![atop Technologies logo]

Atop Technologies, Inc.

GNSS IEEE1588v2 Grandmaster Clock
GNSS NTP Server

NTS7500

Hardware Installation Guide

Version 1.0
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Package Check List

Inside the package you will find the following items:

■ GNSS Grandmaster clock or NTP Server x1
■ Rack Mount Kit x 2
■ 12-pin Terminal block only in the modules box
■ Protective caps for all SFP ports
■ Installation Guide with Warranty Card x 1

⚠ Never install or work on electrical or cabling during periods of lightning activity. Never connect or disconnect power when hazardous gases are present.

⚠ Warning:Hot Surface Do Not Touch.

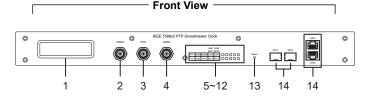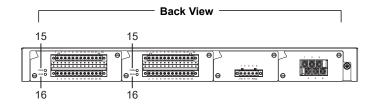⚠ Caution: CLASS 1 LASER PRODUCT. Do not stare into the laser!

🏠 This equipment should be installed indoor and not connect directly with equipment installed outdoor.

🗑 Throw the device must follow RoHS procedure to recycle

Product Layout

Front View

1   2   3   4   5~12   13   14   14

Back View

15   15

16   16

1. Liquid Crystal Display Module
2. 10MHz BNC connector
3. PPS BNC connector
4. GNSS BNC connector
5. PWR 1 LED
6. PWR 2 LED
7. RUN LED
8. ALM LED
9. GNSS LED
10. 1PPS LED
11. LAN 1/SFP 1 (Combo) link LED
12. LAN 2/SFP 2 (Combo) link LED
13. Reset Bottom
14. LAN / SFP Combo Port
15. Serial Board PWR LED
16. Serial Board RUN LED

Installation Overview

The device's appearance is as in the figure below.

1. For Serial modules, these two modules need to place on the left side of back view, for AC/DC module, these two modules need to place on the right side of back view. Per user's demand to place the module into the device, try to insert the slot to the main device and use the screwdriver to tighten the screw for each module.

(Fig.1)

2. Ground the device properly. You can use the FG pin in the terminal block. It is required to connect to the grounds at all times to ensure overall maximum performance.

3. If you opt to place the device on a rack, you will need to secure the rack mounts kit on to the device before placing it on the rack. If you opt to place the device on a surface, you can put on the foot rubbers to prevent the device from sliding.

4. You can then choose whether to plug in the I/O ports at this point or do it later. Next you can then proceed to connect the device to the LAN (switch or PC), take care on using the RJ-45 connector; after this we can then proceed to the device's settings.

5. The GNSS antenna is fundamental in this device, currently, we've used cable type RG58 and antenna type GL-111 for this deivce. In addition, now we support GPS, GLONASS, Galieo and Beidou, for each GNSS frequency band needs to match different antennas. Ours use active antenna, if user want to use a passive one, you need to add a DC blocker to avoid component burnout.

6. This switch's factory IP by default LAN1 is 10.0.50.1 / LAN2 is 192.168.1.1 . you can access the device by its Web UI once it is connected to a physical network (or using Management Utility, for more information on Management Utility, please refer to its manual). Please be aware that the PC needed for this procedure needs to be in the same subnet, or you may refer yourself to the device User's Manual.
Factory default information (username: admin / password: default)

7. PPS output ： Vp-p 3.3V / 10MHz reference output: Vp-p 1.5V

LED Indicators

LED		Color	State	Description
CPU board	PWR1/ PWR2	Green	ON	PWR is connected
			OFF	PWR is disconnected
	GNSS	Green	ON	GNSS is connected
			OFF	GNSS is disconnected
	PPS	Green	Blinking	Transmit PPS signals
			OFF	No PPS transmit
	RUN	Green	Blinking	System is booted up and running
			OFF	System is still booting up or powered off
	ALM	Red	ON	One of dual power fail or TBD
			OFF	Dual power function running
	ACT	Green	Blinking	Data transmit
			OFF	No data transmit
	LINK	Green	ON	Lan or SFP ports is connected
			OFF	Lan or SFP ports is disconnected
IO Module	PWR	Green	ON	IO Module PWR Connector is connected
			OFF	IO Module PWR Connector is disconnected
	RUN	Green	ON	Data transmit
			OFF	No data transmit

Environmental Limits

■ Operation Temperature : -40°C ~ +85°C (LCM display: 0°C ~70°C)
■ Storage Temperature: -40°C ~ +85°C (LCM display: -30°C ~80°C)
■ Ambient Relative Humidity: 5 to 95%, 55°C (non-condensing)
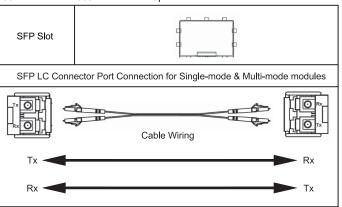■ Housing Protection : SPCC IP30 Metal Housing

Field Maintenance and Service

If the device requires servicing of any kind, you may need to disconnect and remove it from its mounting. The initial installation should be done in a way that makes this as convenient as possible.

■ Voltage/Power lines should be properly insulated as well as other cables. Be careful when handing the so as to not trip over
■ Do not under any circumstance insert foreign objects of any kind into the heat dissipation holes located in the different faces of the device. This may not only harm the internal layout but might cause harm to you as well.
■ Do not under any circumstance open the device for any reason. Please contact your dealer for any repair needed or follow the instructions on section of your User's Manual.
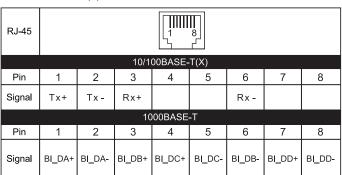
Pin Assignments and Connections

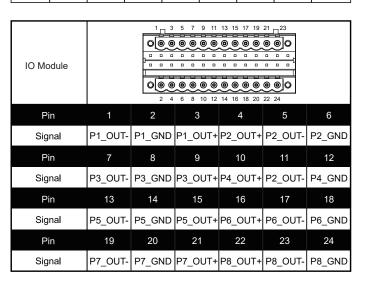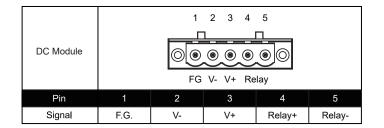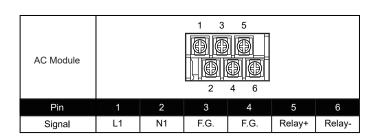**100Base-FX and 1000Base-X Fiber Optics SFP Slot**

SFP Slot

SFP LC Connector Port Connection for Single-mode & Multi-mode modules

Cable Wiring

Tx ⟷ Rx

Rx ⟷ Tx

Caution
The SFP slot should be used in conjunction with a MSA compliant optical transceiver.

10/100/1000BASE-T(X) Ethernet

RJ-45

10/100BASE-T(X)							
Pin	1	2	3	4	5	6	7	8
Signal	Tx+	Tx -	Rx+			Rx -		

1000BASE-T							
Pin	1	2	3	4	5	6	7	8
Signal	BI_DA+	BI_DA-	BI_DB+	BI_DC+	BI_DC-	BI_DB-	BI_DD+	BI_DD-

IO Module

Pin	1	2	3	4	5	6
Signal	P1_OUT-	P1_GND	P1_OUT+	P2_OUT+	P2_OUT-	P2_GND
Pin	7	8	9	10	11	12
Signal	P3_OUT-	P3_GND	P3_OUT+	P4_OUT+	P2_OUT-	P4_GND
Pin	13	14	15	16	17	18
Signal	P5_OUT-	P5_GND	P5_OUT+	P6_OUT+	P6_OUT-	P6_GND
Pin	19	20	21	22	23	24
Signal	P7_OUT-	P7_GND	P7_OUT+	P8_OUT+	P8_OUT-	P8_GND

DC Module

Pin	1	2	3	4	5
Signal	F.G.	V-	V+	Relay+	Relay-

FG V- V+ Relay

AC Module

Pin	1	2	3	4	5	6
Signal	L1	N1	F.G.	F.G.	Relay+	Relay-

Power Requirements

■ Power input : 24-60 VDC , 0.8A Max , 20W Max
(For NTS7x00-DC power module)

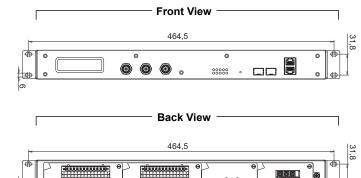120-240 VDC , 0.2A Max , 20W Max
(For NTS7x00-AC power module)

110-240 VAC , 0.2A Max , 20W Max
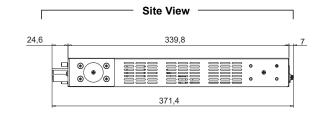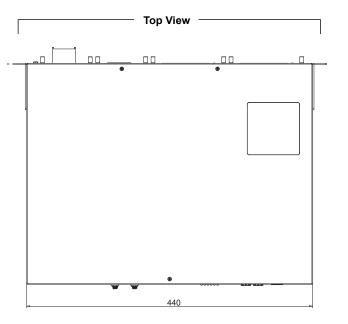(For NTS7x00-AC power module)

⚠ Attention

1. It is recommend to use at least a 20 AWG cable for the AC power input.
   It is suggested the cable to be resistant to at least 85°C temperature on the power connector.
2. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may not be impaired.
3. Clean the device with dry or humid (water) soft cloth.
4. Before powering on the device, the Functional Ground (Grounding Screw) shall be connected to the ground.
5. If 2 modules are installed we have the redundancy. If only one, there's no redundancy.

Mechanical Dimensions (Unit=mm)

Front View

464,5

31.8

Back View

464,5

31.8

Site View

24,6   339,8   7

371,4

Top View

440

※ The wall mount kit illustrated in this document is for reference only and is not included in the package.

Warranty Policy

Warranty Conditions

Products supplied by Atop Technologies are covered in this warranty for sub-standard performance or defective workmanship. The warranty is not, however, extended to goods damaged in the following circumstances:
(a) Excessive forces or impacts
(b) War or an Act of God: wind storm, fire, flood, electric shock, earthquake
(c) Use of unqualified power supply, connectors, or unauthorized parts/kits
(d) Replacement with unauthorized parts

RMA and Shipping Costs Reimbursement

Customers shall always obtain an authorized "RMA" number from Atop before shipping the goods to be repaired to Atop. When in normal use, a sold product shall be replaced with a new one within 3 months after purchase. The shipping cost from the customer to Atop will be reimbursed by Atop.

After 3 months and still within the warranty period, it is up to Atop whether to replace the unit with a new one; normally, as long as a product is under warranty, all parts and labor are free of charge to the customers.

After the warranty period, the customer shall cover the cost for parts and labor.Three months after purchase, the shipping cost from the customer to Atop will not be reimbursed, but the shipping cost from Atop to the customer will be paid by Atop.

Limited Liability

Atop shall not be held responsible for any consequential losses from using Atop's product.

Warranty Period

Product Categories	Warranty	Product Categories	Warranty
Ethernet Switches	5 Years	DIN-Rail Power Supplies	3 Years
Wireless			
Serial Device Servers		Power Adaptors	1 Year
Modbus Gateways			
Media Converters		Antennas	
Embedded Device Servers		Other Accessories	

The warranty certification will not be effective until an authorized stamp issued by Atop's overseas agents.

Purchase Date: /   /   (yyyy/mm/dd)

Serial Number

Atop Customer Services and Supports

1. Please contact your local dealers or Atop Technical Support Center at the following numbers.
   + 886-3-550-8137 (Atop Taiwan)
   + 86-21-6495-6232 (Atop China)
2. Please report the defected problems via Atop's Web site or E-mail account
   Web Site：www.atop.com.tw, e-mail：service@atop.com.tw
   Web Site：www.atop.com.cn, e-mail：service@atop.com.cn
3. Company Addr: 2F, No. 146, Sec. 1, Tung-Hsing Rd., Jubei, Hsinchu 30261, Taiwan, R.O.C.
   Manufacturer Addr: 1st FL 30 R&D RD II,SCIENCE-BASED INDUSTRIAL PARK,HSINCHU 300 TAIWAN, R.O.C

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