IRIG-B PTP Clock Converter Output Module

Hardware Installation Manual

KYLAND

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Hardware Installation Manual

Disclaimer: Kyland Technology Co., Ltd. tries to keep the content of this manual as accurate and as updated as possible. This document is not guaranteed to be error-free, and we reserve the right to amend it without notice to users.

Notice for Safety Operation

This product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the equipment should be avoided.

- Read this manual carefully and keep it for future reference;
- Do not place the equipment near water sources or damp areas;
- Do not place anything on power cable or put the cable in unreachable places;
- Do not tie or wrap the cable, which may cause a fire risk;
- Power connectors and other equipment connectors should be firmly interconnected and checked frequently;
- Do not repair the equipment by yourself, unless it is clearly specified in the manual;
- Please keep the equipment clean; if necessary, wipe the equipment with soft cotton cloth.

In the following cases, please immediately shut down your power supply and contact your Kyland representative:

- Water gets into the equipment;
- Equipment damage or shell damage;
- Equipment operation or performance has abnormally changed;
- The equipment emits odor, smoke or abnormal noise.

Contents

1 Product Overview

IRIG-B PTP clock converter output module is designed specifically and provides a high precision time for the switches including SICOM6028GPT, SICOM6424PT, SICOM3028GPT and SICOM3424PT that support PTP protocol. It realizes the conversion from PTP to IRIG-B clock and PPS (Pulses Per Second). This allows the industrial devices that keep the IRIG-B format unchanged to conveniently receive PTP high precision clock. This achieves the normalization of network clocks and reaches high precision synchronization in the industrial control system.

The module provides two IRIG-B (DC) output ports, two IRIG-B (AC) output ports and one PPS output port.

2 Structure and Interface

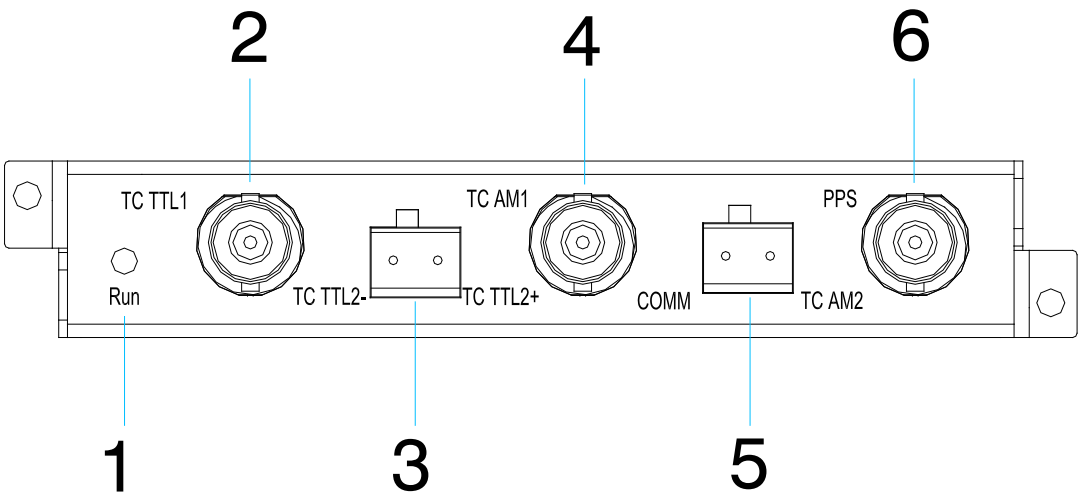

Figure 1 IRIG-B PTP Clock Converter Output Module Panel

Table 1 IRIG-B PTP Clock Converter Output Module

Number	Diagram Label	Description
1	Run	Module Running LED
2	TC TTL1	IRIG-B (DC) output port, BNC connector (female)
3	TC TTL2- TC TTL2+	IRIG-B (DC) output port, 2-Pin 5.08mm-spcing plug-in terminal block (socket)
4	TC AM1	IRIG-B (AC) output port, BNC connector (female)

5	COMM TC AM2	IRIG-B (AC) output port, 2-Pin 5.08mm-spcing plug-in terminal block(socket)
6	PPS	PPS (Pulses Per Second) output port, BNC connector (female)

3 Installation

3.1 Installation Dimension Drawing

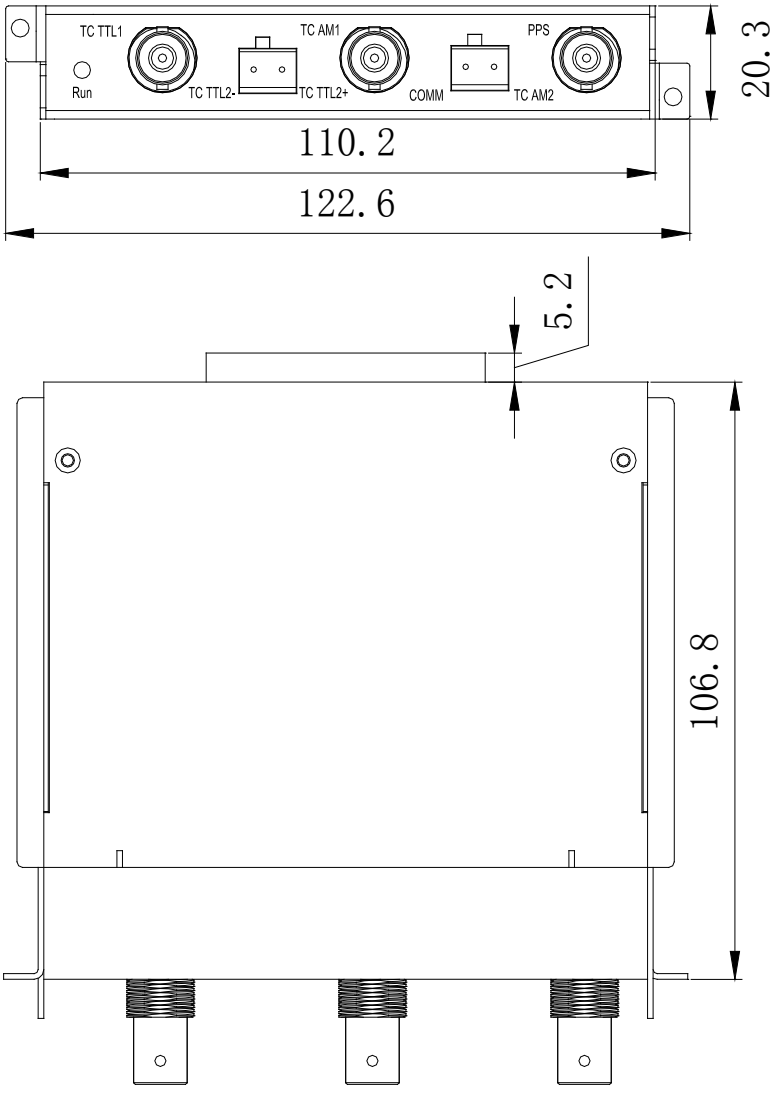

Figure 2 Installation Dimension Drawing

3.2 Installing the Module

Note: We recommend that the modules be installed and removed while the power is

disconnected.

3.2.1 Installing the Module

The series switches provide six 0.5U Slots (Slot2-Slot7) in the rear panel. The IRIG-B PTP clock converter output module can be installed into the random 0.5U slots as needed.

The installation method for upper slots (Slot2, 4 and 6) is to install the module facing up and lower slots (Slot3, 5 and 7) should be installed facing down.

- The IRIG-B PTP clock converter output module installation in upper slots(Slot2,Slot4 and Slot6)

  Step 1: Place the module with the diagram label facing up. Insert the guide rail of module into the guide rail slot, as shown in Figure 3, and then push the module in along the guide rail slot until the module is in close contact with the switch.

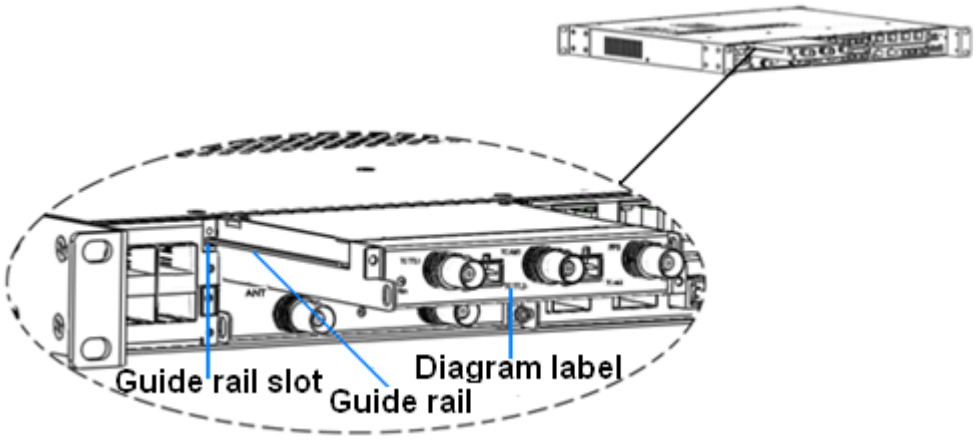

Figure 3 Module Installation 1

Step 2: Secure the module into the switch chassis with two screws (M2.5×5), as shown in Figure 4.

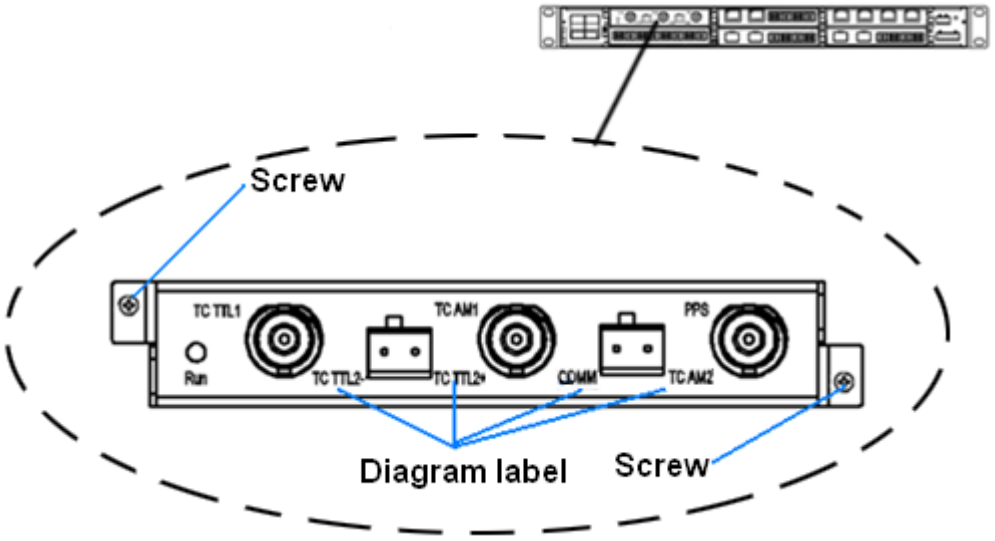

Figure 4 Module Installation 2

- The IRIG-B PTP clock converter output module installation in lower slots(Slot3,Slot5 and Slot7)

Step 1: Place the module with the diagram label upside down. Insert the guide rail of module into the guide rail slot, as shown in Figure 5, and then push the module in along the guide rail slot until the module is in close contact with the switch.

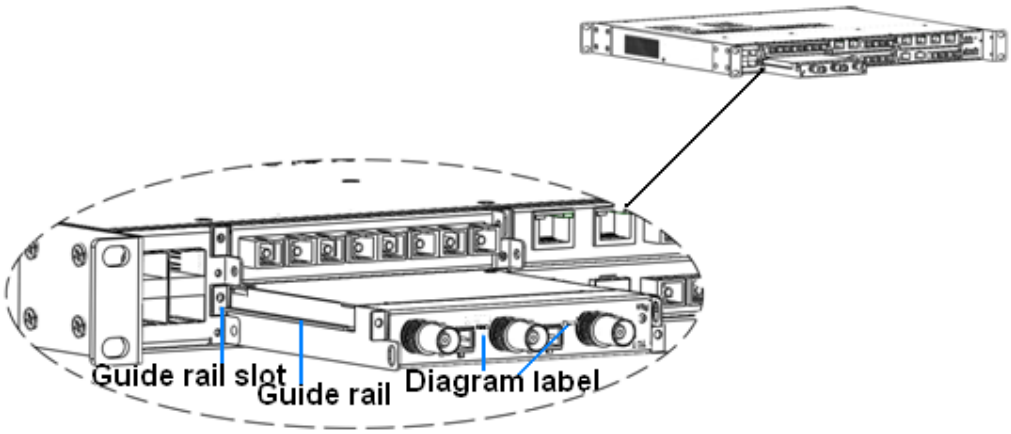

Figure 5 Module Installation 3

Step 2: Secure the module into the switch chassis with two screws (M2.5×5), as shown in Figure 6.

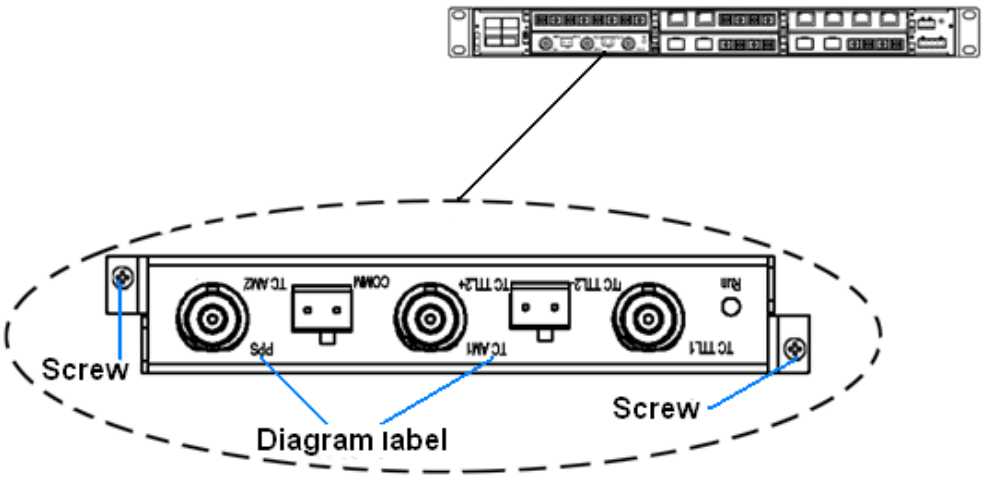

Figure 6 Module Installation 4

3.2.2 Removing the Module

When removing an module, a puller as shown in Figure 7 is needed.

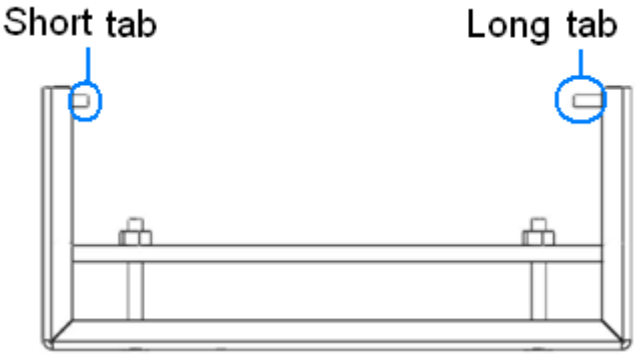

Figure 7 Puller

The specific mounting steps are as follows: (removal for upper and lower slots is the same)

Step 1: Remove the two fastening screws of the module and switch chassis.

Step 2: Insert the long tab into the handle of the module, as shown in Figure 8; then move the puller left to ensure adequate space for inserting the short tab.

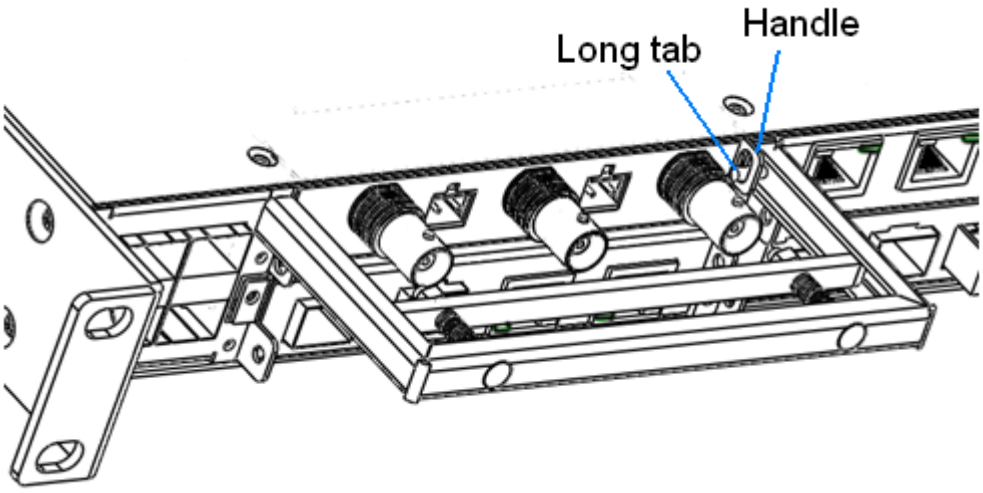

Figure 8 the Module Removal 1

Step 3: Insert the short tab of the puller into the other handle of the module as shown in Figure 9; move the puller to the right to keep both of the tabs inserted into the two handles of the module, as shown in Figure 10.

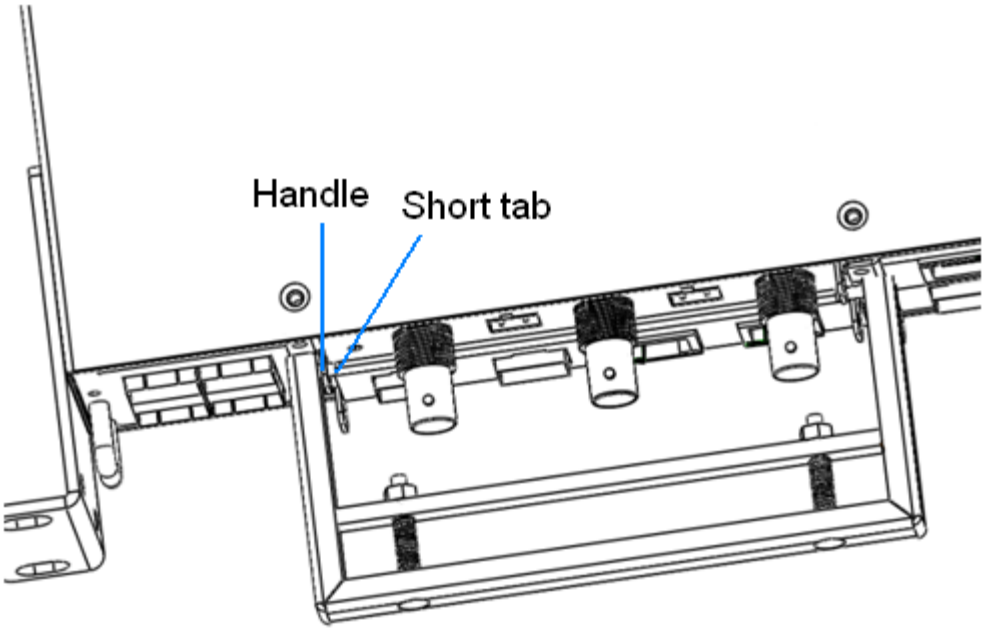

Figure 9 the Module Removal 2

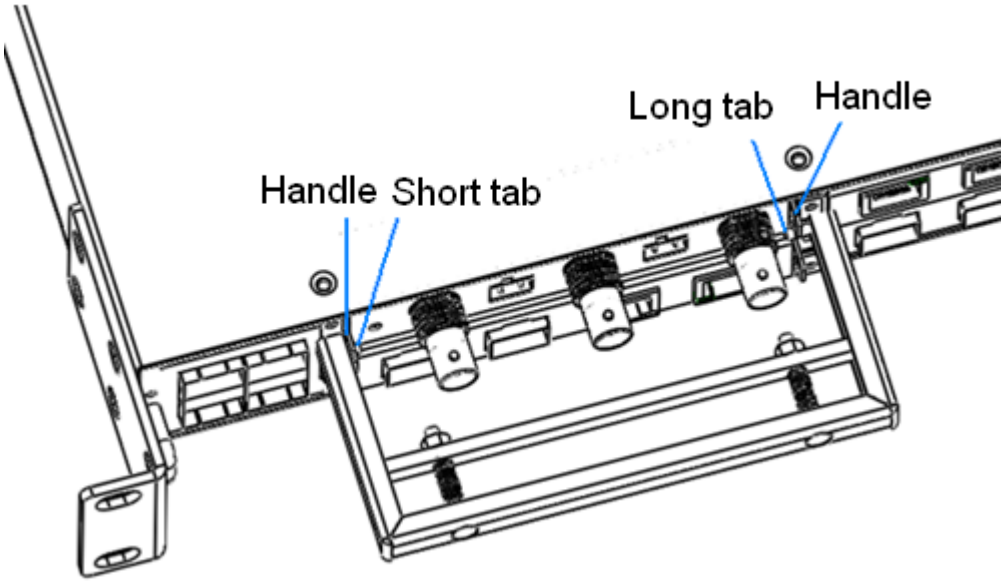

Figure 10 the Module Removal 3

Step 4: Grip the handle of puller; push the handle in the direction of arrow 1 with your thumb, and at the same time pull the handle outwards with your fingers in the direction of arrow 2. The module will pop-up. Pull the module outwards along the guide rail slot, until it completely comes out of the switch chassis.

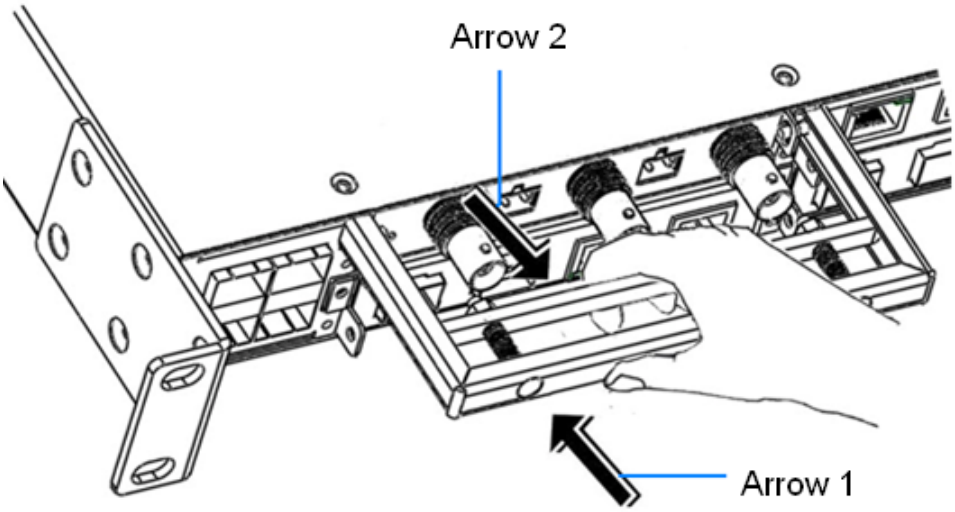

Figure 11 the Module Removal 4

Note: When using the puller, ensure to insert the long tab into the handle of the module first and then insert the short tab; otherwise the long and short tabs will not be inserted into the handles because of the specific design of the puller.

4 Cable Connection

4.1 IRIG-B (DC) Output Port

Two types of connectors can accomplish IRIG-B (DC) output: one is a BNC connector, and the other one is a 2-pin 5.08mm-spacing terminal block. Users can choose the appropriate interface according to their own requirements.

- BNC connector

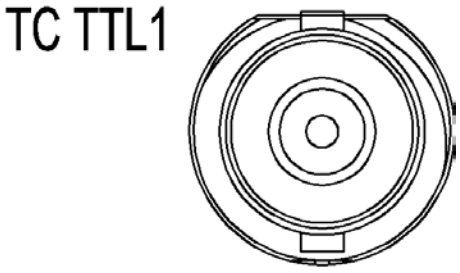

Figure 12 IRIG-B (DC) BNC Connector (female)

- 2-Pin 5.08mm-spcing plug-in terminal block

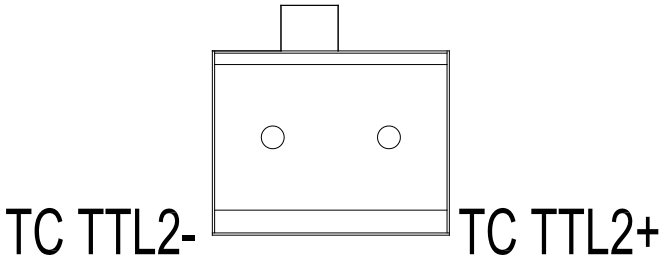

Figure 13 2-Pin 5.08mm-spcing Plug-in Terminal Block (Socket)

Table 2 2-Pin 5.08mm-spcing Plug-in Terminal Block Definition

Diagram Label	Description
TC TTL2+	IRIG-B(DC)TTL +5V level output
TC TTL2-	IRIG-B(DC) Signal Ground

Note: IRIG-B output, TTL +5V level, trigger by rising edge, port load:40mA.

4.2 IRIG-B (AC) Output Port

Two types of connectors can accomplish IRIG-B (AC) output: one is a BNC connector, and the other one is a 2-pin 5.08mm-spacing terminal block. Users can choose the appropriate interface according to their own requirements.

- BNC connector

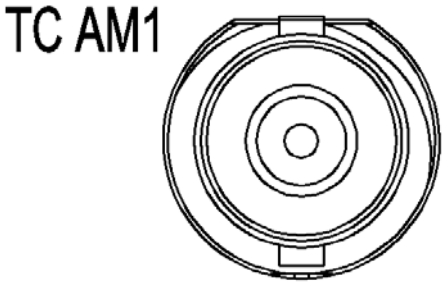

Figure 14 IRIG-B (AC) BNC Connector (female)

- 2-pin 5.08mm-spacing plug-in terminal block

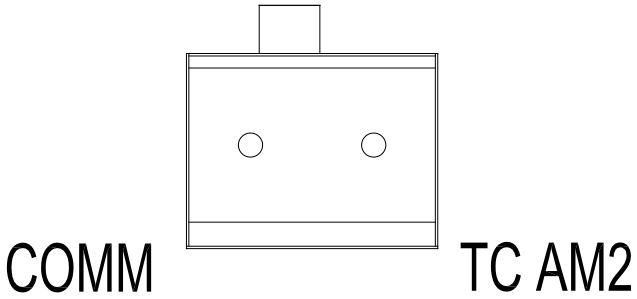

Figure 15 2-pin 5.08mm-spacing Plug-in Terminal Block (Socket)

Table 3 2-pin 5.08mm-spacing Plug-in Terminal Block Pin Definition

Diagram Label	**Description**
TC AM2	IRIG-B (AC) output
COMM	IRIG-B (AC) Signal Ground

Note: IRIG-B (AC) output, Vp-p: 3V~10V software adjustable (default Vp-p: 4.5V), 600Ω, modulation radio: 3:1, 4:1, 5:1, 6:1 software adjustable (default modulation radio: 3:1).

4.3 PPS Output Port

PPS(Pulses Per Second) TTL +5V level output through BNC connector, as shown in Figure 16.

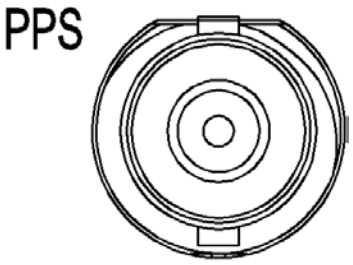

Figure 16 PPS BNC Connector (female)

Note: PPS output, TTL +5V level, 50Ω, trigger by rising edge, pulse width 20ms-200ms, software adjustable step is 1ms.

5 LED Indicators

Table 4 Panel LED

LED	State	Description
Module Running LED		
Run	ON	The module is running abnormally or the module is starting.
	Blinking (1HZ)	The module is running normally
	OFF	The module is not started up.

6 Management Access

IRIG-B PTP clock converter output module is managed by the host switch (SICOM6028GPT, SICOM6424PT, SICOM3028GPT or SICOM3424PT). The host switch manages the module through CLI, SNMP or Web browser. Finishing the installation of the module as shown in 3.2.1, we can search for the information of module via Console interface, telnet or web browser.

6.1 Connection Via Console Interface

1. Install the driver for Mini USB onto your PC. The driver “Mini USB driver.exe” is in the software download folder, which is on the supplied CD.
2. Use the Console cable that is equipped with Mini USB connector at one end and USB connector at the other end to connect the Console interface on the switch with the USB port on PC.
3. On Windows desktop, click Start → All programs → Accessories → Communications → HyperTerminal.

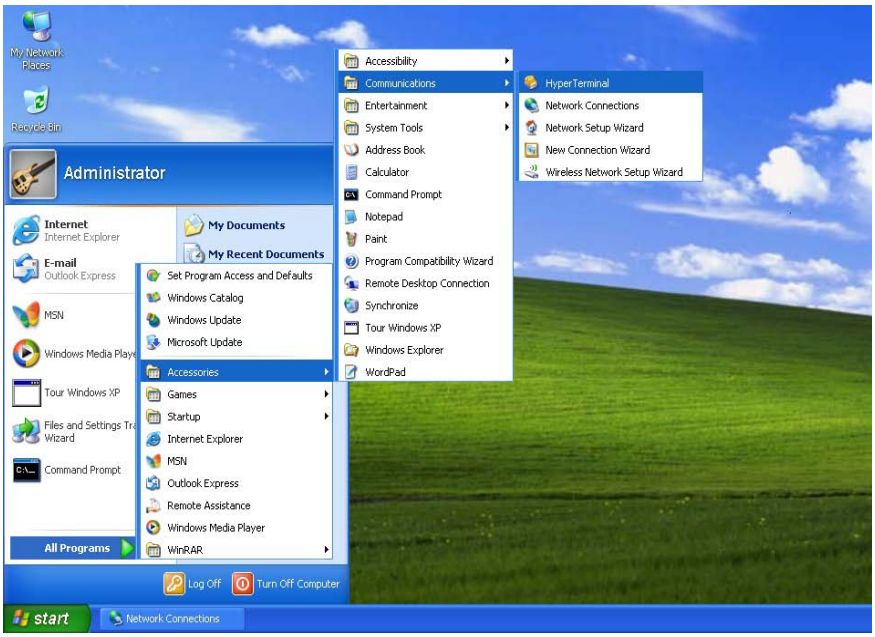

Figure 17 Hyper Terminal

4. Build a new connection named “aa”

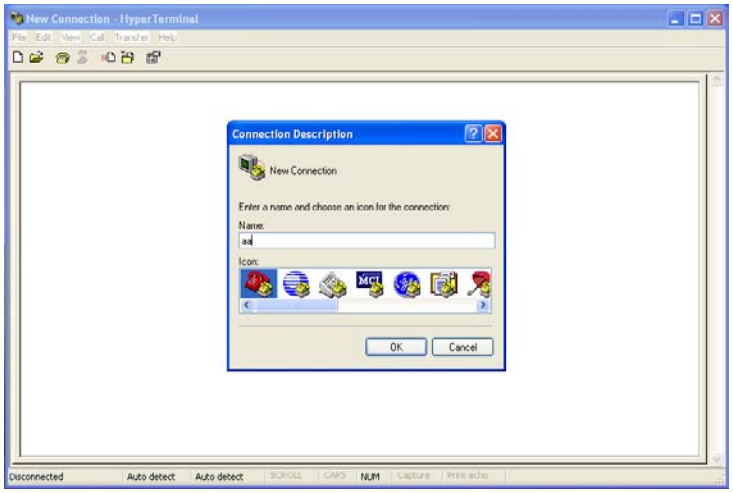

Figure 18 New Connection

5. Select COM port as the connection type.

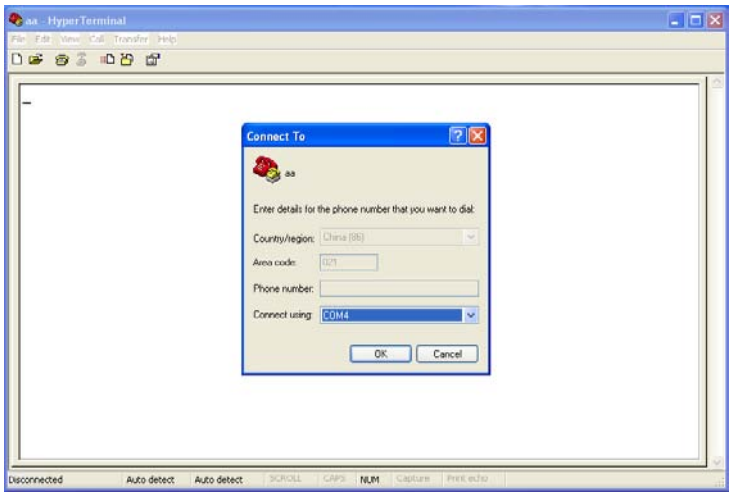

Figure 19 Choose Port

6. Set the parameters of COM port (Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None)

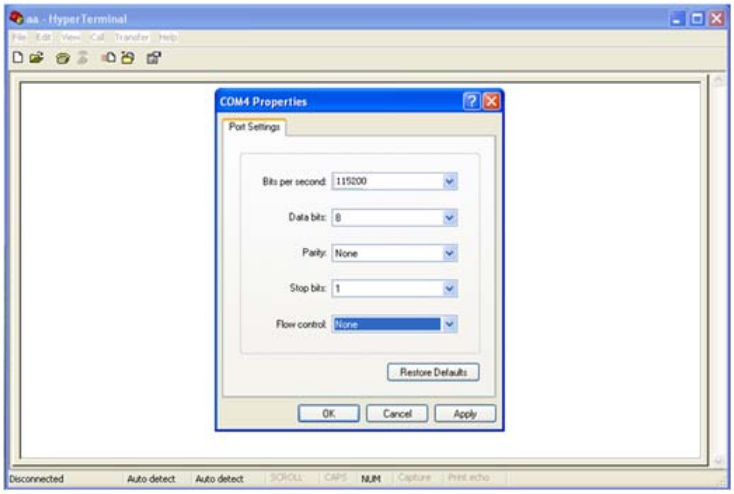

Figure 20 Set COM Parameters

7. Click “OK” to enter the HyperTerminal interface, and type in the command “enable” to enter management view, and then type in the command “ show interface irig-b” to search for current information of the module.

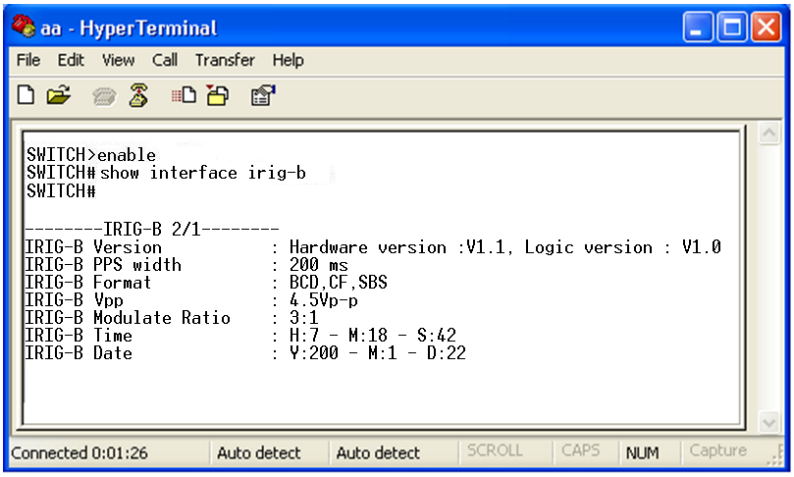

Figure 21 HyperTerminal

Table 5 describes the display information that appears after clicking the command “show interface irig-b”

Table 5 Display Information Description

Display Information	Description
IRIG-B Version	hardware version and logic version of the module
IRIG-B PPS width	PPS output pulse width
IRIG-B Format	IRIG-B coding format
IRIG-B Vpp	peak to peak value of IRIG-B(AC) output signal
IRIG-B Modulate Ratio	modulation radio of IRIG-B(AC) output signal
IRIG-B Time	IRIG-B time
IRIG-B Date	IRIG-B date

6.2 Connection Via Telnet

1. Connect any RJ45 port of the switch with the Ethernet port of a personal computer with a RJ45 cable.
2. Open Run window from the start menu, then input “telnet + ‘IP address’”.

The default IP address is 192.168.0.2.

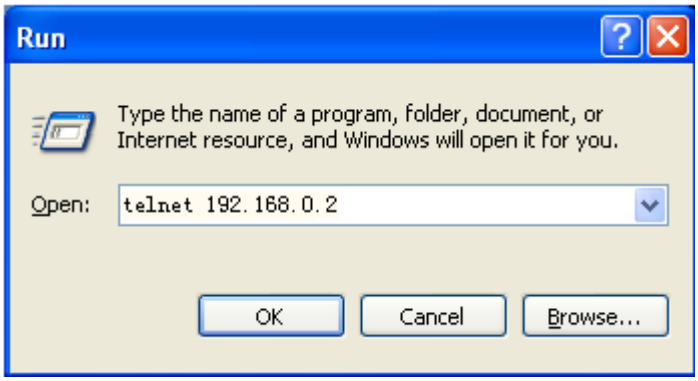

Figure 22 Enter Telnet

3. Click “OK” to enter the Telnet configuration interface as shown in Figure 23. Login with default user name “admin” and password “123”, and type in the command “enable” to enter management view, and then type in the command “show interface irig-b” to search for current information of the module.

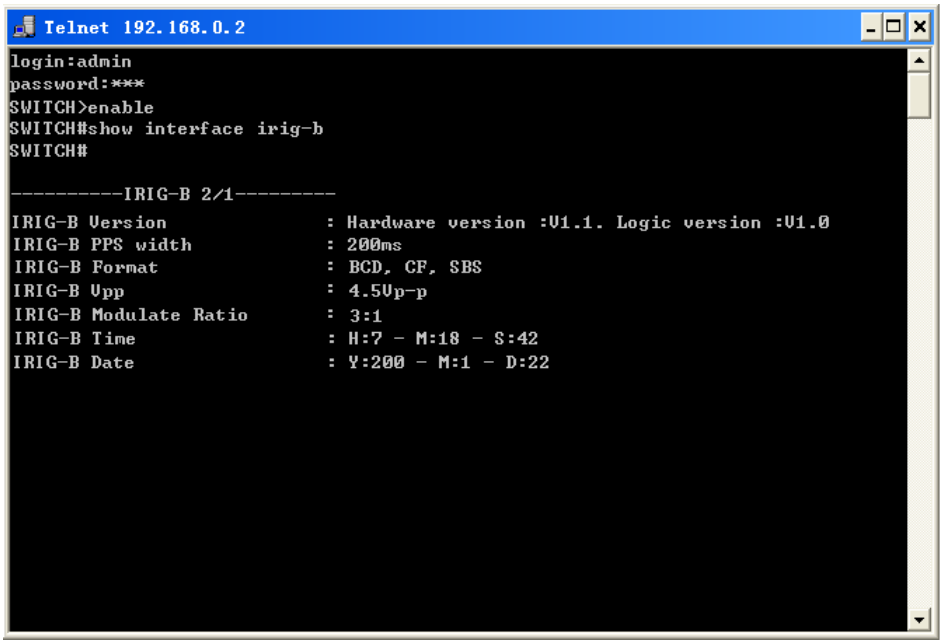

Figure 23 Telnet Configuration Interface

The description of display information that appears after clicking the command “show interface irig-b” is shown in Table 5.

6.3 Connection Via Web Browser

1. Connect the Ethernet port on the PC to any RJ45 port on the device.
2. Input the IP address of the current switch in web browser, the default IP is 192.168.0.2. The Web interface access screen will appear as shown in Figure 24 (Take SICOM6028GPT for example); Enter the Web management page as shown in Figure 25 with default user name "admin" and password "123".

Figure 24 Web Interface Access Screen

3. As shown in Figure 25 below, there is a navigation tree menu on the left side; click IRIG-B configuration→IRIG -B configuration(in red), and the IRIG-B configuration interface will appear on the right; you can make and search for IRIG-B configuration on upper and lower side of the IRIG-B configuration interface separately. Refer to Table 5 for the description of the current IRIG-B configuration information.

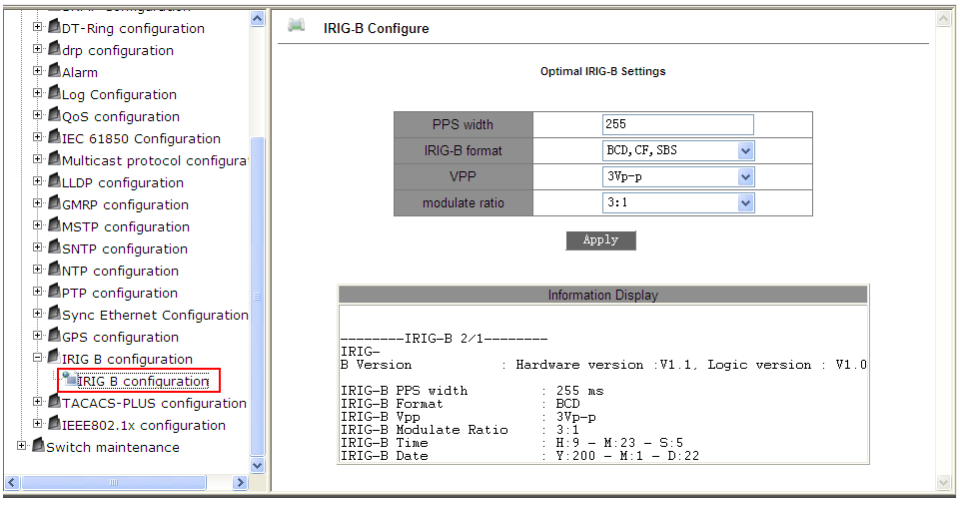

Figure 25 IRIG-B Configuration Interface

Note: We recommend IE version 8.0 or greater.

7 Product Configuration Information

Table 6 Product Configuration

Model	Interface Description
SM6.6-PTP-BO-0.5U	IRIG-B PTP clock converter output module, conversion from PTP to IRIG-B output, supports two IRIG-B(DC) outputs, two IRIG-B(AC) outputs, one PPS output

8 Basic Features and Specifications

- Physical Characteristics

  Housing: Metal

  Dimensions (W×H×D): 122.6mm×20.3mm×106.8mm

  Weight: 350g

- Power consumption

  <1W

- IRIG-B(DC) Output Port Load

  40mA

- Environment Limits

  Operating Temperature: -40℃~+85℃

  Storage Temperature: -40℃~+85℃

  Ambient Relative Humidity: 5%~95% (non-condensing)

- Warranty

  5 years

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

http://www.kyland.cn/