User Manual

H-8ATSC-IP Gateway

A Note from Thor Broadcast about this Manual

Intended Audience

This user manual has been written to help people who have to use, integrate and to install the product. Some chapters require some prerequisite knowledge in electronics and especially in broadcast technologies and standards.

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Chapter 1 - Introduction

1.1Outline

The Thor Broadcast H-8ATSC-IP gateway is our new solution in converting tuner based inputs into a Gigabit IP transport streams. This ideal head-end conversion device has massive processing power which lets you intake up to 8 ATSC frequencies and convert to a single Ethernet output. Thor's new power packed deviceintegrates tuner demodulation and IP gateway functionality, which can demodulate the signals from 8 tuners into TS and packet the TS into an IP package, then output the IP package through different IP addresses and ports for your convenience.Simple and sophisticated; you can now convert your off-air antenna head-end into a modern IPTV head-end

1.2Features

- High quality demodulation and gateway functions
- Supports 8 channel ATSC tuners (DVB-S/S2, ISDB-T, DVB-C optional) input and 8 IP output
- MPEG-2 and MPEG-4 TS to IP one way conversion
- 1 GE output(support parallel 1 Gbps data output channel)
- Maximum 8 tuners to IP conversion, the maximum output bit-rate is 800Mbps
- UDP protocol; unicast and multicast
- LCD display and keyboard
- NMS operation for ease of use

1.3 Specifications

Interface	Input	8 ATSC inputs (DVB-S/S2 /ISDB-T/DVB-C optional)
	Output	1 GE output, TS over UDP protocol, unicast and Multicast
Transmission Bit-rate		Maximum total bit-rate is 800Mbps
General	Dimension (WxLxH)	482mm×410mm×44mm
	Weight	3.6kg
	Temperature	0~45℃(working) , -20~80℃(storage)
	Power supply	100~240VAC，50/60Hz
	consumption	20W

1.4 Principle Chart
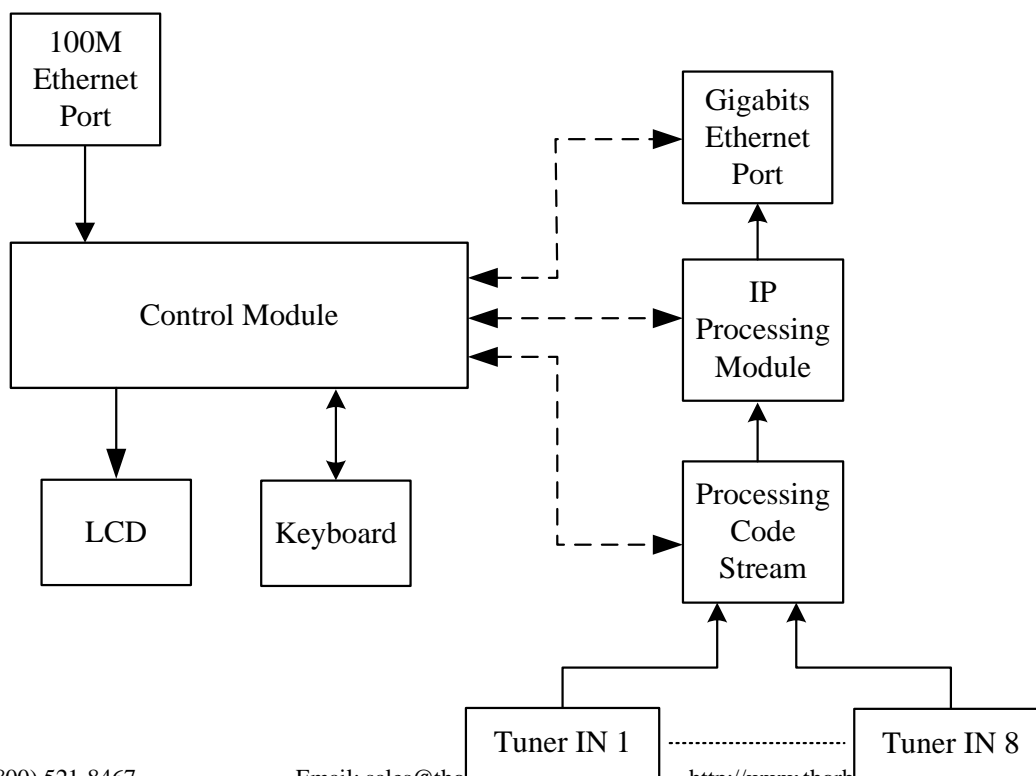
1.5Appearance and Description

Front Panel Illustration:

1   2   3   4   5   6

1	LCD Display	
2	Tuner in	Power Indicator
		Alarm Indicator
		Tuner 1(2/3…/8): when the input signal of tuner 1(2/3…/8) is locked, the light becomes green. Otherwise it is red.
3	Up (▲)/Down (▼)/ Left (◄)/Right (►)button	
4	Enter	
5	Menu	
6	Lock	

Rear Panel Illustration

7   8   9   10   11

7	8 channels RF IN Interface (top row)
8	Loop Out Interface (bottom row)
9	CAS port: Network management interface
10	Ethernet port: Network management interface ； Data port: IP out port
11	Integrated power switch and socket

Chapter 2 - Installation Guide

This section is here to explain the cautions you should adhere to so you don't hurt yourself or anyone else. That would not be good for anyone; so read through before operating your new Thor Broadcast equipment.
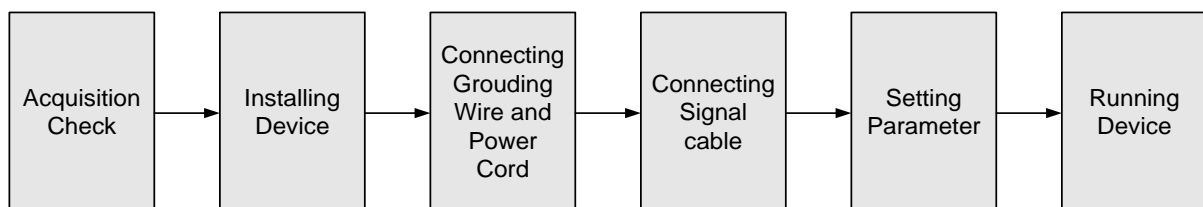
2.1 General Precautions

✓ Must be operated and maintained in an area free of dust and debris.

✓ The cover should be securely fastened, do not open the cover of the chassis when thepower is on. This will also void Thor's manufacturer's warranty.

✓ After installation, securely stow away all loose cables, external antenna, and others.

2.2 Power precautions

✓ Be careful when connecting a power source to the device.

✓ Do not operate in wet or damp areas. Make sure the extension cable is in good condition

✓ Make sure the power switch is off before you start to install the device

2.3 Device's Installation Flow Chart Illustrated (as following)

Acquisition Check → Installing Device → Connecting Grouding Wire and Power Cord → Connecting Signal cable → Setting Parameter → Running Device

2.4 Environment

Item	Requirement
Machine Hall Space	When installing unit on rack, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free, HVAC anti-static material:$1X10^7$~$1X10^{10}\Omega$, Grounding current limiting resistance: $1M\Omega$ (Floor bearing should be greater than $450Kg/m^2$)
Environment Temperature	5~40℃(sustainable），0~45℃(short time)，installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Fire Protection	Fire alarm system and extinguisher
Power	Device power, HVAC and lighting should be independent to each other. Device power requires AC 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running.

2.5 Grounding Requirement

- ✓ It is important to keep this device grounded to ensure all of the modules function correctly. Correctly grounding the device will also help prevent any electrical interference, lightening. Etc. Also it helps reject minor interference that may disrupt the devices ability to function smoothly. General rule of them, make sure the device is grounded when installing anywhere.

- ✓ Always use copper wire. When applied correctly the ground must be wrapped well to ensure maximum conduction so it can reduce any high frequencies. The copper ground wire should also be as short and thick as possible

- ✓ Installer must make sure that the two ends of the ground are well conducted and have appropriate anti-rust properties.

- ✓ It is prohibited to use any other device as part of the grounding electric circuit.

- ✓ The area of the conduction between the ground wire and device's frame should be no less than 25 m^2.

Chapter 3 - Operation

Keyboard Function Description:

MENU: Cancel current entered value, resume previous setting; Return to previous menu.

ENTER: Activate the parameters which need modifications, or confirm the change after modification.

LEFT/RIGHT: Choose and set the parameters.

UP/DOWN: Modify activated parameter or paging up/down when parameter is inactivated.

LOCK: Lock the screen/cancel the lock state. After pressing the lock key, the LCD will display the current configuring state.

3.1 Initializing

After the device is powered on, the screen will display the system's stand-by interface. Information about channel number, signal type and etc. will be displayed alternatively in the second row.

3.2 General Settings

Pressing LOCK key, will enter the main menu, and the LCD will display the following options:

```
►1 Alarm Status          2 Input Setting
  3Output Setting         4Network Setting
```

```
►5Saving Config              6LoadingConfig
7Version
```

By pressing "ENTER",you can delve into each submenu to set parameters of each input channel, device output, network settings and so on.

3.2.1 Alarm Status

After entering "1 Alarm Status", you can check the Alarm Count status in this submenu:

> Alarm Status
> Alarm count 0

3.2.2 Input Setting

After entering "Input Setting", it will display these submenus:

> ►2.1 Tuner 1 Setting   2.2 Tuner 2 Setting
> 2.3 Tuner 3 Setting   2.4 Tuner 4 Setting

> ►2.5 Tuner 5 Setting   2.6 Tuner 6 Setting
> 2.7 Tuner 7 Setting   2.8 Tuner 8 Setting

Under this interface, you can use UP or DOWN key to choose channel, and press ENTER to go to the relevant submenu for setting parameters.

3.2.2.1 Tuner 1 Setting

This section will take Tuner 1 to illustrate the configuration of parameters.

Pressing ENTER button, enter into the submenu as shown below:

> ►1.1 Frequency

> ►1.1 Frequency
> 057.000 MHz

From here you can press Enter once after the submenu 1.1 Frequency is loaded, this will produce an image similar to the box below indicating the frequency in MHz. Simply use the UP DOWN LEFT RIGHT buttons to change the variables and press Enter to save your changes. Always follow up by pressing lock to permanently save those changes.

3.2.2.1 Tuner 2-8 Settings

Absolutely the same setting sequence is repeated just as shown in Tuner Setting 1.1

3.2.3 Output Setting

Return to the main menu and press ENTER to enter into submenu 3, the LCD will display below menus.

```
►3.1SPTS Config          3.2 SPTS IP Addr
  3.3 SPTS Gateway        3.4 SPTS Enable
```

```
►3.5 SPTS Para Prg
```

3.2.3.1 Tuner 1 Setting

Any one of the settings in 3.1-3.4, after you press enter will go into each individual submenu and show you the correlated information whether it's the IP address, Gateway or simply turn it on or off.

In setting 3.5 This menu allows you to dictate the SPTS Para Program

```
►Parse Program           Mux Program Select
  Delete all Programs
```

These settings will allow you to Parse, Mux your SPTS, or Delete the Program all together.

3.2.4Network setting

Users can set the management port and service port by entering the system network configuration menu. The sub-menu is shown as follows:

```
4.1 IP Address           4.2 Subnet Mask
4.3 Gateway              4.4MAC Address
```

Note: The MAC address is the factory setting, and it's unique.

Under the following submenus, these are parameters which can be set manually; press "Up/Down" to choose this item. "Enter" and "Left/Right" to set the parameters. The system displays the following pages.

```
4.1 IP Address
192.168.001.136
```

```
4.2 Subnet Mask
255.255.255.000
```

> 4.3 Gateway
> 192.168.002.001

> 4.4 MAC Address
> xx-xx-xx-xx-xx-xx

3.2.5 Saving configuration

You can choose to save the current configured parameters by pressing the ENTER key. The system displays the following page:

> Saving, please wait:
> Erasing…….

After saving is finished, the menu automatically returns back to the previous screen.

3.2.6 Load configuration

The system can load two kinds of configurations. One is customer saved configurations; the other is factory default configuration.

> 6.1 Load Saved CFG   6.2 Load Default CFG

Under the corresponding menu, press ENTER to choose the configuration needed to load.

> Loading, please wait:
> >>>>>>>>>>>>>>>>

After loading is finished, the menu automatically returns back.

3.2.7 Version

The hardware and software version can be displayed in this menu. It is shown as follows:

> Thor Broadcast
> SW   1.01   HW   1.6

Chapter 4 NMS Setting

4.1 Setup the NMS

The default IP of this device is 192.168.0.136. We can modify the IP through the front panel.

Connect the pc and the device with net cable, and use ping command to confirm they are on the same network segment.

E.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 0 to 255 except 252 to avoid IP conflict).
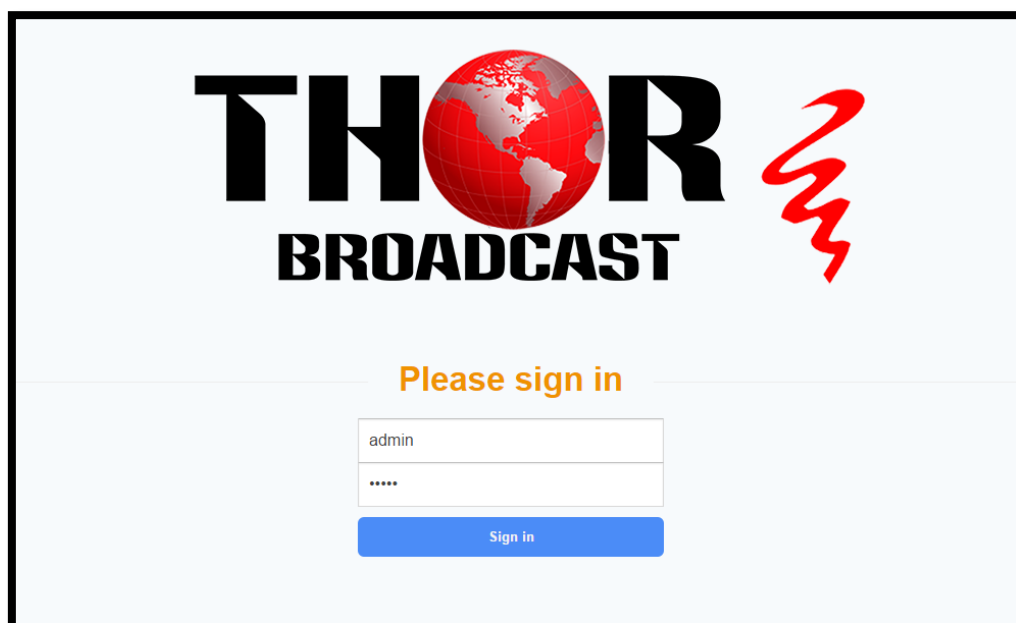
Use any web browser to connect the device with the PC by inputting the Encoder & Modulator's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "admin".) and then click "LOGIN"tostart the device setting.

4.2 NMS Operation

4.2.1 Login Interface

Once you set the units address and enter that IP into your browser this Login window appears

4.2.2 Status Page

Should you leave your new Thor Broadcast Gateway running with no inputs your status page shows as follows: you can see the address in the unit in the top left hand corner and all inputs are blank

As soon as you input an ATSC source into the unit, the NMS web gui will adjust automatically

Here you can see that input one has a Green dot TS Lock and it's bitrate is 18Mbps

Then click INPUT – highlighted in RED above you'll be directed to the inputs page

4.2.3 Inputs Page

This page will give you a rundown of all the inputs 1 through 8
The Modify button will adjust the Freq shown to the left of the button; all are set at 57000KHz

4.2.4 Mux

This is the informative Mux page which allows you to change, parse, and mux your program information:

Click on the arrow next to your input channel to view the correlating drop down and pid information

If your selection is satisfactory then proceed to click the ADD box off to the right

Now you'll see on the right side of the screen under OUTPUT Program a little green arrow correlating to your first channel appears; click on the arrow to view the drop down information.

Here you can see the system automatically created Program 257 TV-101
Click on the EDIT box off to the right to manually change your channel information

A pop up box will appear: Make your changes and press SET at the bottom

Edit

General

Program Number	257	Program Name	TV-101
PMT PID	100	PCR PID	103

Program Info

13818-2 Video	101	AC3 Audio	102

Close   Set

⊿ ⇒ CH 1 1   Del
⊿ 📁 2 ABC   Del   Edit
📄 Program Number:2
📄 Program Name:ABC
📄 PMT PID:256 (0x100)
📄 PCR PID:259 (0x103)
⊿ 📁 Element PIDs
📄 13818-2 Video PID:257 (0x101)
📄 AC3 Audio PID:258 (0x102)

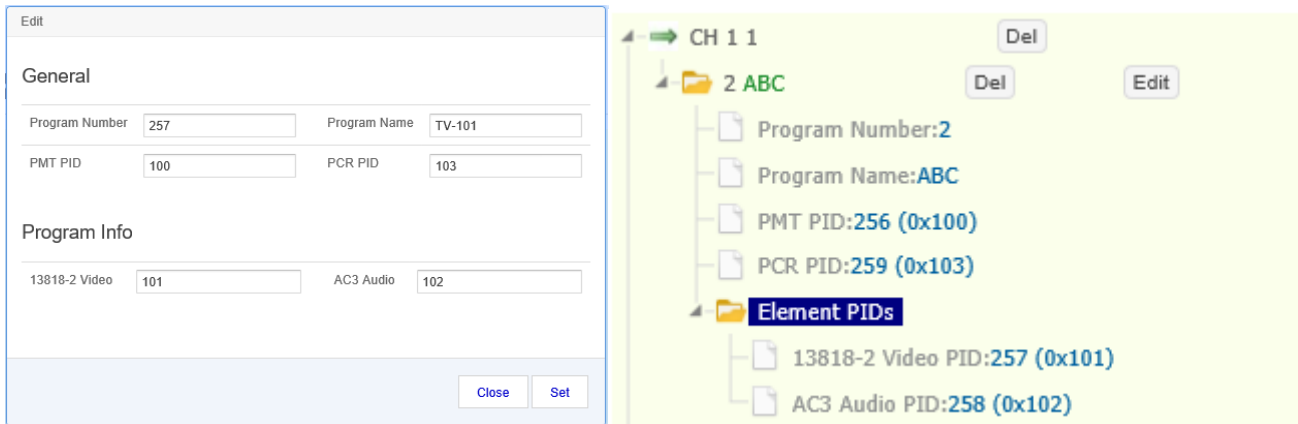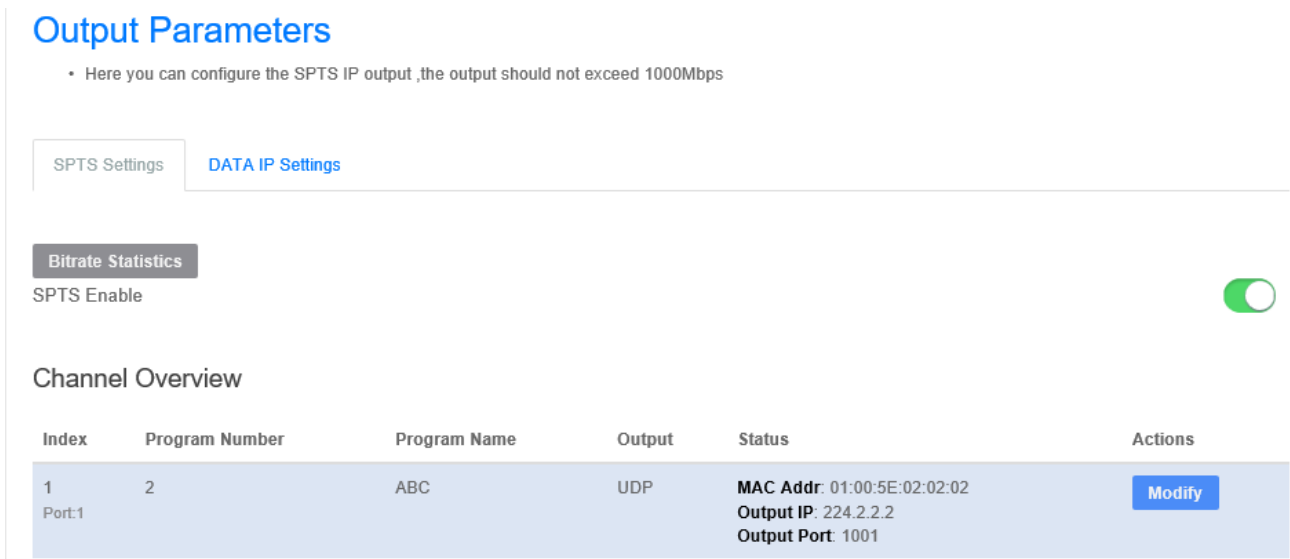You can now see that we've changed the program to ABC and Number 2
Continue on with inputs 2-8 in the same manner to fill your awesome new IP Gateway to capacity

4.2.5 SPTS

This will display all of the IP output parameters of your Thor Broadcast H-8ATSC-IP

Output Parameters

• Here you can configure the SPTS IP output ,the output should not exceed 1000Mbps

SPTS Settings   DATA IP Settings

Bitrate Statistics
SPTS Enable

Channel Overview

Index	Program Number	Program Name	Output	Status	Actions
1 Port:1	2	ABC	UDP	**MAC Addr**: 01:00:5E:02:02:02 **Output IP**: 224.2.2.2 **Output Port**: 1001	Modify

This menu shows all the configured output SPTS channels that you have configured.

Click the **MODIFY** button off to the right to pull up the individual channel

Channel **1**

IP Output	OFF ⌄
Dest IP Addr	224.2.2.2
Dest Port	1001
Output Bitrate	0.000 Mbps

Apply

You can set these options yourself for your specific application

Channel **1**

IP Output	OFF
	UDP
Dest IP Addr	RTP/RTSP
Dest Port	1001
Output Bitrate	0.000 Mbps

Apply

IP OUTPUT: displays options for the particular IP output you wish to distribute.

4.2.5 System

Under the System tab at the top menu has a drop down for CONFIG, NETWORK, PASSWORD
Under Config drop down the following table will be displayed:

These options correlate to saving and restoring your configuration; backing up your saves; and
uploading previous saves if you will be switching between head-end applications.

Under the Network drop down you will see this table

These settings can be automatically populated or you can issue the device a new range of settings for your particular setup and IP distribution network.

The GET and APPLY buttons on the bottom right hand corner will assist in reaching out for the information or to save your newly input configuration.

The Final drop down menu under System is the PASSWORD

Password

Note
Modify and Change User Name and Password

Current Username	admin
Current Password	
New Username	
New Password	
Confirm New Password	

Apply

This simple easy to use menu will let you manually change your USERNAME and PASSWORD

Make sure you always press APPLY and save your system settings whenever making changes on your unit, by saving the configuration through the SYSTEM drop down you're ensuring that if your unit ever suffers a malfunction or loses power; all of your settings will be saved and the unit will automatically restart to the last previously used settings configuration.

Chapter 5 - Troubleshooting

THOR's ISO9001 quality assurance system has been approved by the CQC organization. We guarantee the products' quality, reliability and stability. All THOR products haven passed all testing and manual inspections before they are shipped out. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by THOR. To prevent a potential hazard, please strictly follow the operation conditions.

Prevention Measures

- Installing the device in a place where the environmental temperature is between 0 to 45 °C
- Making sure the unit has plenty of ventilation for the heat-sink on the rear panel; and other heat-sink bores if necessary
- Checking the AC input within the power supply and ensure it is working, the connection is correctly installed before switching on device
- Checking the RF output levels to stay within a tolerable range, if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must be greater than 10 seconds.

Conditions needed to unplug power cord

- Power cord or socket damage.
- Any liquid that got into the device.
- Any stuff that could cause a circuit short
- Device in damp environment
- Device has suffered from physical damage; i.e. it fell off a rack.
- Longtime idle.
- After switching on and restoring to factory setting, device still won't work properly.
- Maintenance needed on device

Chapter 6 -Packing List

H-8ATSC-IP   1PC

User's ManualCD   1PC

Power Cord   1PC

For Further Tech Support

1-800-521-Thor(8467)

support@thorfiber.com