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# Delta InfraSuite Power Management

Static Transfer Switch

User Manual

[www.deltapowersolutions.com](http://www.deltapowersolutions.com)



**DELTA**  
Smarter. Greener. Together.

## Save This Manual

This manual contains important instructions and warnings that you should follow during the installation, operation, storage and maintenance of this product. Failure to heed these instructions and warnings will void the warranty.

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# Chapter 1 : Important Safety Instructions

## 1.1 Important Safety Notes

- Only qualified personnel can service this equipment.
- Follow the following precautions when working on this unit.
  1. Remove watches, rings, or other metal objects.
  2. Use tools with insulated handles.
  3. Examine the packing container. Notify the carrier immediately if any damage is present.
  4. Do not disassemble the unit.
  5. Do not operate the unit near water or in an area with excessive humidity.
  6. Keep liquid and foreign objects from getting inside the unit.
  7. Do not operate the unit close to gas or fire.
- Upstream circuit breaker must be added for each input. The recommended breaker is D curve 16A.
- Verify whether the branch circuit breaker or fuse on service feed is correct.
- Verify line voltage requirements and the supplied line voltage prior to installation.

## 1.2 Electrical Warnings

- When servicing this equipment, you will need to remove its protective covers and disconnect the input power. Please observe great caution during these procedures. Only qualified personnel can service this equipment.
- Check that power cords, plugs, and outlets are in good condition.

## 1.3 Standard Compliance

- **Safety**

UL (US) (UL 60950) CE (EU) (IEC 60950)

- **EMI**

CISPR 22 Class A and FCC Class A

- **EMS**

IEC 61000-4-2

IEC 61000-4-3

IEC 61000-4-4

IEC 61000-4-5

IEC 61000-4-6

IEC 61000-4-8

IEC 61000-4-11

- **IPv6 Certification**

IPv6 Ready Logo Phase 2 (Core for Host, Logo ID 02-C-000624)

## Chapter 2 : Product Introduction

### 2.1 Product Description

The STS is designed to guarantee the uninterrupted operation of sensitive equipment. It is powered by two independent power sources and automatically makes a rapid switch from one source to the other when the original power supplying to its connected load fails.

The user can know the power flow and the STS's status from the user-friendly front panel, and can read and write parameters via the built-in **NETWORK** port and **LOCAL** port located at the rear of the unit. The STS is designed to be efficient and reliable.

### 2.2 Features

- **Self-test function**

  - Power-on self-test

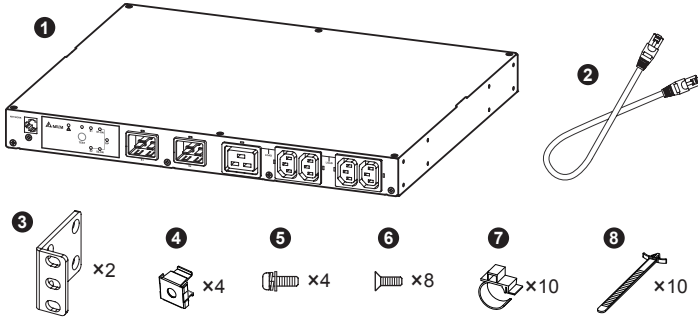
  - Manual self-test

- **Withstands high inrush current**

  - SCR design withstands high inrush current during transferring process.

# Chapter 3 : Package and Storage

## 3.1 Package Contents



STS package contains the following items.

No.	Item	Quantity
①	STS module	1 PC
②	Extension Ethernet cable	1 PC
③	Bracket Ear	2 PCS
④	Rack nut	4 PCS
⑤	Rack screw	4 PCS
⑥	Bracket screw	8 PCS
⑦	Wire Mount	10 PCS
⑧	Cable Tie	10 PCS

## 3.2 Storage

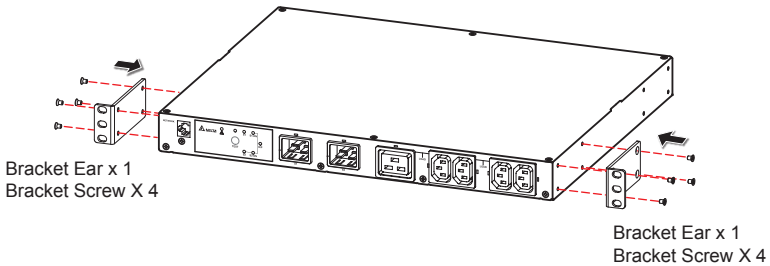
Please store the STS in its original package and in a dry place. Keep the storage temperature between -15°C~ +50°C.



## Chapter 4 : Installation

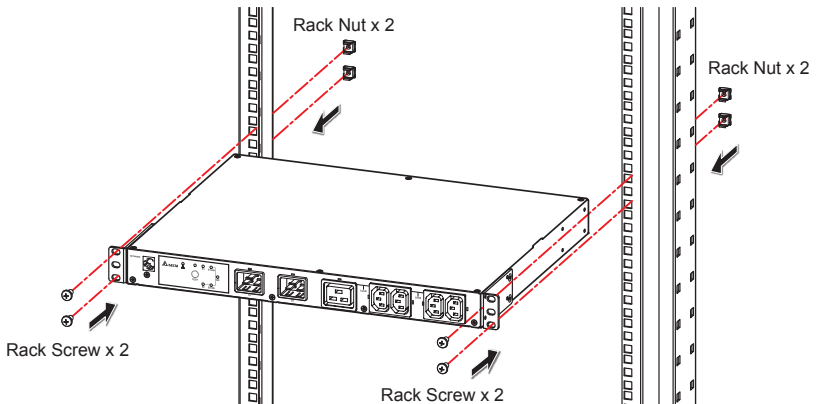
### • Front Installation

- 1 Use the eight bracket screws (provided) to attach the two bracket ears (provided) to the lateral mounting holes located in the front of the STS. Please see **Figure 4-1**.



(Figure 4-1)

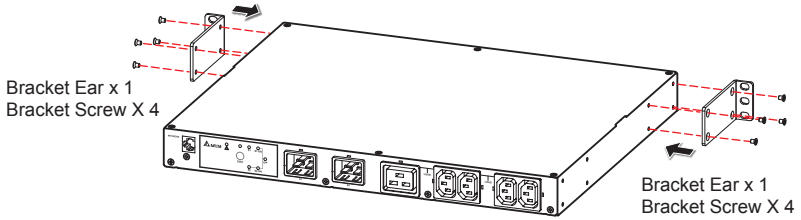
- 2 Use the four rack screws (provided) and four rack nuts (provided) to fix the STS on your rack. Please see **Figure 4-2**.



(Figure 4-2)

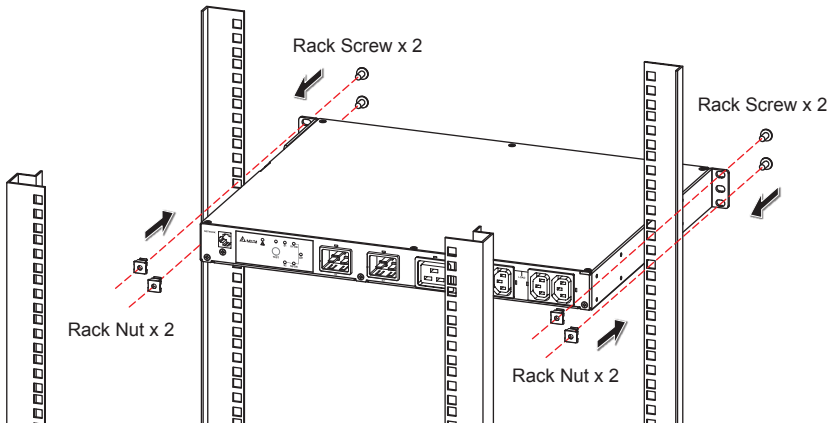
- **Rear Installation**

- 1 Use the eight bracket screws (provided) to attach the two bracket ears (provided) to the lateral mounting holes located at the rear of the STS. Please see **Figure 4-3**.



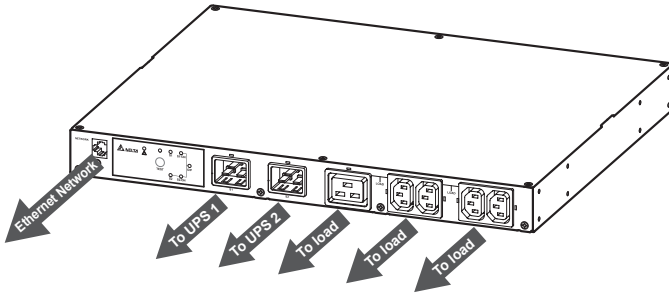
(Figure 4-3)

- 2 Use the four rack screws (provided) and four rack nuts (provided) to fix the STS on your rack. Please see **Figure 4-4**.



(Figure 4-4)

## Chapter 5 : Wiring



(Figure 5-1: Front view)

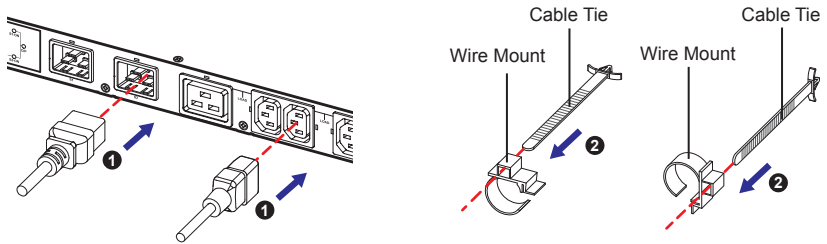
- 1 Use input power cables (not provided) to connect the STS and two UPSs (UPS1 (S1) is the preferred source).
- 2 Use output power cables (not provided) to connect the STS and loads.



**NOTE :**

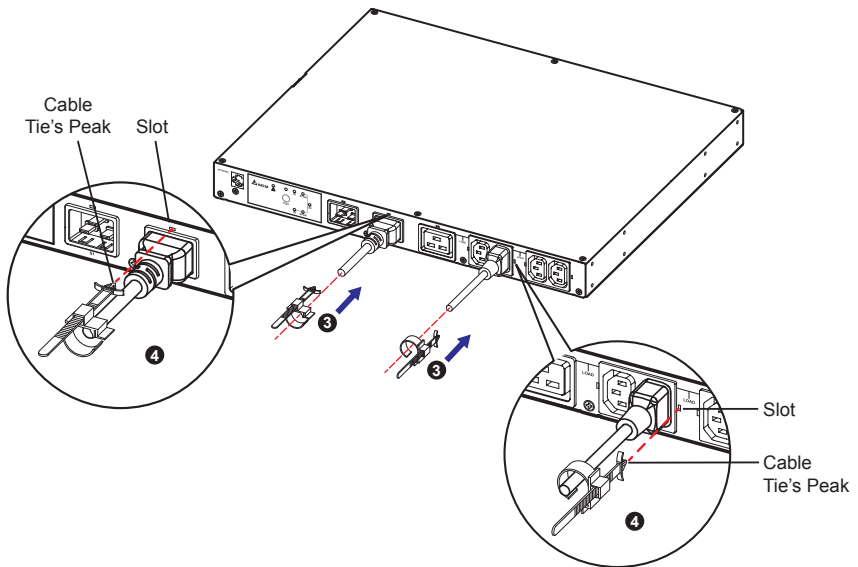
To avoid the loose input/ output power cables, please use the provided wire mounts and cables ties to fix the input/ output power cables to the outlets/ sockets firmly. Please refer to the following procedures and figures.

- A. Firmly insert the power cables into the outlets/ sockets (1) and insert the cable ties into the wire mounts (2), Please refer to **Figure 5-2**.



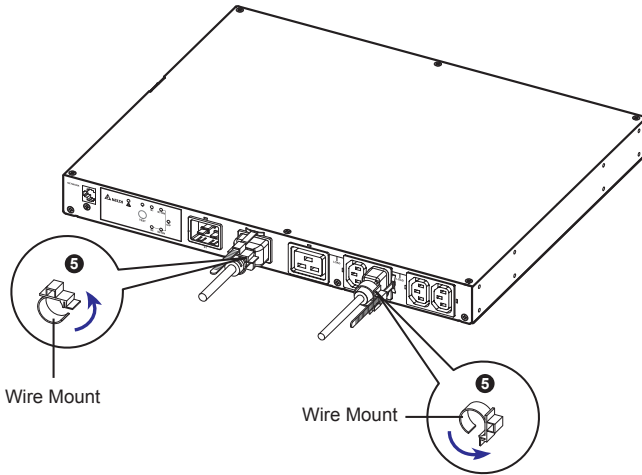
(Figure 5-2)

- B. Firmly insert the wire mounts into the power cables (3) and insert each cable tie's peak into the according slot (4). Please refer to **Figure 5-3**.



(Figure 5-3)

C. Clip each wire mount firmly (5). Please refer to **Figure 5-4**.

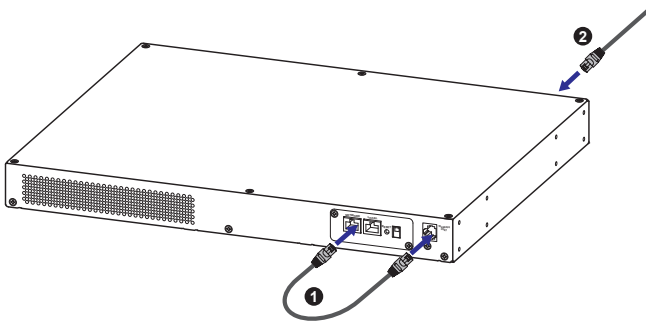


(Figure 5-4)

3 Connect to the Ethernet Network. There are two methods.

1. Method 1 (Front Application):

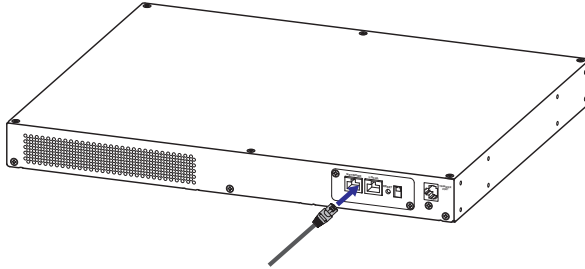
Use the provided extension Ethernet cable to connect the rear panel's **NETWORK** port and the rear panel's **TRANSFER PORT**; please see **Figure 5-5 1**. Use a user-supplied Ethernet cable to connect to the front panel's **NETWORK** port; please see **Figure 5-5 2**.



(Figure 5-5: Rear View)

2. Method 2 (Rear Application):

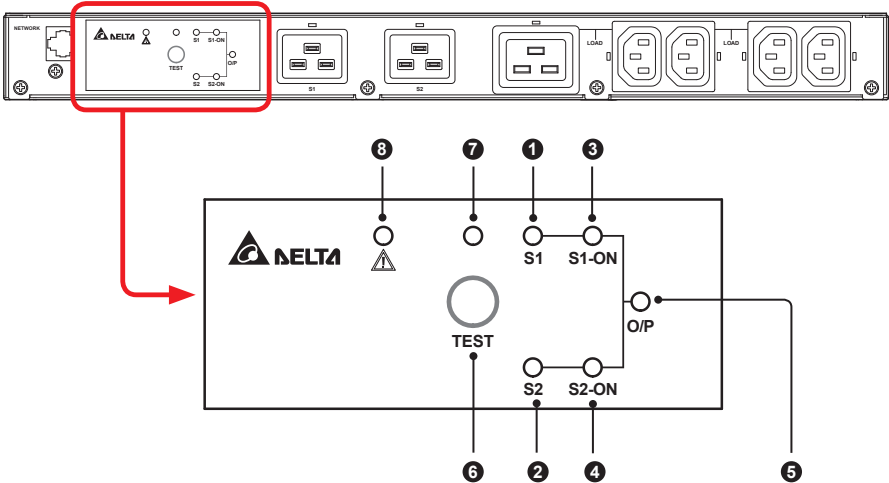
Use a user-supplied Ethernet cable to connect to the rear panel's **NETWORK** port; please see *Figure 5-6*.



*(Figure 5-6: Rear view)*

## Chapter 6 : Operation

### 6.1 Front Panel



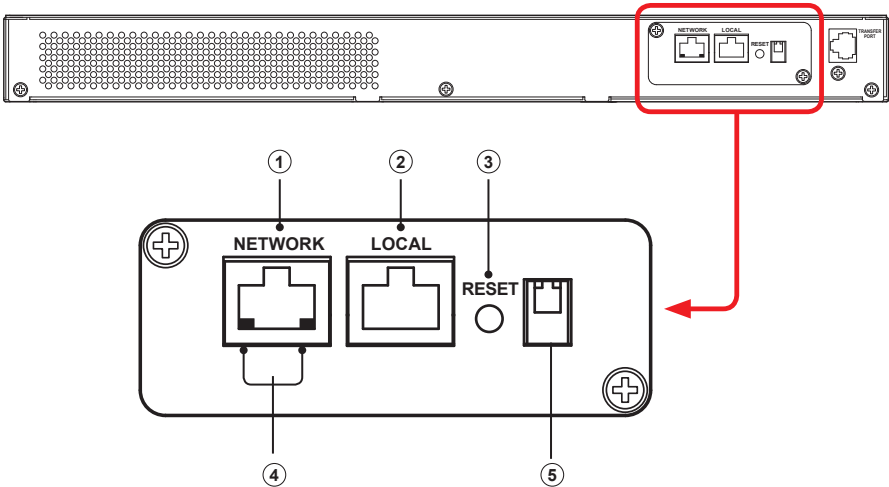
No.	Item	Description
①	S1 LED	Green. The LED indicates the condition of input source 1. If the input source 1 is within the acceptable range, the LED will light up as green. If the input source 1 is out of the acceptable range, the LED will be off.
②	S2 LED	Green. The LED indicates the condition of input source 2. If the input source 2 is within the acceptable range, the LED will light up as green. If the input source 2 is out of the acceptable range, the LED will be off.
③	S1_ON LED	Green. If the STS uses input source 1 to supply power to the output, the LED will light up as green. If not, the LED will be off.
④	S2_ON LED	Green. If the STS uses input source 2 to supply power to the output, the LED will light up as green. If not, the LED will be off.


No.	Item	Description																												
5	O/P LED	Green. The LED indicates the output condition (voltage is > 60Vac). If there is output, the LED will light up as green. If not, the LED will be off.																												
6	Test Button	Use this button to test the STS. Press the button, the STS will transfer to the 2 <sup>nd</sup> source for 1 minute and then transfer back to the original preferred source.																												
7	Test LED	Green. If you press the test button, the STS will be on test and the Test LED will flash (on: 0.5s; off: 0.5s). In normal operation, the LED will be off.																												
8	Fault LED	<p>Red. If the STS has any internal fault, the LED will light up as red. If the STS has any environmental fault, the LED will flash (on: 0.5s; off: 0.5s). Via the rear panel's <b>NETWORK</b> port, fault messages will be sent to a connected PC. From the PC, you can see error codes as follows</p> <table border="1" data-bbox="303 722 986 1401"> <thead> <tr> <th colspan="2" data-bbox="303 722 986 767">Internal Fault</th> </tr> <tr> <th data-bbox="303 767 471 812">Error Code</th> <th data-bbox="471 767 986 812">Meaning</th> </tr> </thead> <tbody> <tr> <td data-bbox="303 812 471 887">E11</td> <td data-bbox="471 812 986 887">Over temperature (due to detection of S1 heat-sink temperature)</td> </tr> <tr> <td data-bbox="303 887 471 962">E12</td> <td data-bbox="471 887 986 962">Over temperature (due to detection of S2 heat-sink temperature)</td> </tr> <tr> <td data-bbox="303 962 471 1007">E13</td> <td data-bbox="471 962 986 1007">Auxiliary power 1 circuit failure</td> </tr> <tr> <td data-bbox="303 1007 471 1051">E14</td> <td data-bbox="471 1007 986 1051">Auxiliary power 2 circuit failure</td> </tr> <tr> <td data-bbox="303 1051 471 1096">E21</td> <td data-bbox="471 1051 986 1096">Input relay of S1 is open</td> </tr> <tr> <td data-bbox="303 1096 471 1141">E22</td> <td data-bbox="471 1096 986 1141">Input relay of S1 is short</td> </tr> <tr> <td data-bbox="303 1141 471 1185">E23</td> <td data-bbox="471 1141 986 1185">Input relay of S2 is open</td> </tr> <tr> <td data-bbox="303 1185 471 1230">E24</td> <td data-bbox="471 1185 986 1230">Input relay of S2 is short</td> </tr> <tr> <td data-bbox="303 1230 471 1275">E25</td> <td data-bbox="471 1230 986 1275">Input SCR of S1 is open</td> </tr> <tr> <td data-bbox="303 1275 471 1319">E26</td> <td data-bbox="471 1275 986 1319">Input SCR of S1 is short</td> </tr> <tr> <td data-bbox="303 1319 471 1364">E27</td> <td data-bbox="471 1319 986 1364">Input SCR of S2 is open</td> </tr> <tr> <td data-bbox="303 1364 471 1409">E28</td> <td data-bbox="471 1364 986 1409">Input SCR of S2 is short</td> </tr> </tbody> </table>	Internal Fault		Error Code	Meaning	E11	Over temperature (due to detection of S1 heat-sink temperature)	E12	Over temperature (due to detection of S2 heat-sink temperature)	E13	Auxiliary power 1 circuit failure	E14	Auxiliary power 2 circuit failure	E21	Input relay of S1 is open	E22	Input relay of S1 is short	E23	Input relay of S2 is open	E24	Input relay of S2 is short	E25	Input SCR of S1 is open	E26	Input SCR of S1 is short	E27	Input SCR of S2 is open	E28	Input SCR of S2 is short
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No.	Item	Description	
8	Fault LED	<b>Environmental Fault</b>	
		<b>Error Code</b>	<b>Meaning</b>
		E01	Output overload
		E02	Over temperature (due to detection of ambient temperature)
		E03	Output temperature warning (due to detection of S1 heat-sink temperature)
E04	Over temperature warning (due to detection of S2 heat-sink temperature)		

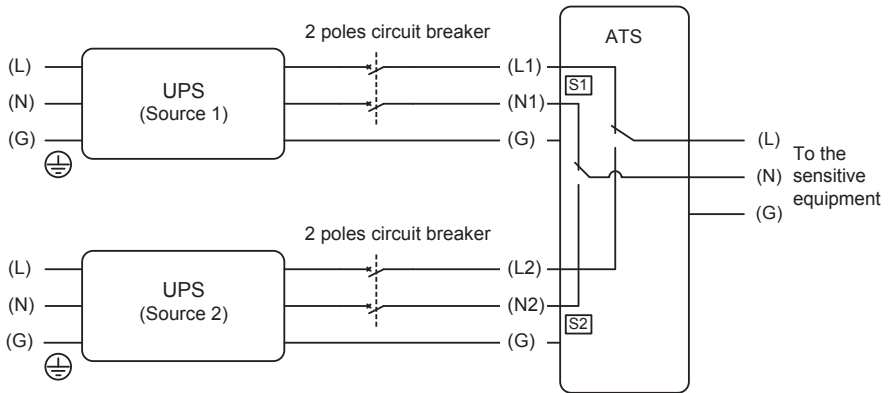
## 6.2 Rear Panel



No.	Item	Description																										
①	NETWORK Port	Connects to the Ethernet Network.																										
②	LOCAL Port	Connects to a workstation with an RJ45 to DB9 cable to configure the system.																										
③	RESET Button	Resets InsightPower SNMP IPv6 for STS (hereafter referred to as SNMP IPv6). This does not affect the operation of the STS.																										
④	LED Indicators	<p data-bbox="339 504 990 563">NET LED (green) indicates network communication status. STS LED (amber) indicates the STS's communication status.</p> <div data-bbox="553 587 762 778" style="text-align: center;">  <p data-bbox="605 587 707 608">NETWORK</p> <p data-bbox="553 756 762 777">NET LED    STS LED</p> </div> <table border="1" data-bbox="339 807 990 1305"> <thead> <tr> <th data-bbox="339 807 484 855">LED</th> <th data-bbox="484 807 617 855">Condition</th> <th colspan="2" data-bbox="617 807 990 855">Meaning</th> </tr> </thead> <tbody> <tr> <td data-bbox="339 855 484 903">NET LED</td> <td data-bbox="484 855 617 903">OFF</td> <td colspan="2" data-bbox="617 855 990 903">Ethernet is unlinked.</td> </tr> <tr> <td data-bbox="339 903 484 951">NET LED</td> <td data-bbox="484 903 617 951">Green</td> <td colspan="2" data-bbox="617 903 990 951">Ethernet is linked.</td> </tr> <tr> <td data-bbox="339 951 484 1035">STS LED</td> <td data-bbox="484 951 617 1035">OFF</td> <td colspan="2" data-bbox="617 951 990 1035">1. Initialization 2. SNMP IPv6 abnormality</td> </tr> <tr> <td data-bbox="339 1035 484 1083">STS LED</td> <td data-bbox="484 1035 617 1083">Amber</td> <td colspan="2" data-bbox="617 1035 990 1083">SNMP IPv6 abnormality</td> </tr> <tr> <td data-bbox="339 1083 484 1305" rowspan="2">STS LED</td> <td data-bbox="484 1083 617 1305" rowspan="2">Blinking</td> <td data-bbox="617 1083 734 1195">Every second</td> <td data-bbox="734 1083 990 1195">Poor connection between the STS and the SNMP IPv6.</td> </tr> <tr> <td data-bbox="617 1195 734 1305">Every 50 ms</td> <td data-bbox="734 1195 990 1305">Normal connection between the STS and the SNMP IPv6.</td> </tr> </tbody> </table>	LED	Condition	Meaning		NET LED	OFF	Ethernet is unlinked.		NET LED	Green	Ethernet is linked.		STS LED	OFF	1. Initialization 2. SNMP IPv6 abnormality		STS LED	Amber	SNMP IPv6 abnormality		STS LED	Blinking	Every second	Poor connection between the STS and the SNMP IPv6.	Every 50 ms	Normal connection between the STS and the SNMP IPv6.
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No.	Item	Description																							
⑤	DIP Switches	Set up operation mode. Please refer to the following table.																							
		<div style="text-align: center;">  </div>																							
		<table border="1"> <thead> <tr> <th>DIP Switch 1</th> <th>DIP Switch 2</th> <th>Operation Mode</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>Normal Mode</td> <td>The built-in SNMP IPv6 provides the STS's status information and parameters through a network system.</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>Pass Through Mode</td> <td>The built-in SNMP IPv6 stops polling the STS but transfers the communication data between the <b>LOCAL</b> port and the STS.</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>N/A</td> <td>Invalid state.</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>Configura-tion Mode</td> <td>In this mode, the user can login through the <b>LOCAL</b> port and configure the built-in SNMP IPv6's settings.</td> </tr> </tbody> </table>	DIP Switch 1	DIP Switch 2	Operation Mode	Description	OFF	OFF	Normal Mode	The built-in SNMP IPv6 provides the STS's status information and parameters through a network system.	OFF	ON	Pass Through Mode	The built-in SNMP IPv6 stops polling the STS but transfers the communication data between the <b>LOCAL</b> port and the STS.	ON	OFF	N/A	Invalid state.	ON	ON	Configura-tion Mode	In this mode, the user can login through the <b>LOCAL</b> port and configure the built-in SNMP IPv6's settings.			
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### 6.3 Operation



After power connection, the STS will automatically perform power-on self-test. After the test, the STS will start supplying power to its connected equipment. You can also press the 'Test Button' to force the STS to execute self-test.

## Chapter 7 : InsightPower SNMP IPv6 for STS

### 7.1 Introduction of InsightPower SNMP IPv6 for STS

The InsightPower SNMP IPv6 for STS, hereafter referred to as SNMP IPv6, is built in the STS and is a device that provides an interface between the STS and a network. It communicates with the STS, acquires its information and remotely manages the STS via a network system. The SNMP IPv6 supports public protocols including SNMP and HTTP. You can effortlessly configure this SNMP IPv6 using a network system and easily obtain your STS's status and manage your STS via the SNMP IPv6.

### 7.2 SNMP IPv6 Features

- **Network STS management**

Allows remote management of the STS from any workstation through Internet or Intranet.

- **Remote STS monitoring via SNMP & HTTP**

Allows remote monitoring of the STS using SNMP NMS, Delta MIB (Management Information Base) or a Web Browser.

- **STS and system configuration from any client (password protected)**

Sets the STS and system parameters through a Web Browser.

- **Event logs & metering data keeping**

Provides a history data of the STS's power events, power quality and status.

- **Other features and supported protocols include:**

- User notification via SNMP Traps and e-mail
- Network Time Protocol
- Telnet configuration
- BOOTP/ DHCP
- HTTPS, SSH, SFTP and SNMPv3 security protocols

- RADIUS (Remote Authentication Dial In User Service) login and local authentication
- Remote event log management through syslog
- IPv6 Ready Logo certified (ID 02-C-000624)

**DEFAULT SETTING**

User Name: *admin*

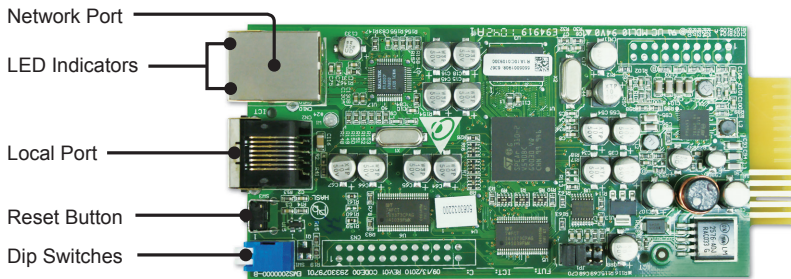
Password: *password*

DHCP Client: Enable

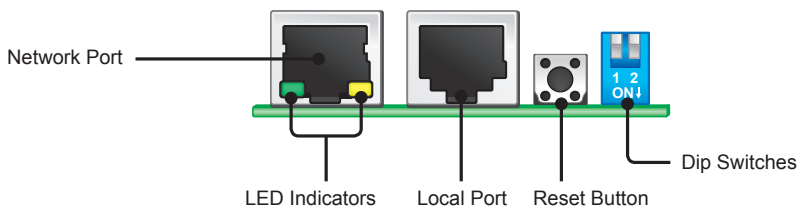
IPv4 Address: *192.168.1.100*

### 7.3 Top View and Front View of SNMP IPv6

- **Top View**



- **Front View**



## 7.4 Console Management

You can manage the SNMP IPv6 through the **LOCAL** port. Please use an RJ45 to DB9 cable to connect the SNMP IPv6's **LOCAL** port and your workstation's COM port. Make sure both of the DIP switches are set to the **OFF** position (normal mode). The baud-rate of the workstation's COM setting should be **2400** bps.

- **Web Card Main Menu**

```
+=====+
|   Web Card Main Menu   |
+=====+

Web Card Version 01.12.11f
MAC Address 00-30-ab-26-b1-b4
[1].User Manager
[2].TCP/IP Setting
[3].Network Parameter
[4].Time Server
[5].Soft Restart
[6].Reset All To Default
[d].Device Communication
[z].Exit Without Save
[0].Save And Exit

Please Enter Your Choice =>
```

- **User Manager**

```
+=====+
|   User Manager         |
+=====+

RADIUS
[1].RADIUS Auth: Disable
[2].Server:
[3].Secret:
[4].Port:      1812
-----
Local Auth
  Administrator
[5].Account:   admin
[6].Password:  *****
[7].Limitation: Only in This LAN
  Device Manager
[8].Account:   device
[9].Password:  *****
[a].Limitation: Only in This LAN
  Read Only User
[b].Account:   user
[c].Password:  *****
[d].Limitation: Allow Any
[0].Back To Previous Menu

Please Enter Your Choice =>
```

- TCP/IP Setting

```
+=====+
|   TCP/IP Setting   |
+=====+

[1].IPv4 Address:      192.168.1.100
[2].IPv4 Subnet Mask:  255.255.255.0
[3].IPv4 Gateway IP:   192.168.1.254
[4].IPv4 DNS or WINS IP:192.168.1.254
[5].DHCPv4 Client:     Enable
[6].IPv6 Address:      ::
[7].IPv6 Prefix Length: 0
[8].IPv6 Gateway IP:   fe80::226:Sbff:fecc:fdal
[9].IPv6 DNS IP:       ::
[a].DHCPv6:            Disable
[b].Host Name (NetBIOS): INSIGHTPOWER
[c].System Contact:
[d].System Location:
[e].Auto-Negotiation:  Enable
[f].Speed:              100M
[g].Duplex:             Full
[h].Status Stable:     3
[i].Telnet Idle Time:  60 Seconds
[0].Back To Previous Menu

Please Enter Your Choice =>
```

- Network Parameter

```
+=====+
|   Network Parameter   |
+=====+

[1].HTTP Server:      Enable
[2].HTTPS Server:     Enable
[3].Telnet Server:    Disable
[4].SSH/SFTP Server:  Enable
[5].FTP Server:       Enable
[6].Syslog:            Disable
[7].HTTP Server Port:  80
[8].HTTPS Server Port: 443
[9].Telnet Server Port: 23
[a].SSH Server Port:  22
[b].FTP Server Port:  21
[c].Syslog Server1:
[d].Syslog Server2:
[e].Syslog Server3:
[f].Syslog Server4:
[g].SNMP Get,Set Port: 161
[0].Back To Previous Menu

Please Enter Your Choice =>
```



- Time Server

```

+=====+
|      Time Server      |
+=====+

[1].Time Selection:      SNTP
[2].Time Zone:          +0 hr
[3].1st Time Server:
[4].2nd Time Server:
[5].Manual Date:        01/01/2000 (MM/DD/YYYY)
[6].Manual Time:        00:00:00 (hh:mm:ss)
[0].Back To Previous Menu

Please Enter Your Choice =>
    
```

- Soft Restart

```

+=====+
|  Web Card Main Menu  |
+=====+

Web Card Version 01.12.11f
MAC Address 00-30-ab-26-b1-b4
[1].User Manager
[2].TCP/IP Setting
[3].Network Parameter
[4].Time Server
[5].Soft Restart
[6].Reset All To Default
[d].Device Communication
[z].Exit Without Save
[0].Save And Exit

Please Enter Your Choice => 5

The Web Card Will Restart.
Are You Sure? [Y]es/[N]o =>
    
```

- **Device Communication**

You can enter the **STS Command Mode** below by selecting Device Communication.

```
STS> Vs1
216.8
STS> Vs2
217.9
STS> Iout
8.1
STS> Vout
217.1
STS> Vbp2s
180.0
STS> Vbs2p
180.0
STS> Tdp2s
12.0
STS> Tds2p
12.0
STS> TempF
96
STS> TempC
36
STS> Age
1075878
STS> Time
13:3:24 07/18 2011
STS> XCount
4402
STS> Prefer
S1
STS> DevID
12345678901234567890
STS> Serial

STS> Tprev1
13:35:16 07/18/2011
STS> Event1
0x0029
STS> Log
10
STS> Log 1
13:35:16 07/18/2011 0x0029
STS>

STS> SetDevID 1234567890abcdefghijklmn

STS> DevID
12345678901234567890
STS> SetDevID 1234567890abcdefghij

STS> DevID
1234567890abcdefghijkl
STS>
```

## 7.5 Upgrade

- **Upgrade via Web**

You can upgrade the SNMP IPv6's firmware or the STS's firmware through **the InsightPower SNMP IPv6 for STS Web** (please see the following figure). The SNMP IPv6 will restart after finishing self-upgrade. If you upload the STS's firmware to the Web, you can see the STS's firmware upgrade progress from the Web.

The screenshot shows the web interface for upgrading firmware. The top navigation bar includes the DELTA logo, the title "InsightPower SNMP IPv6 for STS Web", and links for Home, Logout, and English. Below the navigation bar, there are tabs for Administration, Notification, and History. The main content area is divided into two panels:

- Network Card Firmware:**
  - Current Ver.: 01.12.12d
  - Firmware File:  No file chosen
  - 
  - Description: This feature is used to update the network card firmware. Please follow the following steps to complete the process:
  - Step 1: Select the network card firmware file and press the Upload button to upload the file to the network card.
  - Step 2: Wait about 1 minute for the network card to reprogram the flash and reboot again.
- STS Firmware:**
  - Current Ver.: DELTA - FT\_2 -07
  - Release Date: 2012-03-21
  - Firmware File:  No file chosen
  - 
  - Stage: **Idle state**
  - Status: **OK**
  - Description: This feature is used to update the STS firmware. Please follow the following steps to complete the process:
  - Step 1: Select the STS firmware file and press the Upload button to upload the file to the network card.
  - Step 2: Wait for the network card to reprogram the STS flash.

- **Upgrade via FTP/ SFTP**

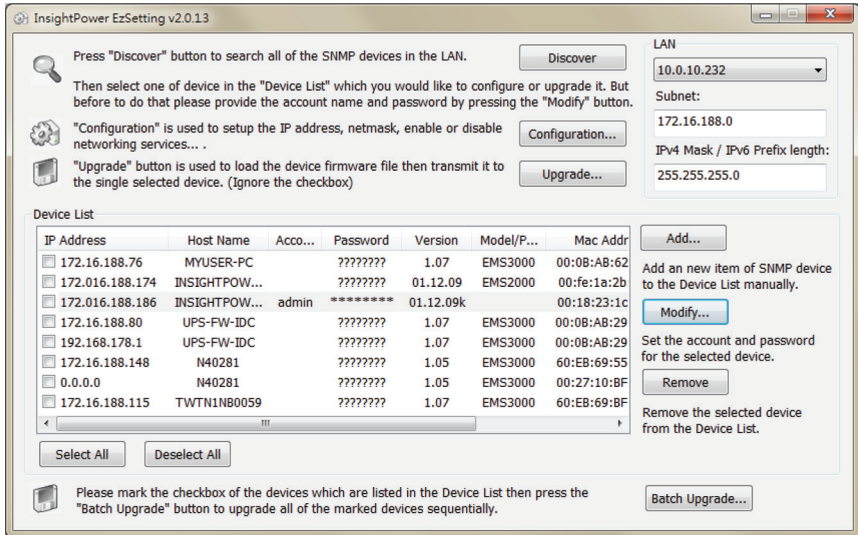
You can also upgrade the SNMP IPv6's firmware or the STS's firmware by using FTP or SFTP program. Make sure you upload correct images to **upgrade\_snmp** when upgrading SNMP IPv6's firmware, and upload correct images to **upgrade\_device** when upgrading the STS's firmware.

- ▷  config\_snmp
- ▷  config\_system
- ▷  https\_pem
- ▷  ssh\_dsa
- ▷  ssh\_pubkey
- ▷  ssh\_rsa
- ▷  upgrade\_device
- ▷  upgrade\_snmp

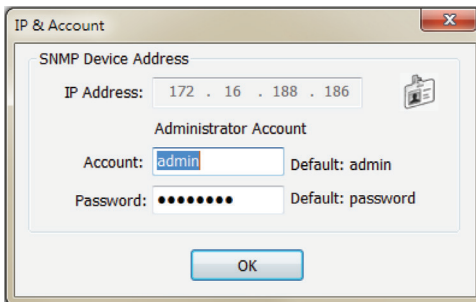
- **Upgrade via EzSetting**

You can also upgrade the SNMP IPv6's firmware or the STS's firmware by using EzSetting.

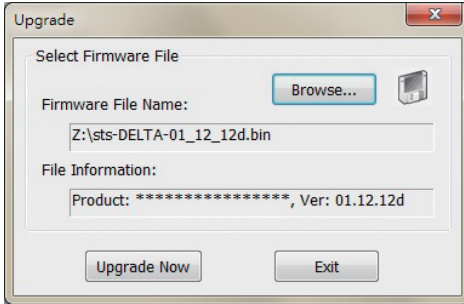
1. Click **Discover**. A list of SNMP devices is shown. Select a device from the Device List, and click **Modify**.



2. Enter Administrator account and password.



3. Click **Upgrade**. The upgrade dialog box pops up. Click **Browse** to select a valid firmware binary file. Verify the firmware version shown under File Information, and then click **Upgrade Now** to continue.



## 7.6 STS Command Settings

Command	Description	Parameter	Response
<b>Info</b>	Report summary information.	N/A	<Command>: [<response>] [<unit>]
<b>TempF</b>	Report internal STS fahrenheit temperature.	N/A	#
<b>TempC</b>	Report internal STS celsius temperature.	N/A	#
<b>Age</b>	Report internal STS age.	N/A	#
<b>Time</b>	Report present time.	N/A	hh:mm:ss MM/DD/ YYYY
<b>XCount</b>	Report number of times that STS has transferred.	N/A	#
<b>Model</b>	Report the model name.	N/A	<model name string>
<b>FWVer</b>	Report the FW version.	N/A	<version string>
<b>FWDate</b>	Report the FW release date.	N/A	YYYY-MM-DD
<b>Serial</b>	Report the unit's serial number.	N/A	<Device serial string>

<b>Command</b>	<b>Description</b>	<b>Parameter</b>	<b>Response</b>
<b>DevID</b>	Report the unit's device ID.	N/A	<Device ID string>
<b>Prefer</b>	Report the preferred source.	N/A	S1 or S2
<b>Sens</b>	Report the sensitivity.	N/A	hi or low
<b>Mode</b>	Report the operation mode.	N/A	Initialization Diagnosis Off S1 S2 Safe Fault
<b>Vout</b>	Report the output voltage.	N/A	##
<b>Iout</b>	Report the output current.	N/A	##
<b>Vs1</b>	Report the primary voltage.	N/A	##
<b>Vs2</b>	Report the secondary voltage.	N/A	##
<b>Fs1</b>	Report the primary frequency.	N/A	##
<b>Fs2</b>	Report the secondary frequency.	N/A	##
<b>Vtp2s</b>	Report the primary to secondary trip voltage.	N/A	##
<b>Vts2p</b>	Report the secondary to primary trip voltage.	N/A	##
<b>Vbp2s</b>	Report the primary to secondary brownout voltage.	N/A	##
<b>Vbs2p</b>	Report the secondary to primary brownout voltage.	N/A	##

Command	Description	Parameter	Response
<b>Tdp2s</b>	Report the recover time of transfer from primary to secondary.	N/A	##
<b>Tds2p</b>	Report the recover time of transfer from secondary to primary.	N/A	##
<b>Mvs1</b>	Report the max voltage of comparing cycles for primary AC blackout.	N/A	##
<b>Mvs2</b>	Report the max voltage of comparing cycles for secondary AC blackout.	N/A	##
<b>Mts1</b>	Report the max time of comparing cycles for primary AC blackout.	N/A	##
<b>Mts2</b>	Report the max time of comparing cycles for secondary AC blackout.	N/A	##
<b>Log</b>	Report the event code and time of prior transfer.	1 ~ 10	hh:mm:ss MM/DD/ YYYY 0x#
<b>Tprev[1..9]</b>	Report the time of prior transfer/event.  Tprev1 is the most recent time.	N/A	hh:mm:ss MM/DD/ YYYY
<b>Event[1..9]</b>	Report the event code for prior transfer.  Event1 is the most recent event.	N/A	0x#
<b>ClearLog</b>	Clear event log.	N/A	Various kinds
<b>SetTime</b>	Set the present time.	hh:mm:ss [MM/DD/ YYYY]	Various kinds
<b>SetDate</b>	Set the present date.	MM/DD/YYYY	Various kinds

<b>Command</b>	<b>Description</b>	<b>Parameter</b>	<b>Response</b>
<b>SetPrefer</b>	Set the preferred source.	1 or 2	Various kinds
<b>SetDevID</b>	Set the unit's device ID.	<20 characters> alphanumeric only	Various kinds
<b>SetVtp2s</b>	Set the primary to secondary trip voltage.	165.0 ~ 175.0	Various kinds
<b>SetVts2p</b>	Set the secondary to primary trip voltage.	165.0 ~ 175.0	Various kinds
<b>SetVbp2s</b>	Set the primary to secondary brownout voltage.	180.0 ~ 264.0	Various kinds
<b>SetVbs2p</b>	Set the secondary to primary brownout voltage.	180.0 ~ 264.0	Various kinds
<b>SetTdp2s</b>	Set the recover time of transfer from primary to secondary.	12.0 ~ 1800.0	Various kinds
<b>SetTds2p</b>	Set the recover time of transfer from secondary to primary.	12.0 ~ 1800.0	Various kinds
<b>SetMvs1</b>	Set the max voltage of comparing cycles for primary AC blackout.	30 ~ 50	Various kinds
<b>SetMvs2</b>	Set the max voltage of comparing cycles for secondary AC blackout.	30 ~ 50	Various kinds
<b>SetMts1</b>	Set the max time of comparing cycles for primary AC blackout.	2.0 ~ 4.0	Various kinds
<b>SetMts2</b>	Set the max time of comparing cycles for secondary AC blackout.	2.0 ~ 4.0	Various kinds



Command	Description	Parameter	Response
<b>UpProcess</b>	Status of upgrade progress.	N/A	Idle / Run / Error
<b>UpStep</b>	Stage of upgrade progress.	N/A	Init / File ID / Auth / Addr / Erase / Program / Read
<b>UpPercentage</b>	Percentage of upgrade progress.	N/A	#. #
<b>UpResult</b>	Result of upgrade progress.	N/A	OK / No response / File ID fail / Authentication fail / Erase fail / Flash fail / Read fail / Upgrade completion
<b>UpDate</b>	Report each FW upgrade time.	[Index] [# to show] # = 1 - 20	hh:mm:ss MM/DD/YYYY
<b>AgentVer</b>	Report SNMP card version.	N/A	AA.BB.XXX
<b>Link</b>	Check current Modbus connection.	N/A	1 - Normal / 2 - Abnormal / 3- Upgrading
<b>Bye</b>	Terminate remote connection.	N/A	Various kinds

## 7.7 Key Generation for SSH

- For Linux

- (1) Please download and install OpenSSH from <http://www.openssh.org>.
- (2) Launch shell and enter the following command to create your own keys.

Please ignore it when prompted to provide passphrase.

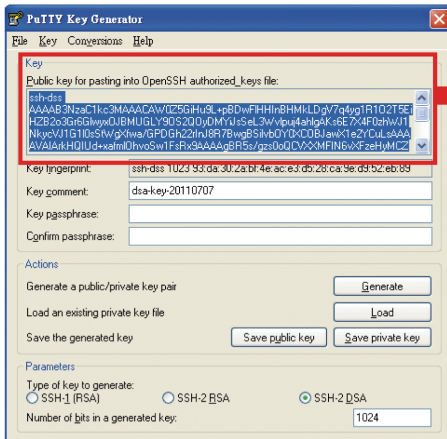
DSA Key:ssh-keygen -t dsa

RSA Key:ssh-keygen -t rsa

- (3) Upload DSA and RSA key files on the web.

- **For Windows**

- (1) Please download and install PuTTY from <http://www.putty.org>.
- (2) Run **puttygen.exe** from the installed directory.
- (3) Select **SSH-2 RSA** from the Parameters area and click **Key**→ **Generate key pair** to generate an RSA key.
- (4) Select **Conversions**→ **Export OpenSSH Key** and assign a file name to the RSA key. Please ignore it when prompted to provide key passphrase.
- (5) Select **SSH-2 DSA** from the Parameters area and select **Key**→ **Generate key pair** to generate a DSA key.
- (6) Select **Export OpenSSH Key** from **Conversions** and assign a file name to the DSA key. Please ignore it when prompted to provide key passphrase.
- (7) Upload the DSA and RSA key files to the web.



→ Please copy the context of public key here and paste it into a key file.

## Chapter 8 : Troubleshooting

Problem	Possible case	Solution
All LEDs on the front panel are off.	The power sources, S1 and S2, are both absent.	<ol style="list-style-type: none"> <li>1. Check the output (overload/ short-circuit).</li> <li>2. Check both power sources, S1 and S2.</li> <li>3. Reset the upstream circuit breakers.</li> </ol>
Input S1 or Input S2 LED is off.	The corresponding power source is absent or out of range.	<ol style="list-style-type: none"> <li>1. Check the corresponding power source.</li> <li>2. Reset the corresponding upstream circuit breaker.</li> </ol>
Fault LED flashes.	Output overload.	Reduce the connected loads.
	Over temperature.	Check the environment temperature.
Fault LED lights up.	Internal component damage.	Please contact service personnel.
Can not communicate with the STS.	Wrong setting or malfunction.	Refer to the user manual of InsightPower SNMP IPv6 for STS.

## Appendix 1 : Specifications

<b>STS 16A</b>		
<b>Nominal Voltage</b>	200/ 208/ 220/ 230/ 240V	
<b>Operating Frequency</b>	45Hz to 65HZ	
<b>Nominal Current</b>	16A	
<b>Input Connection</b>	C20 x 2	
<b>Output Connection</b>	C13 x 4 & C19 x 1	
<b>Physical Dimensions (W x D x H)</b>	440 x 385 x 43 mm	
<b>Weight</b>	4.85 Kg	
<b>Environment</b>	Operating Temperature	0 ~ 40°C
	Storage Temperature	-15 ~ 50°C
	Humidity	5% ~ 95% RH (non-condensing)
	Audible Noise	<40 dBA
	Operating Altitude	0 to 2000m (0 to 6252 ft)



**NOTE :**

1. Refer to the rating label for the safety rating.
2. All specifications are subject to change without prior notice.

## Appendix 2 : Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from improper installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages.

Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact the supplier or Seller.



### **WARNING!**

The individual user should take care to determine prior to use whether the environment and the load characteristic are suitable, adequate or safe for the installation and the usage of this product. The User Manual must be carefully followed. Seller makes no representation or warranty as to the suitability or fitness of this product for any specific application.







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