LTS Load Transfer Switch

User Manual

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Vertiv provides customers with technical support. Users may contact the nearest Vertiv local sales office or service center.

Vertiv Tech Co., Ltd.

Address: Block B2, Nanshan I Park, No.1001 Xueyuan Road, Nanshan District, Shenzhen, 518055, P.R.China

Homepage: www.Vertiv.com

E-mail: overseas.support@vertiv.com

Preface

This manual contains information concerning the installation and operation of the Vertiv LTS load transfer switch (LTS for short). Please read all relevant parts of the manual prior to commencing installation.

The LTS must be commissioned by an engineer authorized by the manufacturer (or its agent) before being put into service. Failure to observe this condition will invalidate any implied warranty.

The LTS has been designed for commercial and industrial use only, and is not for use in any life support application.

Safety Precaution

Warning

The LTS has two AC input sources. It contains hazardous voltages if any input source is on. To isolate the LTS, turn off both input sources. Verify that both input sources are off before making connections to the LTS. Lethal voltages are present within the LTS during normal operation. Only authorized engineer shall service the LTS.

Warning

HIGH EARTH LEAKAGE CURRENT: EARTH CONNECTION IS ESSENTIAL BEFORE CONNECTING THE INPUT SOURCES.
The LTS must be earthed in accordance with local electrical codes.

Warning

As with other types of high power equipment, dangerous voltages are present within the LTS. The risk of contact with these voltages is minimized as the live component parts are housed behind internal protective covers. Further safety screens make the equipment protected to IP20 standards.
No risk exists to any personnel when operating the equipment in the normal manner, following the recommended operating procedures.
All equipment maintenance and servicing procedures involve internal access and should be carried out only by trained personnel.

Warning

The LTS has been designed for commercial and industrial use only. It is not for use with life support equipment or other equipment designated “critical”. The max load on the LTS nameplate must not be exceeded in operation.

Warning

The sources to the LTS should be solidly earthed, and the LTS should be installed by qualified personnel. The installation personnel must assess the user cables, breakers and load in accordance with relevant technical standards and local electrical codes, and verify the input, output and earth connections.

Note

The LTS should be installed in a clean indoor environment at 0~40°C, free of contamination, moisture, flammable liquid/gases or corrosive substances.

Note

Switch off and de-energize the LTS before cleaning it. Use soft dry cloth for cleaning. Do not spray the cleaner directly onto the LTS.

Contents

Chapter 1 Product Description

This chapter describes the application & features, operating principle, operation mode and appearance of the LTS load transfer switch (LTS for short).

1.1 Application & Features

The LTS is a 1-pole automatic transfer device. It assumes the critical task of monitoring and transfer in the dual-bus power supply system consisting of two AC power supplies. It is applicable in high-end uninterruptible power supply fields demanding exceptional power reliability, such as computer centers, internet data centers, telecom and financial data centers, and industrial process control centers, to provide stable and quality AC power for the load equipment.

Features of the LTS include:

- Redundancy design of the system key component, auxiliary supply, ensures normal operation in the case of failure of single power supply
- Full digital signal processor (DSP) control provides increased data processing capability and system reliability
- Advanced power-off detection method provides quick diagnosis of power-off fault
- Powerful communication function enables you to use SIC card (optional) to achieve remote management

1.2 Model

The LTS is available in four models: UF-LTS10-1P, UF-LTS16-1P, UF-LTS16-1P-B and UF-LTS32-1P, in three power ratings: 10A, 16A and 32A.

1.3 Operating Principle

1.3.1 General

Figure1-1 shows the simplified schematic diagram of the LTS, where input 1 is the preferred source and input 2 is the alternate source; the input 1 side of the electronic switch is normally closed, while the input 2 side is normally open.

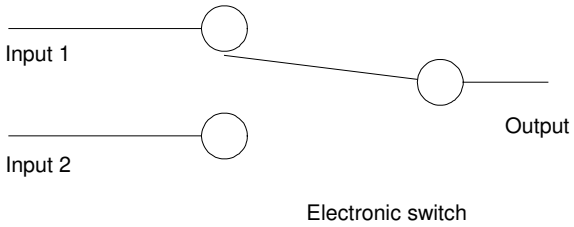

Figure 1-1 Simplified schematic diagram of LTS

The LTS provides two transfer modes: manual transfer and automatic transfer.

> 🕮 Note
>
> LTS supports unsynchronized transfer. However, to reduce the impact on load, please maintain the synchronization between input1 and input 2 under rated working conditions.

1.3.2 Manual Transfer

The LTS allows you to use the Transfer button (see Figure1-2 and Figure 1-3) on the front panel to initiate transfers between the two sources. This is called manual transfer.

Manual transfer is achieved by changing the preferred source. After pressing the Transfer button on the front panel, the original preferred source is changed to the alternate source, while the original alternate source is changed to the preferred source. At this point, if the LTS detects that the new preferred source is normal, and that the phase difference between the two sources is within the preset synchronization window, the LTS will transfer the load to the new preferred source; otherwise, the LTS will automatically delay the transfer until the transfer conditions are met.

1.3.3 Automatic Transfer

In the event that the preferred source becomes abnormal when the LTS is operating from the preferred source, while the alternate source is normal and the phase difference between the two sources is within the preset synchronization window, the LTS will automatically transfer the load to the alternate source. This is called automatic transfer.

After the LTS transfers to the alternate source, if the preferred source remains normal for a certain period, and the phase difference between the two sources is within the preset synchronization window, the LTS will retransfer the load to the preferred source. This is called automatic retransfer. However, if the phase difference between the two sources is outside the preset synchronization window, the LTS will automatically delay the retransfer until the phase difference between the two sources enters the synchronization window.

1.4 Operation Mode

The LTS can be considered to operate in Preferred Source mode and Alternate Source mode.

Preferred Source mode

The LTS routes power from the preferred source to the load through the electronic switch.

Alternate Source mode

The LTS routes power from the alternate source to the load through the electronic switch.

1.5 Appearance

1.5.1 Front Panel

As shown in Figure1-2 and Figure 1-3, the LTS provides LED indicators, functional buttons and USB interface on the front panel.

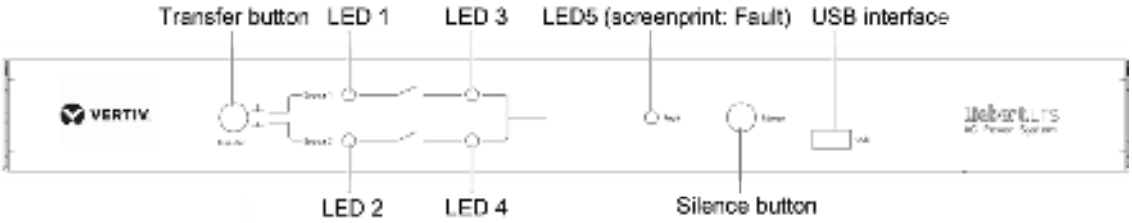

Figure 1-2 Front panel of 10A and 16A LTSs

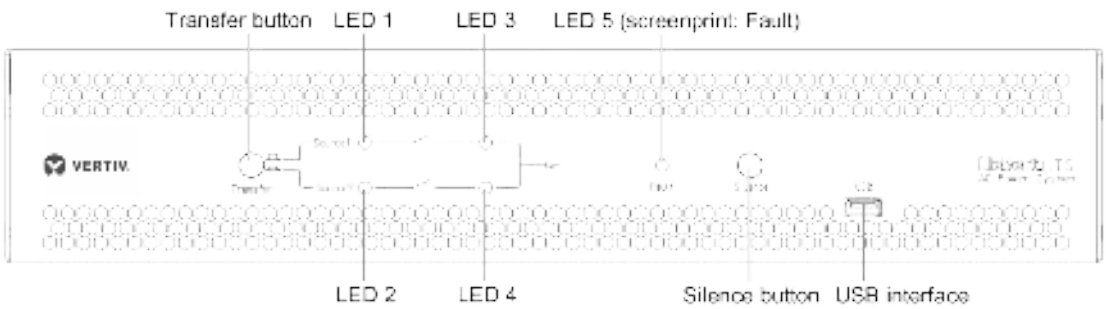

Figure 1-3 Front panel of 32A LTS

LED indicators

The LED indicators mounted on a simple line diagram on the LTS front panel represent the various LTS power paths and show the current LTS operational status. The LED indicators are described in Table 1-1.

Table 1-1 LED indicator description

LED	State	Meaning
LED1	Red light on	Input source 1 voltage or frequency is abnormal
	Green light blinking	Input source 1 voltage is normal; input source 1 is in backup mode and not in synchronization with the current source
	Green light on	Others
LED2	Red light on	Input source 2 voltage or frequency is abnormal
	Green light blinking	Input source 2 voltage is normal; input source 2 is in backup mode and not in synchronization with the current source
	Green light on	Others
LED3	Red light on	The electronic switch is abnormal
	Green light on	The source 1 side of the electronic switch is closed, and source 1 is the preferred source
	Green light blinking	The source 1 side of the electronic switch is closed, and source 1 is the alternate source
	Off	The source 1 side of the electronic switch is open
LED4	Red light on	The electronic switch is abnormal
	Green light on	The source 2 side of the electronic switch is closed, and source 2 is the preferred source
	Green light blinking	The source 2 side of the electronic switch is closed, and source 2 is the alternate source
	Off	The source 2 side of the electronic switch is open
LED5 (screenprint: Fault)	Red light on	The output is abnormal
	Red light blinking	Internal fault

Functional buttons

The LTS provides two functional buttons, Transfer and Silence, on the front panel. The functional buttons are described in Table 1-2.

Table 1-2 Functional button description

Button	Description
Transfer	This button popping up signifies that source 1 is the preferred source, while this button pressed down means that source 2 is the preferred source. Pressing this button makes a changeover of the preferred source between source 1 and source 2
Silence	Pressing and holding this button for two seconds silences the audible alarm. A new alarm afterwards will trigger the audible alarm again

1.5.2 Back Panel

The components provided on the LTS back panel are shown in Figure 1-4 ~ Figure 1-6. The input switches are described in Table 1-3.

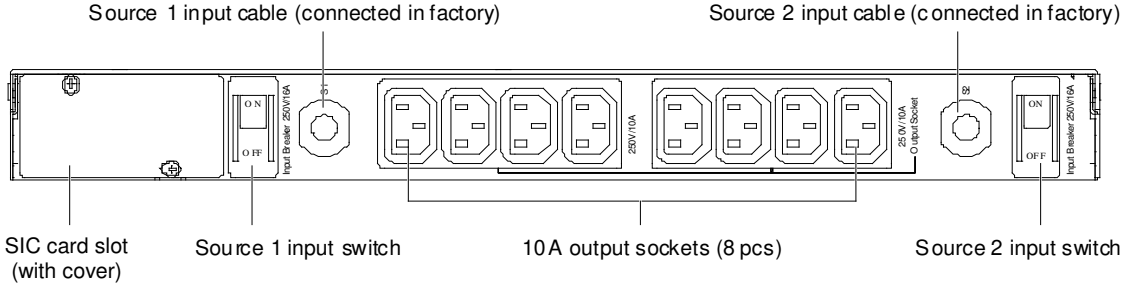

Figure 1-4 10A LTS back panel

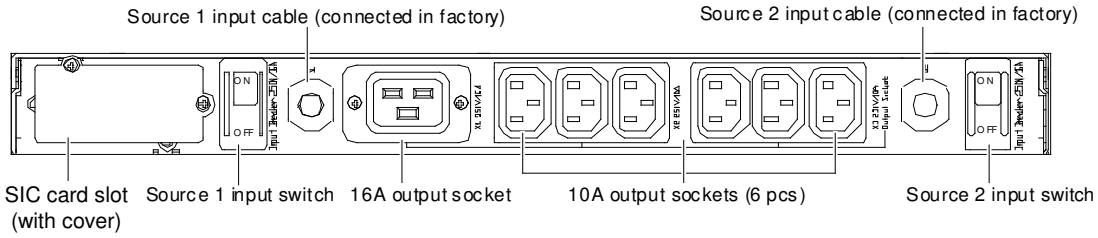

Figure 1-5 16A LTS back panel

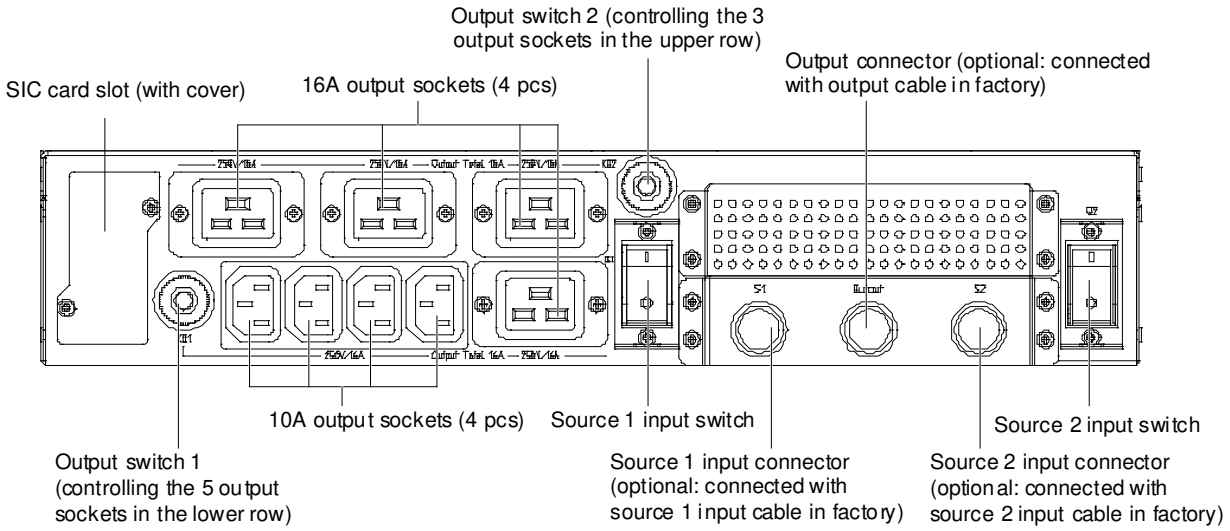

Figure 1-6 32A LTS back panel

Table 1-3 Input switch description

Switch	Description	Remark
Source 1 input switch	Connects source 1 to LTS	Both input switches are circuit breakers
Source 2 input switch	Connects source 2 to LTS	

Chapter 2 Installation

This chapter provides detailed installation instructions, including installation preparation, LTS installation and cable connection. The installation personnel should install the LTS strictly following the instructions.

2.1 Installation Preparation

2.1.1 Unpacking Inspection

After the arrival of the equipment, unpack it and conduct the following checks:

1. Visually inspect the equipment for shipping damage, both internally and externally. If the equipment arrives damaged, contact the carrier immediately.

2. Take out the packing list from the packing box, and check the equipment and materials against the packing list. If there is any discrepancy, contact the distributor immediately.

2.1.2 Installation Notes

In the installation and use of the LTS, to prevent accidents from causing personal injury and equipment damage, pay attention to the following notes:

- Position the LTS in a place free of water, and prevent liquid from entering the LTS
- Wear anti-static wrist strap when installing the LTS
- Route the cables properly. Make sure that no heavy objects are on the power cables, and do not step over the cables
- Earth the LTS properly
- Power off the LTS before operating it

2.1.3 Environmental Requirements

Operating environment

The LTS must be used indoors. To protect the circuits, ensure normal LTS operation and prolong the LTS life, you need to maintain the temperature and humidity in the equipment room in a certain range. See details in Table 5-2.

Anti-static measures

To reduce the influence of the static electricity to the minimum, take the following measures:

- Properly earth the equipment and floor
- Keep clean air in the equipment room, and prevent dust from entering the equipment room
- Keep the temperature and humidity in the equipment room within specifications
- When working with PCBs, wear anti-static wrist strap and anti-static work clothes. Where anti-static wrist strap and anti-static work clothes are unavailable, wash hands with water

Immunity

- Better not use the LTS operation earth along with, and keep it as faraway as possible from, the earth device or lightning protection earth device of other power equipment
- Keep the LTS faraway from strong-power radio transmission station, radar transmission station and high-frequency large-current equipment
- Take electromagnetic shield measures if necessary

Heat dissipation

- Keep the LTS away from heat source
- Advisably, install the LTS in a standard 19-inch rack. Maintain at least 10mm clearances around the LTS to ensure adequate heat dissipation
- Where a standard rack is unavailable, place the LTS horizontally on a clean work platform. In this case, maintain 100mm clearances around the LTS to ensure adequate heat dissipation
- Where it is very hot in summer, better install the LTS in an air-conditioned equipment room

2.2 Installing LTS

The LTS can be installed in two modes: rack installation and work platform installation. The following sections provide the installation instructions of the two modes respectively.

2.2.1 Rack Installation

The LTS can be installed in a standard 19-inch rack.

The installation procedures are as follows:

1. Make sure that the rack has been fixed, with no obstacles inside or outside that might affect the LTS installation, and that the installation position of the LTS and the LTS itself are all ready for installation.

2. Place the LTS on the guide rails in the rack, and push the LTS into place, as shown in Figure 2-1.

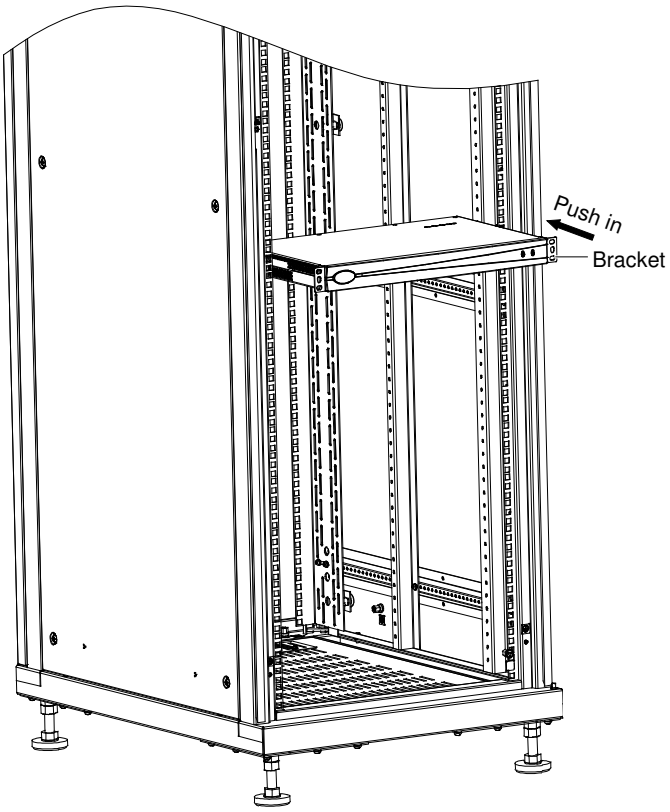

Figure 2-1 Installing LTS in rack

3. Use accessory screws to secure the LTS to the rack through the brackets (see Figure 2-1) on both sides of the front panel.

2.2.2 Work Platform Installation

Where a standard 19-inch rack is unavailable, you might as well place the LTS directly on a clean work platform. In this case,

1. Ensure that the work platform is stable and properly earthed.

2. Maintain 100mm clearances around the LTS for adequate heat dissipation.

3. Do not put any objects on the LTS.

2.3 Connecting Cables

2.3.1 Connecting Power Cables

Connect the power cables using the following procedures:

1. Check that the source 1 input switch and source 2 input switch (see Figure 1-4 ~ Figure 1-6) of the LTS are off.

2. Connect the load cables.

The 10A LTS provides eight 10A output sockets (see Figure 1-4) on the back panel. Insert the load cable plugs into corresponding output sockets of the LTS. Note that the total load rated current cannot exceed 10A.

The 16A LTS provides six 10A output sockets and one 16A output socket (see Figure 1-5) on the back panel. Insert the load cable plugs into corresponding output sockets of the LTS. Note that the total load rated current cannot exceed 16A.

The 32A LTS provides four 10A output sockets and four 16A output socket (see Figure 1-6) on the back panel. Insert the load cable plugs into corresponding output sockets of the LTS. Note that the output sockets are in two rows, three 16A output sockets in the upper row, four 10A output sockets and one 16A output socket in the lower row, and that the total load rated current for each row of output socket cannot exceed 16A.

The 32A LTS provides an output connector (see Figure 1-6) on the back panel for load connection through cable. It also provides an optional output cable with a connector at the end. Table 2-1 is the recommended calbe min cross-sectional area for users, select apporiate cables according to Table 2-1.

Table 2-1 Single unit min cross-sectional area (unit: mm2, ambient temperature: 25℃)

Type	Input	Output	Earth
32A LTS	4	4	4

3. Connect the input cables.

The input cables (see Figure 1-4 and Figure 1-5) connected to the two sources of the 10A and 16A LTSs each provide a connector at the end. Connect the two connectors into corresponding input power.

The 32A LTS provides two input connectors (see Figure 1-6) for connecting the two source supplies respectively through cable. It also provides optional input cables with a connector at the end. Table 2-1 is the recommended calbe min cross-sectional area for users, select apporiate cables according to Table 2-1.

2.3.2 Connecting Communication Cables

The LTS provides a USB interface (see Figure 1-2 and Figure 1-3) on the front panel, which supports RS232 communication, and provides an SIC card slot (see Figure 1-4 ~ Figure 1-6) on the back panel, which is used to install the optional SIC card and supports SNMP networking communication. The two communication modes cannot be used together. You may connect the communication cables according to the actual demand.

The optional SIC card provides high-speed network access solution for the LTS. You can connect the LTS to the local area network (LAN) through the SIC card to achieve network management. For the installation and use of the SIC card, refer to *Site Interface Web/SNMP Agent Card User Manual*.

Note

1. When the SIC card is installed, the USB communication is occupied by the SIC card.
2. For networking communication, shielding measures should be taken for the network cables, otherwise the communication may be interfered.

Chapter 3 Operating Instructions

This chapter provides LTS operating instructions. For the power switches, functional buttons and LED indication mentioned in the operating procedures, refer to *1.5 Appearance*.

3.1 Procedures For LTS Switching-On

Check before switching-on

1. Check that the source 1 input switch and source 2 input switch of the LTS are off.
2. Check that the input and output cables are properly connected.

Procedures for LTS switching-on

1. Switch on the two power sources of the LTS to feed rated voltage to the two input ports of the LTS.
2. Switch on the source 1 input switch, and check the LED 1 indication, confirming that the source 1 voltage and frequency are normal.
3. Switch on the source 2 input switch, and check the LED2 indication, confirming that the source 2 voltage and frequency are normal.
4. Check the position of the Transfer button on the front panel to confirm the current preferred source. If necessary, press the Transfer button to change the preferred source.
5. Check the indications of LED3 and LED4 on the front panel, confirming that the LTS output is normal.
6. Switch on the load.

3.2 Procedures For Preferred Source Selection/Manual Transfer

You can use the Transfer button on the front panel to change the preferred source. After changing the preferred source, if the new preferred source is normal, and the phase difference between the two sources is within the preset synchronization window, the LTS will transfer the load to the new preferred source.

The procedures for preferred source selection/manual transfer are as follows:

1. Check that the source 1 input switch and source 2 input switch are on.
2. Check the indications of LED1 and LED2, confirming that the two input sources are normal.
3. Press the Transfer button on the front panel.
4. Check the indications of LED3 and LED4, confirming that the preferred source has changed from source X to source Y.

At this point, if the LTS detects source Y is normal, and that the phase difference between the two sources is within the synchronization window, the LTS will transfer the load to source Y; if the LTS detects source Y is abnormal, or that the phase difference between the two sources is outside the synchronization window, the LTS will automatically delay the transfer until source Y becomes normal and the phase difference enters the synchronization window.

3.3 Procedures For LTS Switching-Off

Procedures for switching off the LTS are as follows:

1. Switch off the load following the load equipment manufacturer instructions.
2. Switch off the source 1 input switch and source 2 input switch, and confirm that all LEDs are off.

3.4 Alarm Silencing

In the event of an LTS fault or alarm, the buzzer will beep to annunciate the alarm. You can press and hold the Silence button on the front panel for two seconds to silence the alarm. If afterwards a new alarm occurs, the buzzer will beep again.

3.5 Changing System Settings

System settings

Normally, you can use the default settings of the LTS. The LTS is delivered with a CD, which provides ParamSet configuration software to satisfy your demand for changing system settings. The LTS system parameters, setting ranges and defaults are listed in Table 3-1.

Table 3-1 LTS system setting description

No.	Parameter	Setting range	Default
1	Rated voltage	220V, 230V	230V
2	Rated frequency	50Hz, 60Hz	50Hz
3	System time (year/month, date/hour, minute/second)	-	-
4	Auto Retransfer Enable	0: Yes, 1: No	0
5	Frequency Trip Point	1Hz~3Hz	1Hz
6	Auto Retransfer Max Phase	1°~30°	10°
7	Retransfer Delay	3s~60s	10s
8	I-Peak Times	1~3 times	3 times
9	Voltage Range	±20%, ±15%, ±10%	±10%
10	Frequency Range	±20%, ±15%, ±10%	±10%

Changing system settings

The procedures for changing system settings are as follows:

1. Use the accessory USB cable to connect the computer to the USB interface of the LTS.

2. Install the USB drive software in the accessory CD (file name: **USB_CP2102_XP_2000.exe**) on the computer.

3. Double-click the **ParamSet.exe** file of the configuration software in the accessory CD, and the system setting interface appears on the computer screen, as shown in Figure 3-1.

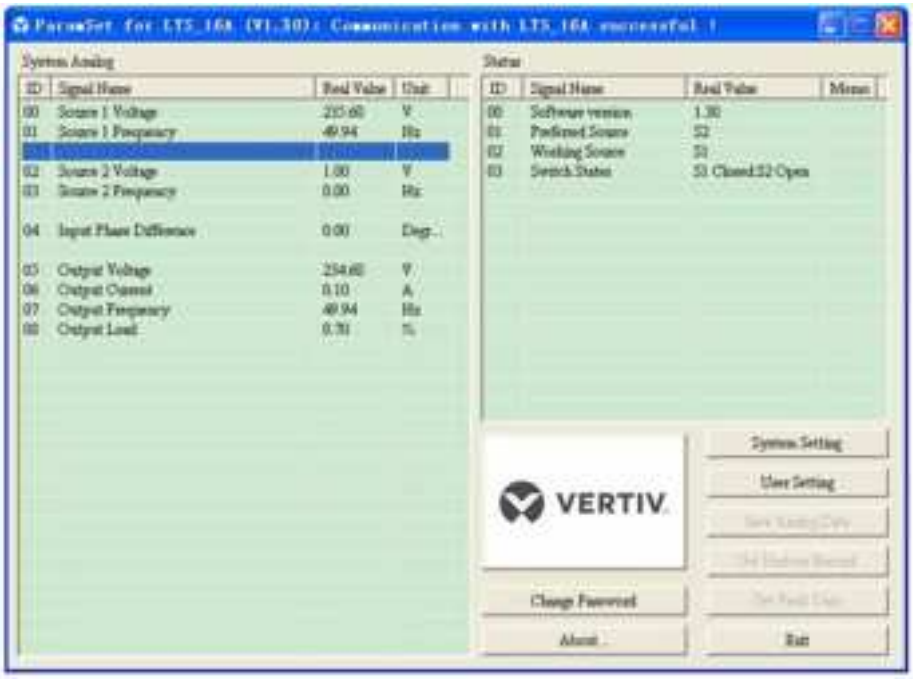

Figure 3-1 System setting interface

4. Change the setting password.

The system setting is protected by password. The default password is “123456”. You are suggested to change the password first.

1) Click the **Change Password** button, and the **Change Password** dialog box appears, as shown in Figure 3-2.

*Figure 3-2 **Change Password** dialog box*

2) Input the old password, and the new password twice. Click the **OK** button, and the system setting interface shown in Figure 3-1 returns.

5. Change the system settings.

In the interface shown in Figure 3-1, click the **System Setting** button, and you will access the interface for changing the settings of parameters 1 to 3 in Table 3-1; click the **User Setting** button, and you will access the interface for changing the settings of other parameters in Table 3-1. The parameter setting ranges and defaults are listed in Table 3-1. The procedures for changing all parameter settings are the same, specifically:

1）Click the **System Setting** button in the interface shown in Figure 3-1, and the **System Configuration Parameters** interface appears, as shown in Figure 3-3.

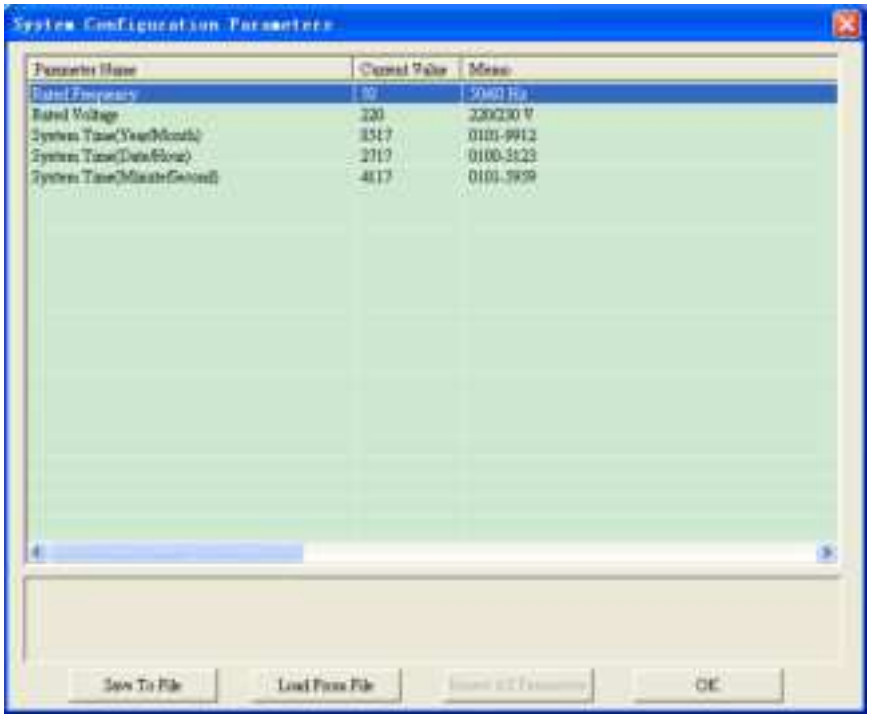

Figure 3-3 System Configuration Parameters interface

2) Double-click the line of the desired parameter, and the **Parameter setup** dialog box appears, as shown in Figure 3-4.

*Figure 3-4 **Parameter setup** dialog box*

3) Input the setting value, click the **OK** button, and the parameter setting is complete.

Chapter 4 Maintenance

This chapter provides the LTS routine maintenance and troubleshooting instructions.

4.1 Daily Check

The ambient environment has big influence on the LTS operation. Therefore, in routine maintenance, it is very important to make sure that the ambient environment meets the specifications. To keep the LTS at its optimum performance and eliminate hidden troubles, it is advisable to check the items listed in Table 4-1 every day.

Table 4-1 Daily check items

Item	Description
LED indication	Check that all LED indications are normal, and that there is no alarm given on the front panel
Noise	Check that the LTS has no abnormal noise

4.2 Troubleshooting

In the event of an LTS fault or alarm, corresponding LED(s) will indicate the fault or alarm, accompanied with buzzer beeping. The LTS background alarms are classified into the following two types:

Type A: internal fault. In the event of this type of alarm, the buzzer will beep continuously, accompanied with corresponding LED indication.

Type B: others. In the event of this type of alarm, the buzzer will beep once every two seconds, accompanied by corresponding LED indication.

The system keeps all alarm history for the reference of the maintenance personnel. Furthermore, the system records system running information before and after the internal faults to facilitate fault location.

Table 4-2 listed all the LTS background alarm messages, alarm types and actions to take. Please shoot the troubles following the instruction provided in Table 4-2. For the interpretation of the background alarms, refer to the LTS_16A Modbus communication protocol in the accessory CD.

Table 4-2 Alarm messages and actions to take

No.	Alarm message	Possible cause	Actions to take	Alarm type
1	Relay Fail	The input relay or transfer relay fails. This alarm will trigger transfer inhibition	Contact the local customer service center of Vertiv	A
2	Aux. Power Fail	Both the 12V auxiliary supply and 5V auxiliary supply fail. This alarm will trigger transfer inhibition	Contact the local customer service center of Vertiv	A
3	S1 Abnormal(Fast)	The source 1 input voltage quickly drops below the S1 Abnormal (Fast) point, and the load is transferred to source 2	Check if the source 1 input voltage is normal. If not, resume it	B
4	S1 Abnormal (Slow)	The source 1 input voltage is outside the preset allowable voltage range, and the load is transferred to source 2	Check if the source 1 input voltage is normal. If not, resume it. Change the allowable voltage range if necessary	B
5	S1 Frequency Abnormal	The source 1 input frequency is outside the preset allowable frequency range, and the load is transferred to source 2	Check if the source 1 input frequency is normal. If not, resume it. Change the allowable frequency range if necessary	B
6	S2 Abnormal (Fast)	The source 2 input voltage quickly drops below the S2 Abnormal (Fast) point, and the load is transferred to source 1	Check if the source 2 input voltage is normal. If not, resume it	B
7	S2 Abnormal (Slow)	The source 2 input voltage is outside the preset allowable voltage range, and the load is transferred to source 1	Check if the source 2 input voltage is normal. If not, resume it. Change the allowable voltage range if necessary	B

No.	Alarm message	Possible cause	Actions to take	Alarm type
8	S2 Frequency Abnormal	The source 2 input frequency is outside the preset allowable frequency range, and the load is transferred to source 1	Check if the source 2 input frequency is normal. If not, resume it. Change the allowable frequency range if necessary	B
9	LTS on Alternate Source	The LTS is on the alternate source. If automatic retransfer is enabled, after the preferred source resumes normal, the load will be transferred to the preferred source	No actions are needed	B
10	Output Voltage Abnormal	The output voltage is outside the preset allowable voltage range	Check if the source 1 input voltage and source 2 input voltage are normal. If not, resume them. Change the allowable voltage range if necessary	B
11	Output Frequency Abnormal	The output frequency is outside the preset allowable frequency range	Check if the source 1 input frequency and source 2 input frequency are normal. If not, resume them. Change the allowable frequency range if necessary	B
12	Output Over Current	The output current is not less than the rated current	Reduce the load	B
13	I-PK	The output current transient value exceeds the preset peak overcurrent point. This alarm will trigger transfer inhibition	Check for load shortcircuit. Contact the local customer service center of Vertiv	B
14	Transfer Inhibited	In the event of an internal fault, output overcurrent or peak overcurrent, the LTS transfer is inhibited	Locate the fault taking other active alarms into account	B

4.3 Technical Support

Technical support is available by email and telephone:

Vertiv Co., Ltd.

Website: www.vertivco.com.

- China

E-mail: vertivc.service@vertivco.com

Customer service hotline: 4008876510

- India

E-mail: customer.care@vertivco.com

Customer service hotline: 1800 209 6070

- Asia

Australia - au.service@vertivco.com

New Zealand - au.service@vertivco.com

Philippines - ph.service@vertivco.com

Singapore - sg.service@vertivco.com

Malaysia -my.service@vertivco.com

Information you need to provide

When you contact us, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help.

Chapter 5 Specifications

This chapter provides the LTS specifications, including the technical specifications, environmental specifications and mechanical specification.

5.1 Technical Specifications

Table 5-1 Technical specifications

Item		Specification
Input	Input source	Two input sources
	Input system	1Φ+N+PE
	Rated voltage	220/230Vac
	Rated frequency	50/60Hz
	Voltage range	150Vac~300Vac
	Frequency range	±5Hz of rated frequency
	Voltage distortion	<10%
Output	Power factor	0.8~1.0, lead or lag
	Overload capacity	125%, 30min (tested at 30°C)
	Efficiency (100% linear load)	99%
Transfer	Pole number	2-pole
	Auto transfer interruption	<6ms (typical), <11ms (max)
	Undervoltage point	10% by default
	Overvoltage point	10% by default
	Max phase difference permitted for synchronized transfer	±10 degrees by default

5.2 Environmental Specifications

Table 5-2 Environmental specifications

Item	Specification
Operating temperature	0~40°C
Storage temperature	-40°C~70°C
Relative humidity	5%~95%, non-condensing
Altitude	3000m
Pollution level	Level II

5.3 Mechanical Specifications

Table 5-3 Mechanical specifications

Dimensions (H×W×D)		44mm×440mm×250mm (for 10A, 16A) 85mm×435mm×340mm (for 32A)
Weight	Net weight of standard LTS	4.5kg (for 10A, 16A); 5kg (for 32A)
	Weight of LTS configured with options	5kg (for 10A, 16A); 6kg (for 32A)