blue white, 6-green, 7-brown white, 8-brown).

4.2 RS-485 Interface

RS-485 interface (pin definition as shown in the following figure)

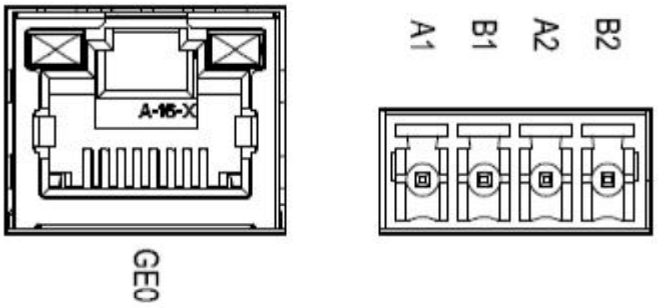


Figure8 Interface Pin Definition

Table4 Serial Interface Pin Definition

Pin name	A1	B1	A2	B2
Definition	A line of serial port 1	B line of serial port 1	A line of serial port 2	B line of serial port 2

4.3 100Base-X, SFP Interface

100Base-X, SFP interface (i.e., 100-megabit SFP interface) needs to be inserted into SFP optical/electrical module before connecting cables for communication. The recommended 100-megabit SFP optical/electrical modules (optional) for this device are shown in the following table.

Table 5 100-megabit SFP optical/electrical module

Model	Interface	Multimode/ single mode	Connector	Central wavelength	Transmission distance
IFSFP-M-LX-LC-1310-2	100Base-X interface	Multimode	LC	1310nm	2km
IFSFP-S-LH-LC-1310-40	100Base-X interface	Single mode	LC	1310nm	40km
IFSFP-S-LH-LC-1550-80	100Base-X interface	Single mode	LC	1550nm	80km

4.3.1. 100-Megabit SFP Optical Module

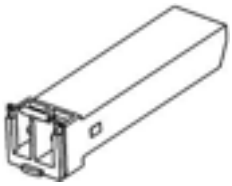


Figure 9 100-megabit SFP optical module

The interface of 100-megabit SFP optical module adopts standard LC optical fiber connector, and each interface is divided into sending port (TX) and receiving port (RX). Device A communicates with Device B by connecting TX and RX of Device A to RX and TX of Device B, respectively. The wiring of the 100-megabit SFP optical module is shown in the following figure.

Figure 10 wiring figure of 100-megabit SFP optical module

- Usage of 100-megabit SFP optical module

First, the 100-megabit SFP optical module is inserted into the SFP slot of the device, and then

the optical fiber is inserted into the RX and TX of the 100-megabit SFP optical module respectively.

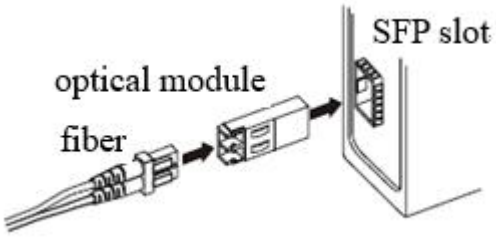


Figure 11 Usage of 100-megabit SFP optical module

Confirm the RX and TX of the 100-megabit SFP optical module

1. Insert two connectors at one end of the optical fiber into two interfaces of the 100-megabit SFP optical module respectively, and then insert two connectors at the other end of the optical fiber into two interfaces at the corresponding end respectively.

2. After connecting the optical fiber, please check the connection status indicator of the corresponding interface: the light flashes to indicate that the optical fiber link has been connected; Light off indicates that the link is not connected, which may be due to the wrong connection between RX and TX of SFP optical module. Please try to switch the two connectors at one end of the optical fiber.

Note:

- Devices use lasers to transmit signals over fiber optic cables. The laser meets the requirements of Class 1 laser products, so when the device is powered on, do not look directly at the luminous port of SFP module, so as not to cause damage to eyes.
- For modules whose transmission distance needs to be greater than 60km,should not be connected with short optical fiber (less than 20km), so as to avoid light saturation and over-power burning at the receiving end of the module.

4.4 SAT Antenna Interface

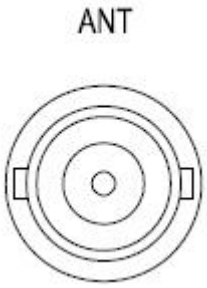


Figure 12 SAT Antenna Interface

The external antenna is connected with the device through the SAT antenna interface, and is used for assisting the device to search and receive satellite signals for timing

4.5 Optical Signal Input Interface FI

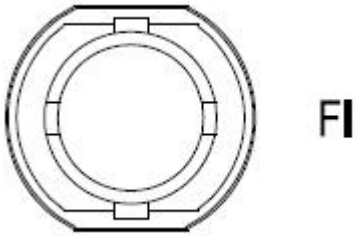


Figure 13 Optical signal input interface FI

The optical signal input port FI of the device receives the B code input signal

4.6 Device Output Signal Interface

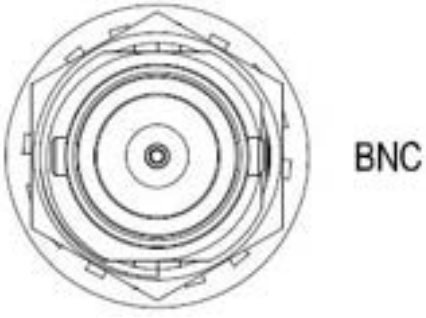


Figure 14 Device Output Signal Interface

Device Output Signal BNC Interface is used for outputting PPS/PPM/PPH/IRIG-B signals

4.7 Console Port

Use the DB9-RJ45 network pipeline to connect the 9 pin serial port of the PC to the console of the device, or connect the DB9-RJ45, USB-DB9 network pipeline in series and then connect the USB port of the PC to the console of the device. The Console software of the device can be called by running the Hyper Terminal of WINDOWS system or the related software tools, and the configuration, maintenance and management functions of the device can be realized. Console parameters are: baud rate 115200, data bit 8, no check bit, stop bit 1.

Figure15 console Port

- DB9-RJ45, USB-DB9Network Pipeline

The DB9-RJ45 network pipeline has a DB9 plug at one end and a crimped RJ45connector at the other end, which needs to be plugged into the console of the device, and aUSB-DB9 (RS 232) serial port line is connected in series at the same time. Note that the DB9 plug of the two lines adapts, and then the USB port is connected to the PC.

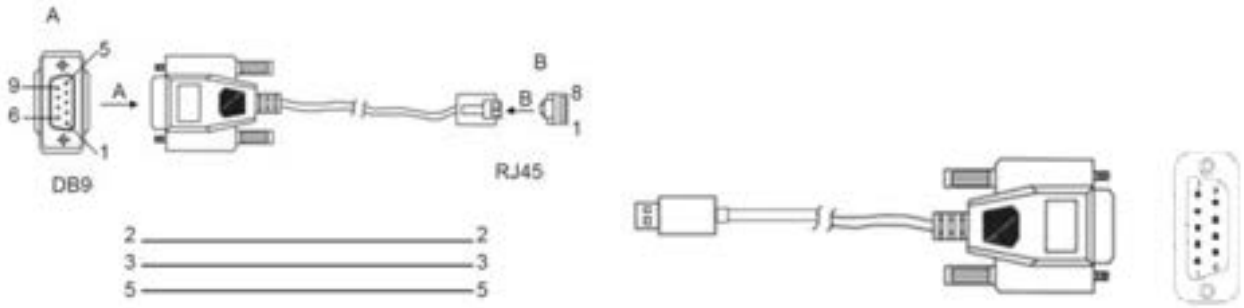


Figure16 DB9-RJ45 and USB-DB9 (RS232)Data Line

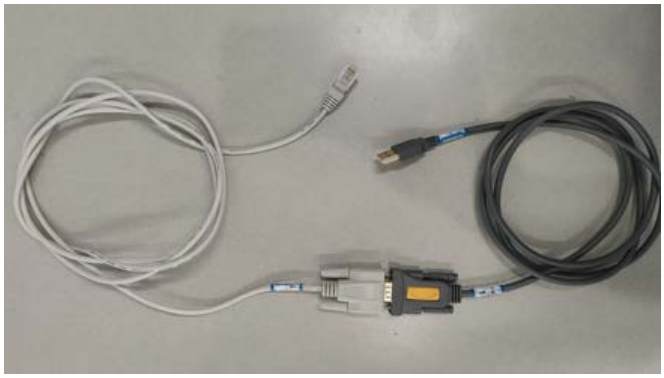


Figure 17 Schematic figure of physical objects

Table6 DB9 Interface (PC Terminal 9 Pin Serial),RJ45 Interface (Console) Pin Definition

DB9Interface (DB9-RJ45)		**RJ45Interface (Console)**	
Pin	**Signal**	**Pin**	**Signal**
2	RXD(received data)	2	TXD(send data)
3	TXD(send data)	3	RXD(received data)
5	GND(Ground)	5	GND(Ground)

4.8 Power Terminal

This series of device adopts 3-core 5.08 mm spacing plug-in power terminals and supports single-channel power supply.

- 3-core 5.08 mm spacing plug-in terminal

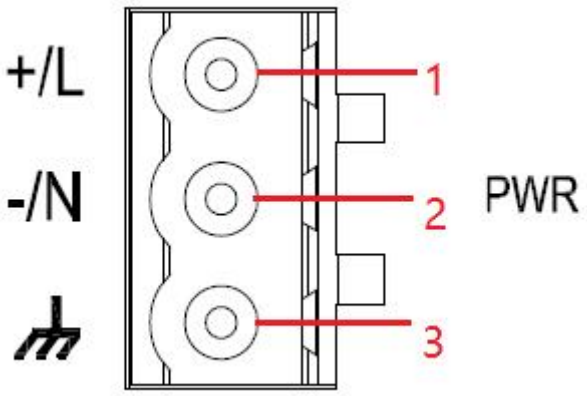


Figure 18 3-core 5.08 mm Spacing Plug-In Terminal (Socket)

Table7 3-core 5.08 mm Pitch Plug-In Terminal Definition

Terminal number	**Wiring definition**

1	Power Supply +/L
2	Power Supply-/N
3	GND

- Wiring and installation

Step 1: Remove the power terminal plug from the device.

Step 2: Plug one end of the power cord into the power terminal plug according to Table and fix the power cord

Step 3: Plug the plug connected with the power cord back to the corresponding power terminal socket of the device.

Step 4: Connect the other end of the power cord to the corresponding external power supply system according to the power supply requirements identified by the device, and check whether the power indicator lamp corresponding to the device turns on, which indicates that the power supply connection is correct.

Note:

- Ensure that the transient value of voltage does not exceed 120% of the rated value.
- Users should not use the power adapter with sparks.
- Before connecting to the power supply, please confirm that the power supply is consistent with the power supply requirements identified by the device, so as not to damage the device.

Warning:

- Do not touch any exposed wires, terminals and parts marked with dangerous voltage in the product, so as to avoid harm to human body.
- Do not disassemble parts or plug-in connectors during power-on.

5 Reset Button

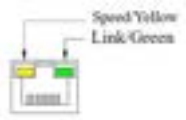
The Reset button has the function of restarting and restoring the default configuration. Press the reset button continuously for 0.5 ~ 3 seconds and then release it to complete the device restart. Press the reset key continuously for more than 3 seconds (less than 10 seconds), then release to restore the default configuration and restart, and press the reset key continuously for more than 10 seconds, then release the cancellation action (neither reset nor restore the factory settings).

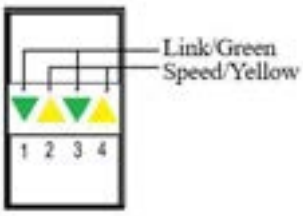
Note:

If you want to restart the device, be careful not to press the reset button for more than 3 seconds to prevent the device from returning to its default configuration.

6 LED Indicator Status

Table 8 Description of Board Indicator Light

LED	Status	Describe
Power indicator PWR	Bright	The input power supply is connected and running normally
	Off	The input power supply is not connected or not operating properly
Star search indicator-SAT	Bright	The number of stars searched by the device is not less than four stars
	Off	The number of stars searched by the device is less than four stars
External antenna indicator-ANT	Bright	An antenna is connected to the BNC port of the external antenna and the antenna is normal
	Off	There is no antenna connected to the BNC port of the external antenna or the antenna is not properly connected
Satellite LOCK indicator-LOCK	Flash (1s1 Flash)	The device successfully entered the locked state when aligning
	Flash (3s1 Flash)	The device enters the punctuality state
	Off	Device timing failed and did not enter the punctuality state
		
10/100 Base-T (X)Ethernet Interface Rate Indicator (yellow)	Bright	100M operating state (i.e. 100Base-TX)
	Off	10M working state or no connection
10/100 Base-T (X) Ethernet Interface Connection Status Indicator (Green)	Bright	Port has established a valid network connection
	Flash	Port has network activity
	Off	Port does not have a valid network connection

		
10M/100M/1000M Ethernet Interface Rate Indicator (Yellow)	Bright	1000M operating state (i.e. 1000Base-T)
	Off	10/100 m operation (i.e. 10/100 Base-T (X)) or no connection
10M/100M/1000M Ethernet Interface Connection Status Indicator (Green)	Bright	Port has established a valid network connection
	Flash	Port has network activity
	Off	Port does not have a valid network connection
 Indicator lights 1 and 2 indicate the status of the lower SFP interface; Indicators 3 and 4 indicate the status of the upper SFP interface Link/Green Speed/Yellow		
100-megabit SFP interface rate indicator (yellow light)	Bright	100M operating state (i.e. 100Base-FX)
	Off	Connectionless
100-megabit SFP interface connection status indicator (green light)	Bright	Port has established a valid network connection
	Flash	Port has network activity
	Off	Port does not have a valid network connection

7 Access

You can access the device in three ways.

7.1 Console Port Access

Use the 9 pin serial port connecting the DB9-RJ45 network pipeline to the PC and the console of the device, or connect the DB9-RJ45 and USB-DB9 network pipeline together, and then connect one end to the USB serial port of the PC. After the other end is connected to the device Console, you can access the device and make configuration changes through Hyper Terminal or related software tools. Customers are not recommended to change the device. If you need to change, please contact our customer service or technical support.

7.2 Telnet Access

After using the network cable to connect the PC network port with the Ethernet interface of the device, you can access the device and make configuration changes through the command line Telnet command or related software tools. Customers are not recommended to change the configuration of the device. If you need to change, please contact our customer service or technical support.

7.3 Web Access

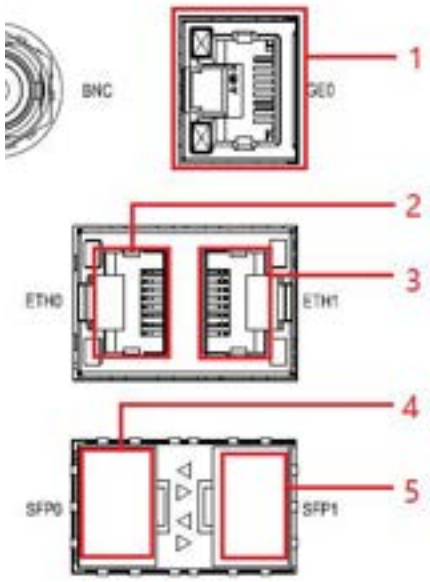


Figure 19 Schematic Figure of Device Network Port/Optical Port

Step 1: Connect the PC network port with the Ethernet interface of the device with a network cable, or connect the SFP interface of the PC end with an optical module and an optical fiber (if supported by the PC) with the SFP interface of the device

Step 2: Enter the IP address of the device in the address bar of the browser. After opening the login dialog box, enter the default user name and default password, and you can successfully log in to the device Web management page.

Table 9 IP And Login Account Password Corresponding To PTS-DR200L Network Port

Product type	Illustrated port	IP address	Account number	Password
	1	192.168. 0.111	admin	pwd4Kyland
	2	192.168. 1.111	admin	pwd4Kyland
	3	192.168. 2.111	admin	pwd4Kyland
	4	192.168. 3.111	admin	pwd4Kyland
	5	192.168. 4.111	admin	pwd4Kyland

Description:

- Firefox or Google Browser is recommended.
- For device access and other specific operations, please refer to the supporting Web operation manual.

8 Basic Performance and Specifications

Power supply	
Power identification	Rated voltage value
Input voltage	PTS-DR200L-1111-HV: 220VAC/DC (85-264VAC/77-300VDC) PTS-DR200L-1111-L2: 24VDC (18 ~ 72VDC)
Access terminal	3-core 5.08 mm pitch plug-in terminal
Rated power	
Rated power	< 12W
Mechanical structure	
Installation mode	Guide rail type/wall hanging type
Dimensions (W × H × D)	160*121*59mm (W × H × D) (Excluding connector protrusions)
Weight	< 1.1 kg
Environment	
Operating temperature	-40 ℃ ~ +70℃
Storage temperature	-40 ℃ ~ +85℃
Relative humidity	5% ~ 95% no coagulation
MTBF	
MTBF	> 300000h
Warranty period	
Warranty period	5 years

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For more information about KYLAND products, please visit the website:

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