



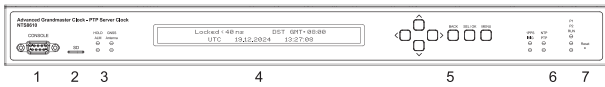
## Package Check List

- Item1: NTS8610 Series Grandmaster x1
- Item 2: Mounting Brackets x 2
- Item 3: Countersunk Flat Head Screws x 8
- Item 4: SFP Dusty Cover x 2 and RJ45 Dusty Cover x 4
- Item 5: Installation Guide with Warranty Card x 1
- Item 6: TB3 3.81 mm pitch x 1 (Applied for NTS8610-S2 or NTS8610M-S2)
- Item 7: DC Power Module x1 and TB3 5.08 mm pitch connector x1 (Applies when NTS8610-DC Power Module is purchased)  
AC Power Module x1 and TB3 6.35 mm pitch connector x1 (applies when NTS8610-AC Power Module is purchased)

- Do not install or service cabling during lightning. Do not connect/disconnect power in hazardous gas environments.
- Warning: Hot Surface Do Not Touch.
- Caution: CLASS 1 LASER PRODUCT. Do not stare into the laser!
- This equipment is intended for indoor installation only and must not be directly connected to outdoor equipment.
- Throw the device must follow RoHS procedure to recycle

## Product Layout

### Front view – All NTS8610 models



- 1 Console Port (DB9)

2 MicroSD Slot

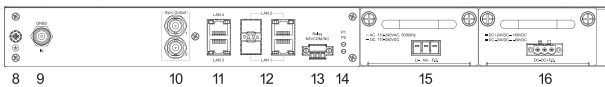
3 LED Indicator Group 1
  - HOLD: Holdover Status
  - ALM: System Warning Alert
  - GNSS: Satellites Status
  - Antenna: Antenna Status

4 LCD Display

5 LCD Control Buttons
- 6 LED Indicator Group 2
  - 1PPS: Pulse-Per-Second Status
  - IRIG: IRIG-B Timecode Input/Output Status
  - NTP: Network Time Protocol Status
  - PTP: Precision Time Protocol Status
  - P1: Power Supply 1 Status
  - P2: Power Supply 2 Status
  - Run: System Working Status

7 Reset & Default Button

### Back view - NTS8610 & NTS8610M



- 8 Protected Earth (M4 Screw)

9 GNSS/GPS Antenna Input (TNC)

10 Synchronized Time Output 1, 2

11 10/100 Ethernet Port x 2 (LAN 3 & 4)

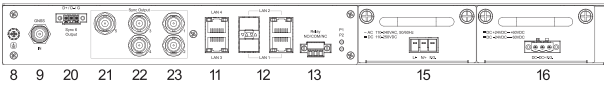
12 100/1000 LAN / SFP Combo Port x 2 (LAN 1 & 2)
- 13 Relay Output (TB3)

14 LED Indicator Group 3
  - P1: Power Supply 1 Status
  - P2: Power Supply 2 Status

15 AC Power Module

16 DC Power Module

### Back view - NTS8610-S2 & NTS8610M-S2

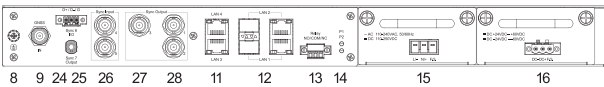


- 20 Synchronized Time Output 6

21 Synchronized Time Output 5
- 22 Synchronized Time Output 3, 4

23 Synchronized Time Output 1, 2

### Back view - NTS8610-S3 & NTS8610M-S3



- 24 Synchronized Time In / Output 6

25 Synchronized Time Output 7

26 Synchronized Time Input 4, 5
- 27 Synchronized Time Output 3

28 Synchronized Time Output 1, 2

## Hardware Installation and Initial Setup

### 1. Rack Mount Installation

To install the NTS8610 in a rack, secure the mounting brackets (Item 2) to both sides using the flat head screws (Item 3), then align the device in the rack and fasten it with additional screws if required.

### 2. Grounding NTS8610

Refer to No. 8 in NTS8610 Back view for the grounding point. Use the M4 screw to connect the device to a reliable earth ground per local codes, ensuring all equipment shares a common ground. Regularly check connections for security and corrosion, and use low-resistance cables for optimal protection and reliability.

### 3. Power connection

Insert the Power Module (Item 7) into the NTS8610 rear slots (No. 17 or 18). Use the module handle to ensure it is fully seated. After installation, refer to the Pin Assignments section in the Hardware Installation Guide (HIG) to connect the power supply.

### 4. Ventilation

The side openings are for heat dissipation. Keep them clear and do not block or cover them.

### 5. Network Connection

Remove the item 4 dust covers (two SFP and four RJ45), then connect the required cables to the combo or RJ45 ports according to your network setup. Ensure secure connections and use only ATOP verified SFP transceivers and CAT5e/CAT6 cables for reliable performance.

### 6. Web Access & Commission

The factory default IP addresses for LAN1–LAN4 are 10.0.50.1, 192.168.1.1, 192.168.2.1, and 192.168.3.1. You can access the device via Web UI by connecting your PC to the same subnet or use ATOP Management Utility to scan and modify the LAN interface (see subsection 4.3.4 of the User Manual for details and default login credentials). After logging in, change the default password and follow Chapter 4 *Quick Start Guide* to commission the NTS8610.

## LED Indicators

| LED     | Color | State    | Description                                                                                                                             |
|---------|-------|----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| P1      | Green | ON       | PWR 1 connected - Active                                                                                                                |
|         |       | Blinking | PWR 1 connected - Standby                                                                                                               |
|         |       | OFF      | PWR 1 not connected                                                                                                                     |
| P2      | Green | ON       | PWR 2 connected - Active                                                                                                                |
|         |       | Blinking | PWR 2 connected - Standby                                                                                                               |
|         |       | OFF      | PWR 2 not connected                                                                                                                     |
| RUN     | Green | ON       | The System is halted                                                                                                                    |
|         |       | Blinking | The System is running and ready                                                                                                         |
|         |       | OFF      | The system is still booting up and not yet ready                                                                                        |
| NTP     | Green | ON       | NTP server capability is enabled but there is no detected NTP activity                                                                  |
|         |       | Blinking | One or more NTP server ports is configured for multicast mode or has responded to a client within the last five minutes in unicast mode |
|         |       | OFF      | NTP server isn't enabled or binding Interface link-down                                                                                 |
| PTP     | Green | ON       | PTP server capability is enabled but there is no detected PTP activity                                                                  |
|         |       | Blinking | One or more PTP server ports is configured for multicast mode or has responded to a client within the last five minutes in unicast mode |
|         |       | OFF      | PTP server isn't enabled or binding Interface link-down                                                                                 |
| 1PPS    | Green | Blinking | PPS is transmitting                                                                                                                     |
|         |       | OFF      | PPS is disabled                                                                                                                         |
| IRIG    | Green | Blinking | IRIG-B is transmitting                                                                                                                  |
|         |       | OFF      | IRIG-B is disabled                                                                                                                      |
| GNSS    | Green | ON       | The GNSS is connected, and satellite lock has been established                                                                          |
|         |       | Blinking | The GNSS signal is present but has not met the user-defined lock conditions. (See GNSS Settings in the user manual)                     |
|         |       | OFF      | The antenna is disconnected, or the NTS8610 is operating in FreeRun mode                                                                |
| Antenna | Green | ON       | Antenna is connected with normal status                                                                                                 |
|         |       | Blinking | Short failure detected for the antenna, or the antenna was installed but is now open                                                    |
|         |       | OFF      | Antenna isn't connected                                                                                                                 |
| HOLD    | Green | ON       | Clock for Holdover mode is ready                                                                                                        |
|         |       | Blinking | System enters Holdover mode                                                                                                             |
|         |       | OFF      | Clock for Holdover mode isn't ready                                                                                                     |
| ALM     | Red   | ON       | When an alarm occurs, the LED will stay on or blink as per the settings (See Alarm Settings in the user manual)                         |
|         |       | Blinking | No alarms have occurred among the configured alarms                                                                                     |
|         |       | OFF      |                                                                                                                                         |

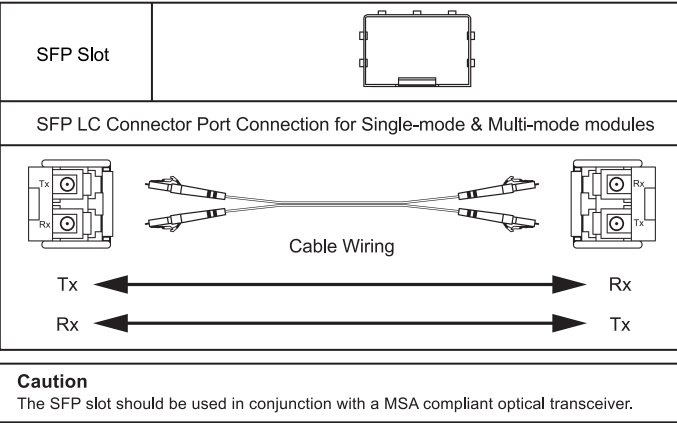
| LED                  | Color  | State    | Description                                                                    |
|----------------------|--------|----------|--------------------------------------------------------------------------------|
| LAN1 & LAN2 Activity | Green  | Blinking | Data transmission                                                              |
|                      |        | OFF      | No data transmission                                                           |
| LAN1 & LAN 2 Link    | Yellow | ON       | Lan or SFP port is connected at 1000/100 Mbps                                  |
|                      |        | OFF      | Lan or SFP port is disconnected                                                |
| LAN3 & LAN4 Activity | Green  | Blinking | Data transmission                                                              |
|                      |        | ON       | No data transmission                                                           |
| LAN3 & LAN4 LAN Link | Yellow | ON       | LAN3 or LAN4 port is connected at 100 Mbps                                     |
|                      |        | OFF      | LAN3 or LAN4 port is disconnected or LAN3 or LAN4 port is connected at 10 Mbps |

## Operating Environmental

- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
- Storage Temperature -40°C to +85°C (-40°F to 185°F)
- Operating Altitude: 5100m
- Ambient Relative Humidity: 5% to 95% (non-condensing)

## Pin Assignments and Connections

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



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

### GNSS/GPS ANT Input

|                    |                                              |
|--------------------|----------------------------------------------|
| GNSS/GPS ANT Input |                                              |
| TYPE               | TNC(F), GNSS Active Antenna Input            |
| Power Requirement  | 3.3VDC, +/-5%, 50mA Max, Gain Value < 40 dB. |

### Synchronized Time Interface

| NTS8610, NTS8610M, NTS8610-S2 and NT8610M-S2 |                  |        |                            |                   |                   |                     |
|----------------------------------------------|------------------|--------|----------------------------|-------------------|-------------------|---------------------|
| Channel                                      | Sync1            | Sync2  | Sync3                      | Sync4             | Sync5             | Sync6               |
| Direction                                    | Output           |        |                            |                   |                   |                     |
| TYPE                                         | BNC(F)           | BNC(F) | BNC(F)                     | BNC(F)            | BNC(F)            | Terminal Block(TB3) |
| Mode                                         | TTL 5V           | TTL 5V | AM 5Vpp<br>TTL 5V          | AM 5Vpp<br>TTL 5V | AM 5Vpp<br>TTL 5V | RS-485<br>+/-5V     |
| Function                                     | IRIG-B DCLS/1PPS |        | IRIG-B DCLS/IRIG-B AM/1PPS |                   |                   | IRIG-B DCLS         |

| NTS8610-S3 and NT8610M-S3 |                                                 |                    |                   |                 |                    |
|---------------------------|-------------------------------------------------|--------------------|-------------------|-----------------|--------------------|
| Channel                   | Sync1~ Sync3                                    | Sync4              | Sync5             | Sync6           | Sync7              |
| Direction                 | Same as the table above, NTS8610 Sync1 ~ Sync 3 | Input              |                   | In/Output       | Output             |
| TYPE                      |                                                 | BNC(F)             | BNC(F)            | TB3             | ST Type Connector  |
| Mode                      |                                                 | TTL 5V             | AM 8Vpp<br>TTL 5V | RS-485<br>+/-5V | Fiber<br>820 nm    |
| Function                  |                                                 | 1PPS & IRIG-B DCLS | IRIG-B AM         | IRIG-B DCLS     | 1PPS & IRIG-B DCLS |

|                                    |                                                                                                         |     |      |
|------------------------------------|---------------------------------------------------------------------------------------------------------|-----|------|
| AC Power Connector<br>(NTS8610-AC) | <div><div><div>123</div><div><div></div><div></div><div></div></div></div><div>L/- N/+ F.G.</div></div> |     |      |
|                                    | 1                                                                                                       | 2   | 3    |
| Signal                             | L/-                                                                                                     | N/+ | F.G. |

|                                    |                                                                                                         |     |      |
|------------------------------------|---------------------------------------------------------------------------------------------------------|-----|------|
| DC Power Connector<br>(NTS8610-DC) | <div><div><div>123</div><div><div></div><div></div><div></div></div></div><div>DC- DC+ F.G.</div></div> |     |      |
|                                    | 1                                                                                                       | 2   | 3    |
| Signal                             | DC-                                                                                                     | DC+ | F.G. |

|                |                                                                                          |    |    |   |     |
|----------------|------------------------------------------------------------------------------------------|----|----|---|-----|
| CONSOLE DB9(F) | <div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> |    |    |   |     |
| Pin            | 1                                                                                        | 2  | 3  | 4 | 5   |
| Signal         | X                                                                                        | TX | RX | X | GND |
| Pin            | 6                                                                                        | 7  | 8  | 9 |     |
| Signal         | X                                                                                        | X  | X  | X |     |

|                 |                                                                                                                      |     |    |
|-----------------|----------------------------------------------------------------------------------------------------------------------|-----|----|
| Relay Connector | <div><div><div>Relay</div><div>NO/COM/NC</div></div><div><div></div><div></div><div></div></div><div>123</div></div> |     |    |
|                 | 1                                                                                                                    | 2   | 3  |
| Signal          | NO                                                                                                                   | COM | NC |
| Rated Voltage   | Rated Operating Voltage: 24–250 VDC                                                                                  |     |    |

## Power Input Range

- AC Module  
Input Voltage: 85 ~ 264VAC, 50/60Hz  
88-300VDC  
Rated Voltage: 110 ~ 240VAC, 50/60Hz  
110-250VDC
  - DC Module  
Input Voltage: +20VDC ~ +66VDC or -20VDC ~ -66VDC  
Rated Voltage: +24VDC ~ +60VDC or -24VDC ~ -60VDC
- Power Consumption: Approx. 20W @ 264VAC (max)

## Attention

- Do not open the equipment. For safety reasons, the unit must only be opened by qualified service personnel.
- This equipment is intended for installation in a Restricted Access Area only.
- The DC power supply source must be UL-certified and compliant with the following specifications:
  - Rated voltage:  $\pm 24\text{--}\pm 60$  VDC, minimum 0.6 A, Tma 75 °C minimum, or
  - Rated voltage: 110–250 VDC, minimum 0.15 A, provided by the manufacturer.
- Power cable requirements:
  - Wire type: copper

- Clamping torque: 4.5 lb-in (0.6 Nm)
  - Cable: jacketed copper wire, minimum 20 AWG, between the equipment and the power source
- This equipment is not intended for installation or use in homes, schools, or other public areas accessible to the general population.
- Knurled thumb screws with slotted heads must be tightened with a tool after both the initial installation and any subsequent adjustments.
- Earth terminal Use a green-and-yellow copper conductor, minimum size 20 AWG, to connect the earth terminal to ground.
  - CAUTION:  
Double pole, neutral fusing. Disconnect mains before serving. This equipment is intended for indoor installation by qualified personnel only and must not be directly connected to equipment installed outdoors.

### Field Wiring – Power Connection:

This equipment must be installed and removed by trained and qualified personnel in a restricted-access location, as defined by the NEC and IEC 62368-1, the Standard for Safety of Audio/Video, Information, and Communication Technology Equipment.

### Safety statement

- CAUTION:



To reduce the risk of electric shock or energy hazards:

It is the customer's responsibility to supply the necessary jacked power cable.

- Use a circuit breaker that is rated at 20 amps.
  - Use 0.75 mm<sup>2</sup> (18 AWG) single copper wire, or 1.5 mm<sup>2</sup> (14 AWG) Multi-core copper at 90° C.
  - Stripping the wire, leave the bare lead approximately 10mm for terminals connection.
  - Torque the wiring-terminal screws to 4.5 Lb-In (0.6 Nm) for DC.
- If the power source requires ring terminals, you must use a crimping tool to install the ring terminals to the power cord wires. The ring terminals must be UL approved and must accommodate the wire that is described in above.
  - Power installation must be performed with qualified electrician and followed with National Electrical Code, “ANSI/NFPA 70 and Canadian Electrical Code, Part I, CSA C22.1.”
  - This equipment is designed to permit the connection of the earthed conductor of the power supply circuit to the earthed conductor at the equipment.

This equipment is designed to permit the connection of the earthed conductor of the power supply circuit to the earthed conductor at the equipment.

If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the power supply system earthed electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the power supply system earthed electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as, adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same dc supply circuit and the earthed conductor, and also the point of earthed of the power system. The power system shall not be earthed elsewhere.
- The power supply source shall be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the dc source and the point of connection of the earthed electrode conductor.

### Connecting Power to NTS8610 series:

- Turn OFF all power sources and equipment to be connected to this product.
- Attach the signal cables to the product.
- Attach the power cords to the product:
  - For DC systems: Ensure correct polarity for  $\pm 24\text{--}\pm 60$  VDC (0.6 A minimum) or 110–250 VDC (0.15 A minimum). Connect the earth ground using a two-hole lug for safety.
  - For AC systems: Ensure correct polarity for 100–240 VAC connections. Connect the earth ground using a two-hole lug for safety.
- Attach the signal cables to the other devices.
- Connect the power cords to their sources.
- Turn ON all power sources.

### Disconnecting Power from NTS8610 series:

- Turn OFF all power sources and connected equipment.
- For DC systems, disconnect the power at the breaker panel or by switching off the DC source. Then carefully remove the power cables.
- Remove all signal cables from the connectors.
- Disconnect any remaining cables from the device.

### Caution, Shock hazard

Disconnecting all power sources



Electrical current from power, telephone, and communication cables can be hazardous.

To reduce the risk of electric shock:

- Do not connect or disconnect any cables, or perform installation, maintenance, or reconfiguration during an electrical storm.
- Ensure that all attached equipment is connected only to properly wired power sources.
- Whenever possible, use one hand only when connecting or disconnecting signal cables.
- Never power on the equipment if there are signs of fire, water damage, or structural damage.
- Disconnect all power sources, network connections, telecommunications systems, and serial cables before opening the device covers, unless specifically instructed otherwise in the installation and configuration procedures.
- Always connect and disconnect cables as described in the provided table when installing, moving, or servicing this product or attached devices.

### WARNING – Protective Earthing

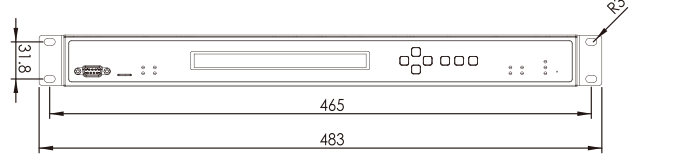
The protective earthing terminal is green and secured with washers and screws. The screw engagement shall be at least twice the pitch of the screw thread and not less than 4.0 mm in diameter. Star washers or spring washers may be used to ensure a secure connection.

### WARNING – Disconnecting Earth

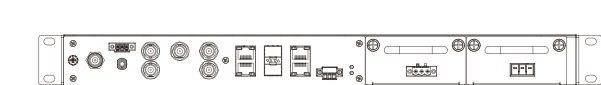
After powering off the equipment and disconnecting it from all power sources, disconnect the equipment frame from earth ground.

## Mechanical Dimensions

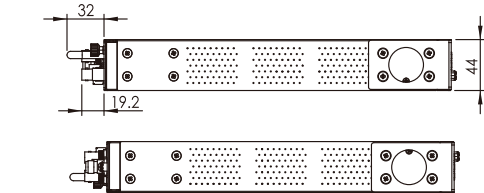
### Front View



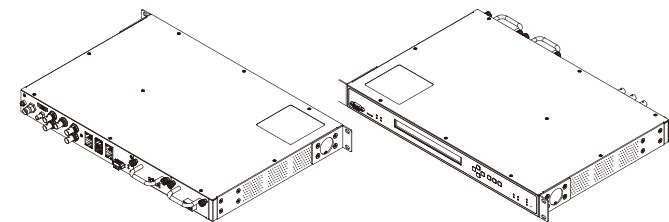
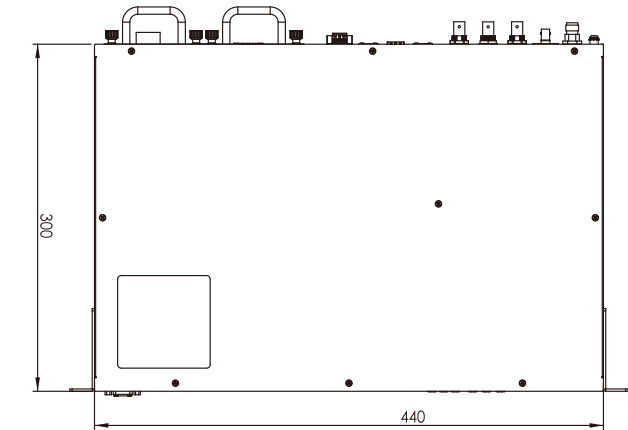
### Back View



### Side View



### Top View



## 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:

- Excessive forces or impacts
- War or an Act of God: wind storm, fire, flood, electric shock, earthquake
- Use of unqualified power supply, connectors, or unauthorized parts/kits
- 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 /GM       | 5 Years  | DIN-Rail Power Supplies | 3 Years  |
| Wireless                    |          | Antennas                |          |
| Serial Device Servers       |          | Power Adaptors          | 1 Year   |
| Modbus Gateways             |          | Other Accessories       |          |
| Media Converters            |          |                         |          |
| Embedded Device Servers     |          |                         |          |
| Grandmaster/ NTP Timeserver |          |                         |          |

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 Support

- Contact your local dealers or ATOP Technical Support Center at the following number: +886-3-550-8137
- Report any problems via ATOP's website or email
  - www.atoponline.com
  - service@atop.com.tw

