

TND、SJW High-accuracy Full-automatic  
AC Voltage Stabilizer

# Manual Instruction

符合标准: JB/T 8749.7 Q/DLX 155

☐ 安装、使用产品前,请仔细阅读使用说明书,并妥善保管、备用。

# TND、SJW High-accuracy Full-automatic AC Voltage Stabilizer

## 1、Overview

1.1 This product is based on the production of high-precision AC voltage stabilizer for many years, in order to let you get a pleasant feeling on the product, combined with the actual situation of the product and the characteristics of electrical appliances, the aesthetic way to develop and improve an AC voltage stabilizer, compared with the original product, its appearance is simple, the shape is novel, easy to install and use, more complete functions, better quality.

The product has high voltage stabilization accuracy and low loss, and is suitable for power supply of precision instruments in households, industrial and mining enterprises, institutions, scientific research units and laboratories, and is an ideal AC stabilized power supply.

TND series single-phase automatic AC voltage stabilizer and SJW series three-phase automatic AC voltage stabilizer are mainly composed of contact voltage stabilizer, sampling control circuit, servo motor and mechanism. When the mains voltage is unstable or the voltage fluctuation is caused by the change of the user's load, the sampling circuit will process the voltage change signal and send it to the servo motor, so that it can drive the carbon brush of the contact voltage stabilizer to move accordingly to ensure the stability of the output voltage.

1.2 Product implementation standard: JB/T 8749.7 Q/DLX 155

## 2. The main technical parameters of the product

### 2.1 Meaning of series models

TND, SVC: single-phase high-precision automatic AC voltage stabilizer

SJW, TNS: three-phase high-precision automatic AC voltage stabilizer

### 2.2 Main technical indicators

Item \ Spec.	TND-0.5~30kVA	SJW-3~30kVA	SJW-45~60kVA
Input Voltage Range	160V~250V	280V~430V	304V~456V
Output Voltage	220V±4%	380V±4%	
Output Over-voltage Protection	246V±4V	426V±7V	
Frequency	50Hz~60Hz		
Temperature Rise	<80K		
Efficiency	>90%		
Adjustable Time	<1s(When input voltage changes over 10%)		

Note 1: The technical indicators of each machine are subject to the ones shown on the fuselage, and the general conventional products do not have "under-voltage protection", if you need "under-voltage protection", you can order separately to indicate that the under-voltage protection value is 184±4V.

Note 2: Products above 5k do not have 110V output terminal, such as 110V output terminal, you can order separately to indicate the output

The value is 110V±4V, at 110V with load: strictly in accordance with the provisions of 2.3.

Note 3: The input voltage beyond the above range can be specially ordered.

### 2.3 The output capacity curve is shown in Figure 1.

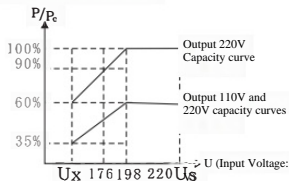


Figure (1) Output capacity graph

P: output capacity

PE: Rated output capacity

U: input voltage

Ux: The lower limit of the permissible input voltage range

Us: The upper limit of the voltage range allowed to be entered

Figure 1: Output capacity curve

## 2.4 Electrical schematic

2.4.1 The electrical schematic diagram of single-phase 0.5kVA~1.5kVA high-precision automatic AC voltage stabilizer is shown in Figure 2 (for reference only).

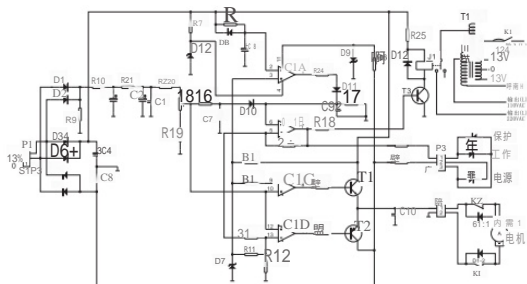


Figure 2 Single-phase: 0.5-1.5kVA electrical principle  
Three-phase: 3-4.5kVA electrical principle

2.4.2 Single-phase 0.5kVA~10kVA electrical principle block diagram is shown in Figure 3.

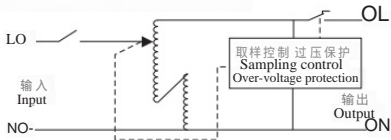


Fig.3 Single-phase 0.5kVA-10kVA electrical schematic

2.4.3 Single-phase 15kVA~30kVA adopts the electrical principle block diagram of the compensation line, see the figure.

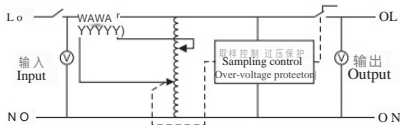


Figure 4: Block diagram of single-phase 15kVA-30kVA electrical principle

2.4.4 Electrical schematic diagram of single-phase 2kVA~10kVA high-precision automatic AC voltage stabilizer, see Figure 5.

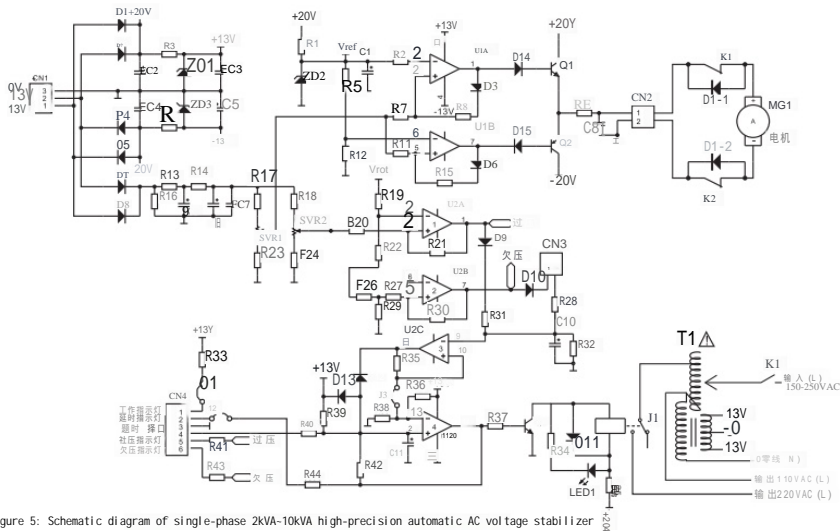
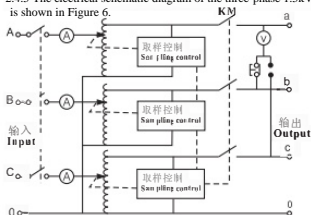


Figure 5: Schematic diagram of single-phase 2kVA-10kVA high-precision automatic AC voltage stabilizer

2.4.5 The electrical schematic diagram of the three-phase 1.5kVA~30kVA automatic AC voltage stabilizer is shown in Figure 6.

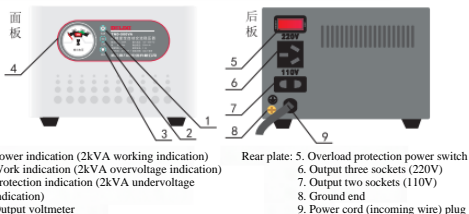


Note 1: Three-phase 1.5kVA, 3kVA, 4.5kVA, 6kVA, 9kVA, 15kVA, 20kVA, The 30kVA sampling control circuit refers to a single phase  
Electrical schematic diagram Fig. 2, Fig. 5.  
Note 2: Three-phase 45kVA~60kVA is compensated  
Refer to Figure 4.

Figure 6: Three-phase high-precision fully automatic AC Electrical schematic diagram of the voltage stabilizer

### 3. Outline drawing

3.1 The shape of TND-0.5, 1, 1.5, 2kVA high-precision automatic AC voltage stabilizer is shown in Figure 7.



Note: If there is an overload or cannot be turned on normally, it means that the load connected to the output is too large, at this time, the load should be reduced, wait for 2~3 minutes, and then turn the power switch back on.

Fig. 7. Shape of TND-0.5-2kVA AC voltage stabilizer

3.2 The shape of TND-3kVA and 5kVA high-precision automatic AC voltage stabilizers is shown in Figure 8.

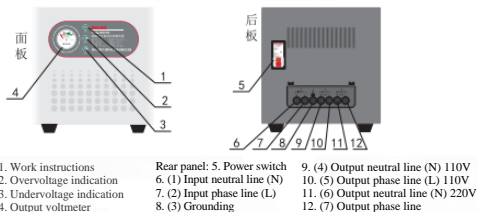


Fig. 8. Shape of TND-3kVA-5kVA AC voltage stabilizer

3.3 The shape of TND-7kVA~10kVA stabilizer is shown in Figure 9

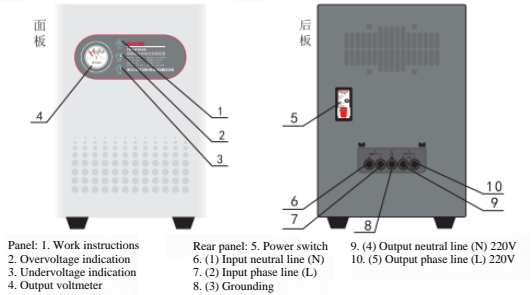


Fig. 9. Shape of TND-7kVA~10kVA stabilizer

#### 4. Instructions for use

4.1 The output power of the voltage stabilizer is the maximum apparent power, and the nominal power of household appliances refers to the active power, and the inductive load such as refrigerator and air conditioner has a large current at the moment of starting, so the refrigerator and air conditioner are  $\times 3\sim 5$  times the power. If the input voltage is too low, the load should be reduced, which can be selected by referring to the output capacity curve (Figure 1).

4. When the output voltage of 20.5kVA~5kVA regulator is 110V, the output capacity cannot exceed the rated capacity 35% to avoid overload damage.

4.3 Check the power supply voltage, must be used within the nominal input voltage range of the voltage stabilizer, when the input voltage exceeds the voltage stabilizer range or the output voltage is undervoltage (less than  $184V\pm 4V$ ) or overvoltage (greater than  $246V\pm 4V$ ) due to fault, the "protection" indicator light of the voltage stabilizer TND-0.5kVA~1.5kVA is on, and the working light is off at the same time; the voltage stabilizer TND-2kVA~30kVA "overvoltage" or "undervoltage"

The indicator light is on, the red indicator light of the voltage stabilizer SJW-1.5kVA~4.5kVA is still in the working state, and there is no overvoltage protection function; the voltage stabilizer SJW-6kVA~60kVA "protection" indicator light is on (that is, the red light is on the overvoltage state or fault state), and the voltage stabilizer will automatically cut off the output voltage to protect the power consumption

Device security. The "Undervoltage" indicator light is an undervoltage indication state, but there is no undervoltage protection function.

4.4 When used in motor running equipment or high-current starting device, a voltage stabilizer with more than 3 times the capacity should be selected to avoid excessive starting current and large voltage drop of the power supply line and failure to work normally.

4.5 Single-phase 0.5kVA adopts fuse seat, 1~2kVA regulator adopts overload protection switch, 3kVA and above specification stabilizer adopts DZ47s small circuit breaker for overcurrent protection, check whether the overload protector is closed before use

Location, whether the circuit breaker and switch are flexible and reliable.

4.6 The three-phase stabilizer must be connected to the neutral line, that is, the three-phase four-wire system to work, and cannot be connected with the ground wire instead of the neutral line  
Turn on the power supply and determine that the three-phase output voltage is within the range before it can be put into operation.

4.7 In order to ensure the safety of equipment and personnel, the shell of the voltage stabilizer is equipped with grounding screws or grounding terminals, and when installed, it must be reliably grounded to prevent the chassis from inducing voltage or moisture leakage to ensure the safety of equipment and personnel.

4.8 After the installation is completed, turn on the input power switch, the working light is on, and the voltmeter is within the normal output voltage range, you can turn on the electrical switch of the electrical equipment to make the load equipment operate normally.

4.9 The front panel of the product is equipped with a voltmeter, which shows the voltage as the output voltage

4.10 When SJW-series three-phase series voltage stabilizer has single-phase load, attention should be paid to the load power, and the load power of each phase shall not exceed 1/3 of the total capacity, (such as SJW-30kVA high-precision automatic AC voltage stabilizer, its load capacity per phase shall not exceed 10kVA); The three-phase current should be balanced as much as possible, otherwise it will damage the stabilizer and affect the service life.

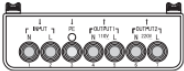
4.11 The input terminal of the three-phase stabilizer should not be equipped with a leakage circuit breaker, if it is necessary to install leakage protection, it should be installed in the stable  
The output of the voltage to avoid false tripping caused by neutral offset.

4.12 When installing the voltage stabilizer, the specifications of the total power switch and fuse at the front end of the voltage stabilizer should be considered, which should be greater than or equal to the nominal current of the voltage stabilizer switch to avoid affecting the power of the voltage stabilizer or tripping by mistake.

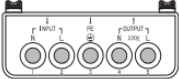
4.13 When wiring the product, it should be strictly in accordance with the terminal identification, refer to the corresponding Chinese or English code identification near the terminal; reasonable and reliable crimping; single-phase and three-phase terminal terminal diagram refer to (1)~(4):

4.14 The opening method of TND-3~10kVA terminal is as follows: two elastic buckles on the terminal are pressed down, and at the same time tilted outward to open (see TND-3~5kVA terminal diagram (5)), loosen the input, grounding and output terminal screws in the rear row of the wiring board, select the power copper wire that meets the requirements of the electrician according to Table 2, and strip the head to remove the outer sheath of the 10mm wire

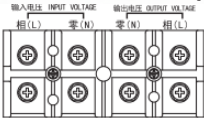
After the wiring nose is cold-pressed firmly, it is installed on the input, grounding and output terminals, and the front screws are the internal wiring of the product, and it is strictly forbidden to loosen the front screws!  
TND-3-5kVA terminal block diagram (1):



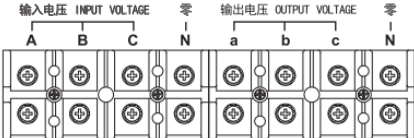
TND-7-10kVA terminal block diagram (2):



TND-10-30kVA cabinet terminal block diagram (3):

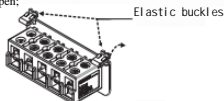


SJW-1.5-60kVA cabinet terminal block diagram (4):



TND-3-10kVA terminal block diagram (5):

As shown in the figure, press down on the two elastic buckles, and at the same time naturally tilt outward to open;



## 5. Normal use conditions and maintenance

5.1 The normal use conditions of the voltage regulator shall meet the following requirements:

### 5.1.1 Altitude

The altitude of the voltage stabilizers installation site should not exceed 1000m.

### 5.1.2 Ambient temperature

The maximum temperature is 40°C; The minimum temperature is -5°C;

(Applicable to indoor voltage s) the average temperature of the hottest month is 30°C; The maximum average annual temperature is 20°C.

### 5.1.3 Atmospheric pressure

Atmospheric pressure: 86kPa~106kPa.

### 5.1.4 Working Environment

- a) The product should be installed in a ventilated, dry and non-direct sunlight room, and there should be no corrosive gases, chemical deposits, dirt, conductive dust, combustibles and other explosive and corrosive media around the product;
- b) The installation of the product should ensure that the product dissipates heat, and the heat dissipation space of more than 0.5 meters should be reserved around the product, and other items are strictly prohibited from being placed on the product;
- d) The output terminals cannot be used in parallel.

### 5.1.5 Relative humidity

The relative humidity should not be more than 90% (at a temperature of 25°C).

## 5.2 Tips!

5.2.1 Please read the instruction manual carefully before use, and scan the QR code of the manual in the "Warm Reminder" of the product with your mobile phone to obtain the manual;

5.2.2 When the input voltage or load changes, the product will emit mechanical rotation and friction sounds, which is a normal phenomenon;

5.2.3 The machine must be reliably grounded to avoid damage to the equipment or electric shock caused by external interference;

5.2.4 The carbon brushes and motors in the product are mechanically worn during work, and should be overhauled and maintained regularly (at least once every 6 months), and the installation and maintenance of the product should be operated by professionals;

5.2.5 According to the use of the environment, must be regularly disconnected from the power supply (generally 6 months), remove the dust inside the product, keep the toroidal transformer contact surface, gear, carbon brush clean, if the carbon brush head has been excessively worn, should be replaced in time with the same type of carbon brush.

5.2.6 Terminal Symbols: +-INPUT-Input, PE-Ground, +-OUTPUT Output.

5.2.7 After one year of product use or replacement of carbon brushes, the carbon brush pressure should be appropriately adjusted, and the adjustment method is as follows: loosen the screws of the carbon brush assembly installed on the central shaft of the motor, press the carbon brush assembly with your hands, so that the carbon brush parts can expand and contract within 3-5mm, and then tighten the screws. If the contact surface between the carbon brush and the coil cannot be in good contact, a fine gauze should be used to pad the plane between the carbon brush and the coil, and then rotate the carbon brush assembly naturally by hand to smooth it.

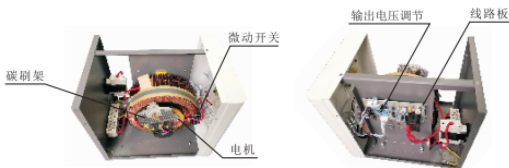
## 6. Common faults and troubleshooting methods

Installation and wiring, maintenance and troubleshooting are not allowed to be operated live, and must be operated by professional electricians or professional technicians to avoid electric shock accidents or damage to the voltage stabilizer!



Table 1: Common faults and troubleshooting methods

Fault phenomenon	Cause of the failure	Troubleshooting methods
The stabilizer is unstable	<ol style="list-style-type: none"> <li>1. The servo motor inside the voltage stabilizer is faulty;</li> <li>2. The circuit board is damaged;</li> <li>3. The input voltage exceeds the voltage regulation range of the voltage stabilizer;</li> <li>4. Micro switch open circuit;</li> </ol>	<ol style="list-style-type: none"> <li>1. There is voltage at both ends of the motor, but the motor does not rotate, and the motor should be replaced. There is no voltage at both ends of the motor, detect whether the micro switch is open to the output voltage potentiometer on the circuit board, if it cannot be ruled out, the motor of the same model should be replaced.</li> <li>2. The sampling voltage of the circuit board is normal, adjust the output voltage adjustment potentiometer on the circuit board, if the fault has not been eliminated, the circuit board of the same model should be replaced (the board number should be the same).</li> <li>3. Measure whether the input voltage exceeds the regulated range of the product, and if so, adjust the grid voltage, circuit or customized wide-range stabilizer.</li> <li>4. After power-off, measure the pin resistance at both ends of the micro switch, the resistance value is 02, if the resistance is too large or infinite, the micro switch of the same model should be replaced.</li> </ol>
The stabilizer does not work and there is no output voltage	<ol style="list-style-type: none"> <li>1. The input end of the voltage regulator is open;</li> <li>2. Circuit breaker tripping or overload protection</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on the input power and check whether the wiring is firm and reliable;</li> <li>2. Reduce the output load power and turn the switch back on.</li> </ol>
The regulated voltage is offset	<ol style="list-style-type: none"> <li>1. Voltage regulation potentiometer displacement</li> <li>2. The voltmeter indication is inaccurate</li> </ol>	<ol style="list-style-type: none"> <li>1. Readjust the voltage potentiometer</li> <li>2. Replace or repair the voltmeter</li> </ol>
The toroidal transformer of the voltage stabilizer burns out	The load is too large and exceeds the load capacity of the stabilizer	Replace the toroidal transformer with a new one, then readjust the output voltage and reduce the load usage to avoid burning out again
Mechanical turning and friction noise inside the stabilizer	<ol style="list-style-type: none"> <li>1. The input voltage fluctuates frequently;</li> <li>2. The load fluctuates greatly</li> </ol>	<ol style="list-style-type: none"> <li>1. It is a normal phenomenon caused by input voltage fluctuations;</li> <li>2. It is a normal phenomenon caused by large load fluctuations.</li> </ol>
The circuit breaker switch trips after the stabilizer is connected	<ol style="list-style-type: none"> <li>1. The input line of the voltage stabilizer is connected incorrectly</li> <li>2. The rated current of the circuit breaker switch does not match</li> <li>3. The input front end is a leakage circuit breaker.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reconnect the input and output lines of the voltage stabilizer correctly;</li> <li>2. Choose a circuit breaker with suitable current;</li> <li>3. The leakage circuit breaker can be adjusted to the output end of the voltage stabilizer.</li> </ol>
The output voltmeter pointer is constantly oscillating	<ol style="list-style-type: none"> <li>1. Poor contact caused by oxidation of the coil contact surface or too small carbon brush pressure;</li> <li>2. The carbon brush is seriously worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the contact surface of the coil with fine gauze and readjust the pressure of the carbon brush;</li> <li>2. Replace the carbon brush, adjust the pressure of the carbon brush, and have good contact with the coil.</li> </ol>
The three-phase stabilizer does not start and has no output voltage	<ol style="list-style-type: none"> <li>1. The input end of the voltage is out of phase;</li> <li>2. The control circuit board is not working or in a protected state;</li> </ol>	<ol style="list-style-type: none"> <li>1. Correctly connect the A, B, C phase lines and 0 "zero line" at the input terminal</li> <li>2. Control the circuit board to drop or damage itself, repair or replace;</li> <li>3. The input voltage is out of the range of the stabilizer, and the mains voltage needs to be adjusted.</li> </ol>



## 7. Random attachments

7.1 No random attachments (please scan the QR code of the product body for instructions and certificates);

## 8. Ordering instructions

8.1 The order must indicate the product model, rated output capacity, number of phases, input voltage, and output voltage.

8.2 Required Quantity.

8.3 If there are special requirements, please make a separate agreement.

### 9. Installation tips!

Before installing the product, the appropriate external copper wire should be selected according to the load power or the rated power of the voltage stabilizer, and the external input and output wires should not be too thin or too long, so as not to cause the product to work normally due to the selection of too thin or too long wire. Refer to Table 2 for the recommended selection of external adapter wires:

Calculated according to the current carrying capacity of the general copper wire: the safe current carrying capacity of the wire is determined according to the maximum allowable temperature of the core, cooling conditions and laying conditions. Generally, the safe ampacity of copper wire is 5~8A/mm<sup>2</sup>,

For example, the recommended value of safe ampacities of 2.5mm<sup>2</sup>BVV copper wire: 2.5×8A/mm<sup>2</sup>=20A

Table 2: Recommended table of external conductors

No.	Model	External copper wire cross-section	No.	Model	External copper wire cross-section
1	TND-500VA	≥0.5mm <sup>2</sup>	12	SJW-1500VA	≥0.5mm <sup>2</sup>
2	TND-1000VA	≥0.75mm <sup>2</sup>	13	SJW-3000VA	≥0.75mm <sup>2</sup>
3	TND-1500VA	≥1.0mm <sup>2</sup>	14	SJW-4500VA	≥1.0mm <sup>2</sup>
4	TND-2000VA	≥1.5mm <sup>2</sup>	15	SJW-6000VA	≥1.5mm <sup>2</sup>
5	TND-3000VA	≥2.5mm <sup>2</sup>	16	SJW-9000VA	≥2.5mm <sup>2</sup>
6	TND-5000VA	≥4.0mm <sup>2</sup>	17	SJW-15kVA	≥4.0mm <sup>2</sup>
7	TND-7000VA	≥6.0mm <sup>2</sup>	18	SJW-20kVA	≥6.0mm <sup>2</sup>
8	TND-10kVA	≥10mm <sup>2</sup>	19	SJW-30kVA	≥10mm <sup>2</sup>
9	TND-15kVA	≥16mm <sup>2</sup>	20	SJW-45kVA	≥16mm <sup>2</sup>
10	TND-20kVA	≥16mm <sup>2</sup>	21	SJW-60kVA	≥16mm <sup>2</sup>
11	TND-30kVA	≥25mm <sup>2</sup>	22	SJW-90kVA	≥25mm <sup>2</sup>

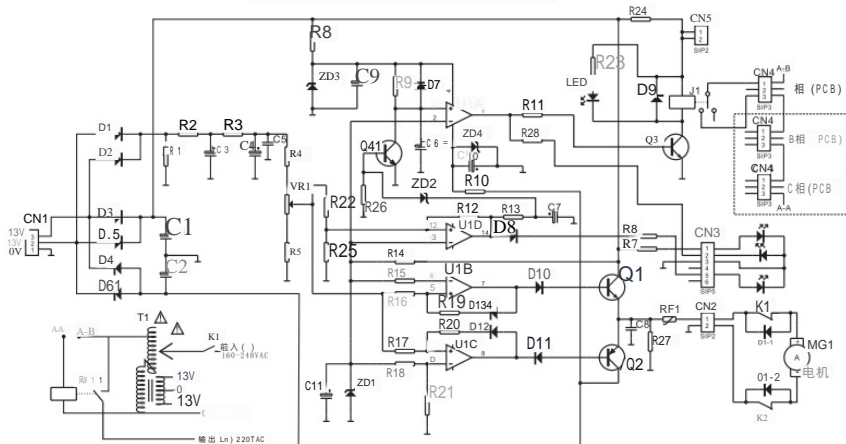
General loads (such as incandescent lamps, refrigerators, etc.) are divided into two types, resistive loads and inductive loads. The formula for calculating the commonly used resistive load:  $P=U \times I$

P = indicates the rated power (W) watts, U= indicates the rated voltage (V) volts, and I= indicates the rated current (A) amps. There is a factor relationship between apparent power and active power, and the power factor is cos0.8;

The relationship between the two is: apparent power 1000VA×0.8 = active power 800W.

TND-15kVA-20kVA High Precision Automatic AC Voltage Stabilizer (Schematic)  
 SJW-6kVA-60kVA High-precision Automatic AC Voltage Stabilizer

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仅供参考，如有改动，恕不另行通知

## Company commitment

Within 24 months from the production date of the product, under the normal storage, transportation, maintenance and use conditions of the customer, the company provides "three guarantees" service when the product itself cannot be used normally due to the manufacturing quality of the product itself. However, if the damage is caused by the following circumstances, it will be repaired for a fee even during the warranty period.

- 1) Due to improper use, maintenance and storage;
  - 2) Self-modification and improper maintenance;
  - 3) After purchase, it is damaged due to falling and installation;
  - 4) Force majeure such as earthquakes, fires, lightning strikes, abnormal voltages and secondary disasters, if you have any questions, please contact the dealer or the company's customer service department.
- Customer Service Hotline: 400-826-8008

**DELIXI**  
ELECTRIC  
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浙江德力西电器有限公司  
Zhejiang DELIXI Electrical Co., Ltd.

名 称: 高精度全自动交流稳压器

型 号: TND、SJW系列

本产品经检验合格准予出厂。

执行标准 Q/DLX 155

检 验 员: 检 05

出厂日期: 见产品编号

**浙江德力西电器有限公司**  
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