



INSTRUCTION FOR INSTALLATION AND OPERATION

CONTACTLESS AC VOLTAGE STABILIZER

CHAT



Please read the User Manual carefully before installing and using the product and keep it well for reference.

Table of Contents

1. Overview
2. Main Characteristics
3. Main Technical Specifications
4. Product Diagram
5. Instructions for Use
6. Cautions
7. Selection Guide for Stabilizer
8. Removal Methods of common faults
9. Random Spare Parts
10. Ordering Information
11. Installation Tips
12. Product Warranty Card

CHAT Series Contactless AC Voltage Stabilizer

1. Overview

The CHAT series Contactless AC Voltage Stabilizer is a contactless AC voltage stabilizer developed by our company based on many years' experiences of production on voltage stabilizers. It integrates the advantages of many power supply, mainly consisting of a self-coupling voltage regulating transformer, SCR thyristor contactless switch, high-speed microcontroller unit and other components.

Through the combination of hardware and software control, and multiple protection of optocoupler isolation and the main circuit, it successfully addresses the problems of interference and the common circuit circulation of SCRs, achieving fast stabilizing, multiple intelligent protection and contactless stabilizing, thus completely solving the shortcomings of contact voltage stabilizers such as mechanical wear, noise, and slow response.

2. Main Characteristics

2.1 The product has the functions of input and output LED digital voltage display, operating status display and fault code indication.

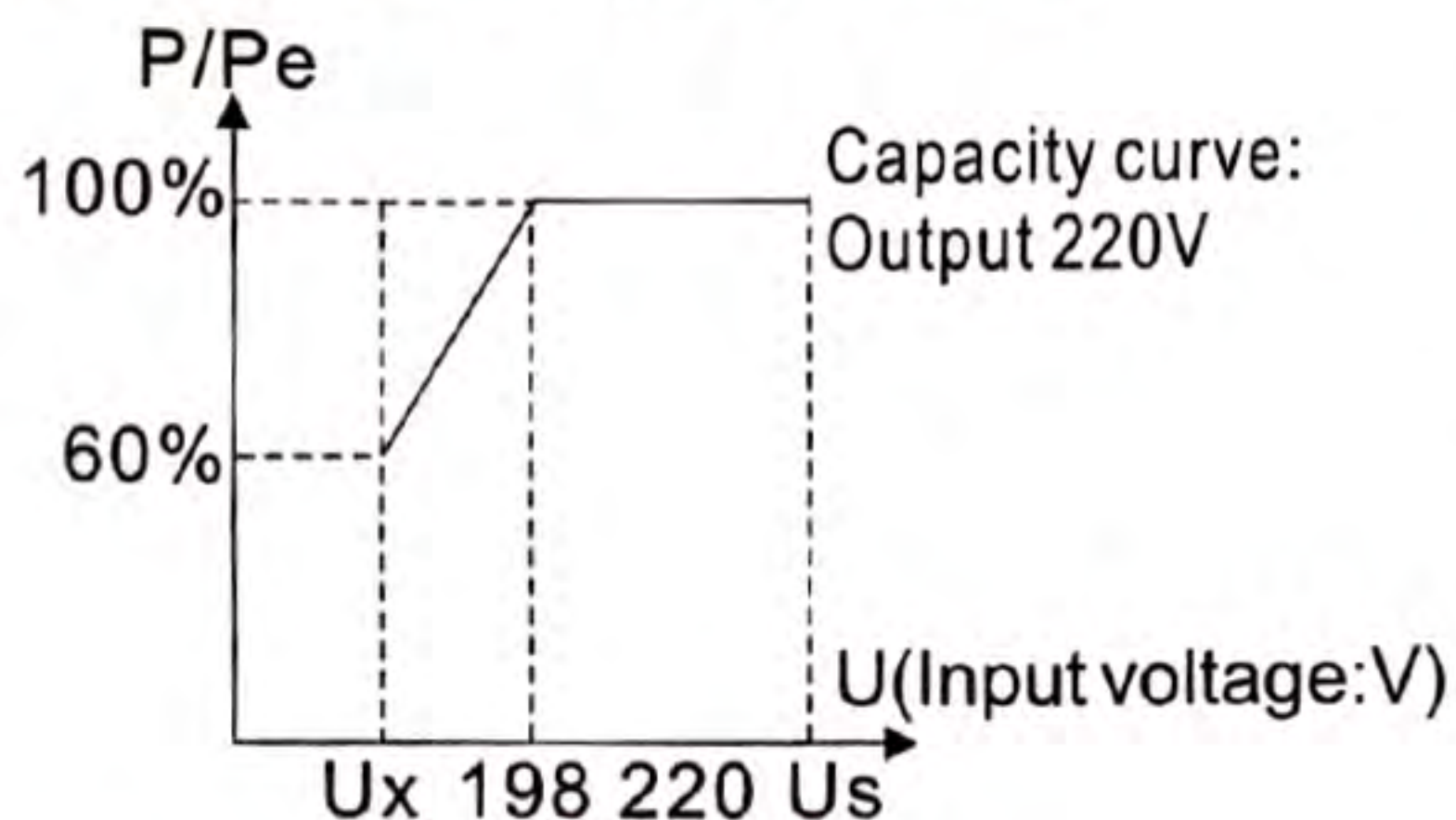
2.2 Applicable to the areas where the low voltage and high voltage fluctuation, It is an ideal power supply integrating the functions of AC voltage stabilizing and equipment protection, which can be used in communication equipment, radio and television equipment, household appliances, precision instruments, factory and residential buildings, and various processing equipment.

2.3 Product Features

- a) It has high efficiency up to 92%, and low loss;
- b) Voltage stabilizing precision $\pm 4\%$;
- c) With a wide input voltage range, it can meet the needs of places and equipment with poor power supply or high voltage fluctuations;
- d) Response Time: 40 milliseconds, without affecting voltage to any device;
- e) With the functions of over-temperature, overload, over-voltage, under-voltage, short-circuit fault display or protection;

3. Main Technical Specifications

3.1 Output capacity curve



P: output capacity;
 P_e : rated output capacity;
 U : input voltage;
 U_x : lower limit value of input voltage allowed;
 U_s : upper limit value of input voltage allowed.

3.2 Technical Parameters

Item	CHAT-1000VA~30kVA
Input Voltage Range	150V~260V
Output Voltage	220V
Output Overvoltage	$246 \pm 4V$
Output Voltage Precision	$< \pm 4\%$
Frequency	50/60Hz
Temperature Rise	less than 80 K (under full load)
Efficiency	$> 92\%$
Regulation Time	$< 40\text{ ms}$
Remarks: For technical specifications of each product, the specifications indicated on the machine body shall prevail.	

4. Product Diagram

4.1 The appearance of the CHAT contactless AC voltage stabilizer is shown in Figure 1.

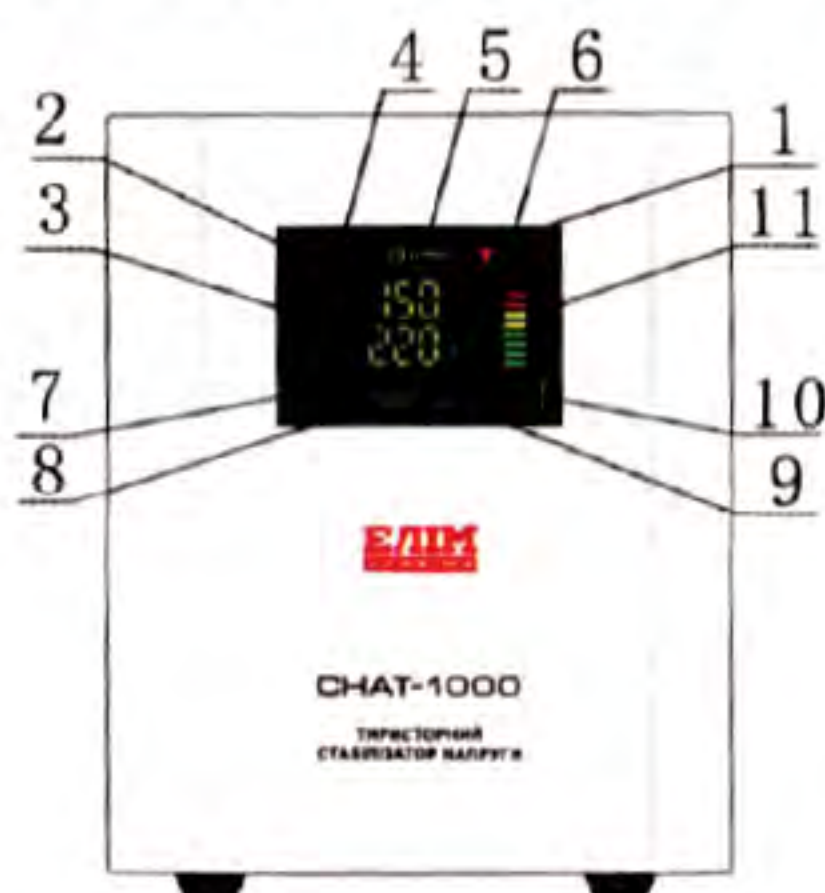


Figure 1: Front panel

1. Status display; 2. Input voltage display; 3. Output voltage display / delay countdown / status display ("L" means under-voltage output, "H" means over-voltage output, "T" means over-temperature, "O" means overload output; 4. Operating status; 5. Delay status; 6. Protection status; 7. Temperature protection status; 8. Under-voltage output status; 9. Overvoltage output status; 10. Overload output status; 11. Load display;

4.2 The rear panel of the CHAT-1000VA ~ 3000VA contactless AC voltage stabilizer is shown in Figure2;

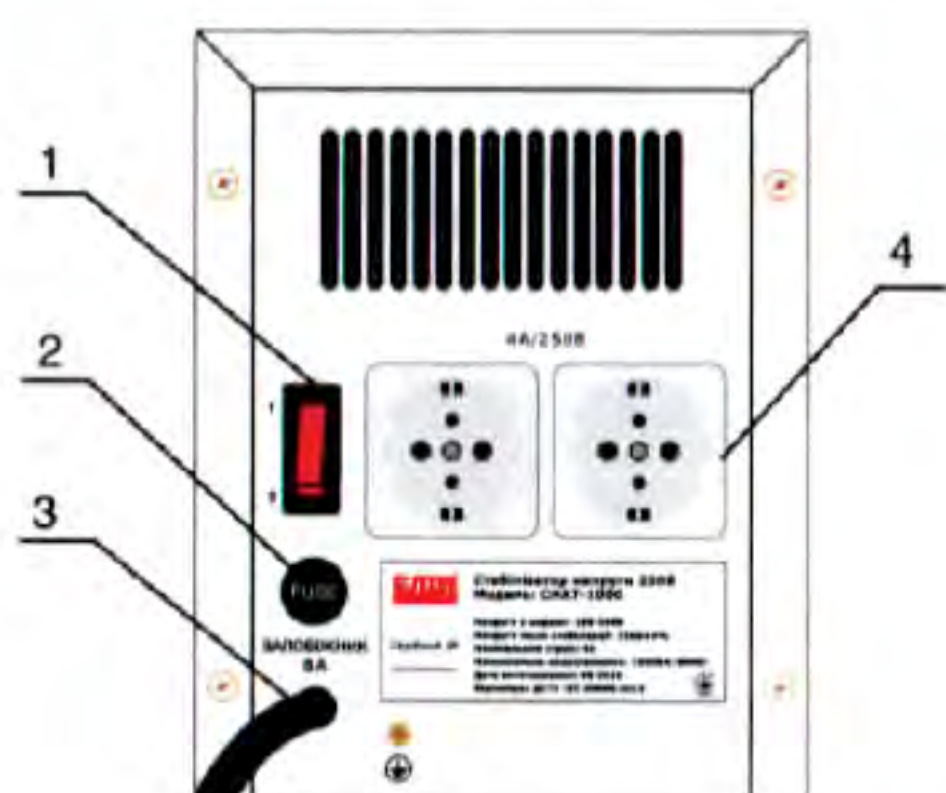


Figure 2:

1. Power switch;
2. Fuse holder;
3. Input power cord;
4. Output three-pin socket (220VAC);

4.3 The rear panel of the CHAT-5000VA ~ 10kVA contactless AC voltage stabilizer is shown in Figure3;

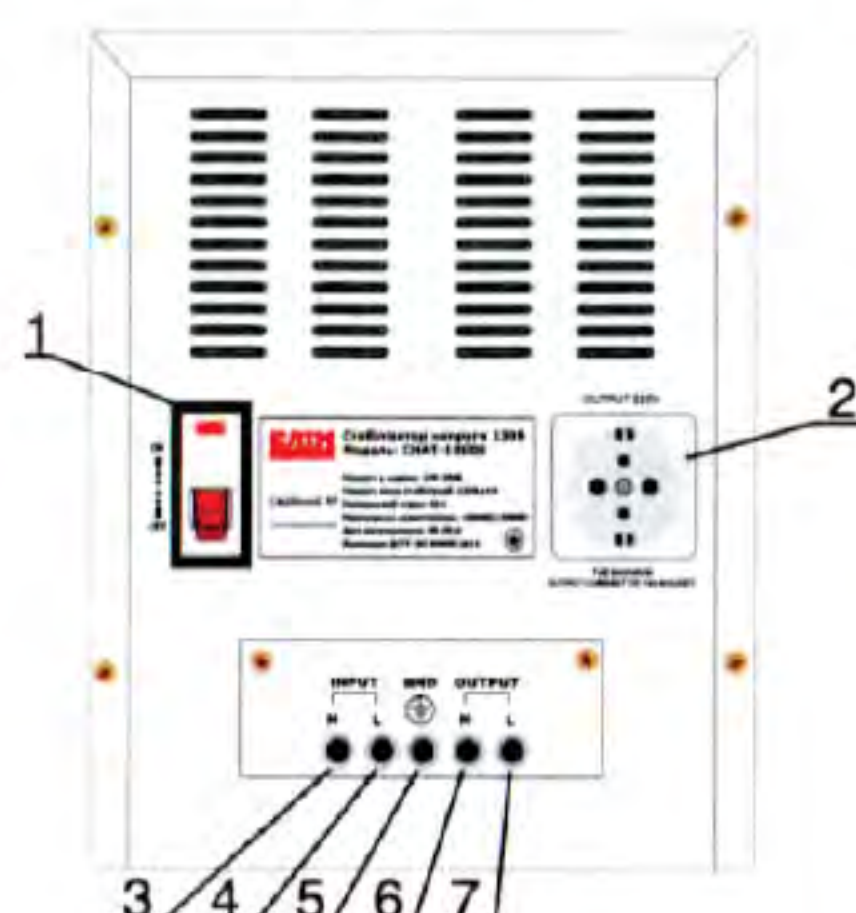


Figure 3:

1. Power switch;
2. Output three-pin socket (220VAC);
3. Input neutral (N);
4. Input phase line (L);
5. Protective grounding
6. Output neutral 220VAC
7. Output phase line 220VAC

5. Instructions for Use

5.1 Check the voltage of the mains (input) first, confirm that it meets the input range of the stabilizer, then switch in the input power of the stabilizer. Do not switch in any power supply that is beyond the range of the stabilizer!

5.2 Connect the input end of the voltage stabilizer to the power supply and turn on the power switch, the operating status indicator is light and the delay status flashes, the power supply outputs after a short delay of 3-6 seconds. If there is a “delay button” and it is switched on the long-delay position, the power supply will be delayed by 5 ± 2 min, and the delay status indicator will stop flashing.

5.3 Until the output voltage is within the normal range ($220 \pm 4\%$), plug the input end (plug) of an appliance into the output of the stabilizer, and turn on the switch of the appliance to use it.

Notes: The output socket of the stabilizer can withstand a maximum current of 10 A. If the user's appliance exceeds 10 A, it must be connected to the terminal block of the stabilizer, otherwise it may damage the stabilizer or the appliance itself!

5.4 When the over-voltage status flashes, the output voltage window displays the letter "H", indicating that the output voltage is higher than the overvoltage setting value.

5.5 When the under-voltage status flashes, the output voltage window displays the letter "L", indicating that the output voltage is lower than the under-voltage setting value.

5.6 When the output voltage window displays "T", it indicates that the over-temperature in the stabilizer exceeds the setting value and the stabilizer is on the over-temperature protection status. At the same time, the load needs to be reduced, and it will automatically resume normal operation after waiting for 15 minutes.

5.7 When the output voltage window displays "O", it indicates that the load capacity of the stabilizer is exceeded, and the stabilizer is in the overload protection status. At the same time, the load needs to be reduced, and it can be used normally after restarting.

5.8 When the input voltage exceeds the stabilizing range or the output voltage of the stabilizer is higher than $246\text{ V} \pm 4\text{ V}$ due to its failure, the stabilizer will automatically cut off the output power and send an alarm signal, and the output window will display the letter "H".

5.9 When the input voltage exceeds the stabilizing range or the output voltage of the stabilizer is lower than $184\text{ V} \pm 4\text{ V}$ due to its failure, the stabilizer will automatically cut off the output power and send an alarm signal, and the output window will display the letter "L". If an "under-voltage protection" selection button is provided, when it is switched on the "Yes" position, the stabilizer will have the under-voltage protection function. When switched on the "None" position, the stabilizer will not have the under-voltage protection function.

5.10 When the load on the display screen lights up 7 bars or the temperature flashes as an alarm, it indicates that the maximum output capability of the stabilizer has been reached; the stabilizer

is about to overload and temperature protection. In order not to affect your use, please reduce the output load of the stabilizer as soon as possible to avoid the stabilizer protection action (power off).

5.11 If there is a blank screen during use, and there is no output voltage: Please check if the fuse tube is blown. If the fuse tube is blown, you must replace the fuse tube of the same specification! Do not amplify the current privately; if the switch trips: Wait for a while, wait for the temperature of the switch to drop and then turn it on; the above phenomenon indicates that the power of the stabilizer you selected is small and you should reduce its power if you want to use it.

6. Cautions

6.1 The stabilizer should be placed and used in a ventilated, dry, without direct sunlight and corrosive gas indoor space.

6.2 The power of the stabilizer should be greater than the total power of the appliance. When the input voltage is as low as 150 V or the lower limit, the capacity of the stabilizer will drop to 60% of the rated capacity. See the output capacity graph in this Instructions for details.

6.3 The power switch of the stabilizer should not be used as the main switch of an appliance. The stabilizer switch should be turned on first. Till the output voltage of the stabilizer is normal, turn on the appliances in turn from large power to small power.

6.4 Turn off the appliance in turn from large power to small power when shutting down, and finally turn off the power switch of the stabilizer.

6.5 When using the stabilizer, check whether the indoor wiring and the cross-sectional area of the incoming line of the meter meet the requirements, otherwise the line voltage will drop too much; as a result, the appliances will be difficult to start and the stabilizer will be under voltage.

6.6 The output voltage of the stabilizer is $220\text{ V}\pm 4\%$, that is, it is allowed to fluctuate within the range of 211 V to 228 V, which is normal.

6.7 The stabilizer switch should not be turned on/off frequently. The interval between each turn-on should be greater than 5 seconds.

Otherwise, it may cause malfunction or even damage to the stabilizer.

6.8 When wiring the stabilizer's peripheral circuits, the connecting copper wire should carry sufficient current according to the rated capacity of the product to reduce the line loss.

6.9 The grounding wire must be installed reliably. Check whether all connecting wires are correctly installed. Check whether the wire connectors are secure and reliable.

7. Selection Guide for Stabilizer

There are two factors to consider when choosing the power of the stabilizer:

7.1 The power of various household appliances refers to active power, while the actual input power is larger. Some electrical appliances (such as refrigerator, ice tank, air conditioning) have large instantaneous power and current (usually 3 to 5 times of normal power and current) at the moment of starting. As a result, the grid voltage is lowered, significantly darkening the illumination lamp;

7.2 The lower the stabilizer input voltage (the grid voltage), the lower the output power (see output capacity graph).

7.3 Calculate the sum of the powers of the appliances. In case of air conditioning or refrigerator, multiply its power by 3 to 5 times; as for other inductive loads (such as electric fans), multiply its power by 1.5 times; for resistive appliances (such as electric heating, lighting), multiply its power by 1 times.

8. Removal Methods of common faults

Note! The input power must be disconnected when the product is being maintained, examined, or replaced its parts.

Fault phenomenon	Causes	Removal Methods
Turn on the power switch, the indicator light is lit and the voltmeter is not displayed.	1. The fuse is blown; 2. The power cord or plug is damaged or broken 3. The power switch fails	1. Check the output circuit and the user's electrical appliance for short circuit, and repair the short circuit problem; 2. Replace the power cord or the plug 3. Replace the switch

No output voltage	1. Overvoltage protection; 2. CPU control board is damaged 3. Overheat or overload protection	1. If the power grid fails and the input voltage exceeds the range, the power switch should be turned off immediately. After the power grid is normal, it can be turned on. 2. Replace the CPU control board. 3. Reduce load when using
The output voltage is lower than the stabilized value (200V)	1. Low supply voltage (less than 140 V) 2. The digital display instrument is damaged; 3. The CPU control board is damaged;	1. If the power supply cord is too long, too thin or the socket is aging, the contact resistance is too large, it should be improved or replaced; 2. Replace the digital display instrument; 3. Replace the CPU control board.

9. Random Spare Parts

9.1 Installation and Instructions for Use (including Certificate)

9.2 Random spare parts, fuse tube (500VA ~ 1500V products)

10. Ordering Information

10.1 The client must indicate the model, rated power, number of phases, input voltage range, and output voltage of the product when ordering.

10.2 Required quantity;

10.3 If the client has special requirements, please make another agreement.

11. Installation Tips

Before installing the product, select appropriate connecting copper wires according to the load power or the rated power of the stabilizer. The external input and output wires shall be neither too thin nor too long, so as to prevent the product from working properly due to too thin or too long wires. The connecting copper wires can be selected by referring to the following example:

Calculate according to the current carrying capacity of copper wires: The safe current carrying capacity of the wire is determined according to the allowed maximum temperature, cooling conditions, and laying conditions of the core. Generally, the safe current carrying capacity of copper wires is 5-8 A/mm². For example: Recommended values for safe current carrying capacity of 2.5mm² BVV copper wire: $2.5 \times 8 \text{ A/mm}^2 = 20 \text{ A}$

No.	Power Rating	Cross-sectional area of connecting copper wires	No.	Power Rating	Cross-sectional area of connecting copper wires
1	500VA	$\geq 0.5\text{mm}^2$	5	3000VA	$\geq 2.5\text{mm}^2$
2	1000VA	$\geq 0.75\text{mm}^2$	6	5000VA	$\geq 4\text{mm}^2$
3	1500VA	$\geq 1\text{mm}^2$	7	7000VA	$\geq 6\text{mm}^2$
4	2000VA	$\geq 1.5\text{mm}^2$	8	10kVA	$\geq 10\text{mm}^2$

Generally, loads (such as incandescent lamps, refrigerators, etc.) can be divided into two types: resistive loads and inductive loads. For resistive loads, which are commonly used, the calculation formula is: $P=U \times I$

P = indicates rated power (W) watts; U = indicates rated voltage (V) volts; I = indicates rated current (A) amps.

The apparent power has a power factor relationship with the active power, for example, the power factor is $\cos\phi 0.8$, the relationship between the two is:

Apparent power $1000\text{VA} \times 0.8 =$ active power 800W .