

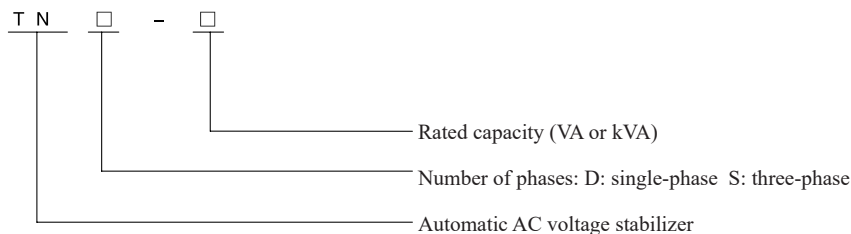
# TND, TNS Series Voltage Stabilizer



## 1 Overview

TND, TNS Series Voltage Stabilizer consists of a contact-type voltage regulator and an automatic control circuit. After sampling and amplifying the output voltage, the servo motor is controlled to drive the electric brush components Screw in the required direction on the annular voltage regulating coil friction surface allowing the output voltage is adjusted to the rated value for obtaining stable voltage. The product can be widely used in power supplies of many electrical equipment and facilities such as office equipment, debugging instrument, communication system, industrial equipment, medical equipment, and household appliances.

## 2 Type Designation



## 3 Technical Parameters

Number of phases	Single-phase	Three-phase
Specifications	0.5k, 1k, 1.5k, 2k, 3k, 5k 7.5k, 10k, 15k, 20k, 30k	1.5k, 3k, 4.5k, 6k, 9k, 15k, 20k, 30k, 40k, 50k, 60k, 75k
Input voltage	160V ~ 250V	280V ~ 430V
Output voltage	220V±3% (110V±3% for 3kVA and below)	380±3%
Output overvoltage protection	246±4V (No overvoltage protection for 1.5kVA and below and 110V output)	430±7V (No overvoltage protection for TNS-4.5kVA and below)
Voltage regulating speed	> 10V per second	
Rated working frequency	50Hz	
Frequency	> 90%	

## 4 Operating Conditions

- 4.1 Ambient environment: -5°C~+40°C (suitable for indoors type)
- 4.2 Relative humidity: Not greater than 90% (at temperature +25°C)
- 4.3 Installation site: The altitude does not exceed 1,000 meters.
- 4.4 Working environment: Installed in the ventilated and dry room free of direct sun radiation, corrosive medium and flammable and explosive gas.
- 4.5 Used indoors; output cannot be used in parallel.
- 4.6 Special use conditions shall be agreed and determined by the client and our company.

## 5 Features

This series of product feature with good waveform, smooth voltage regulation, high output voltage accuracy, wide input voltage range, and high load adaption; with output overvoltage and short-circuit protection (customized for undervoltage protection; when the output voltage is too high or in case of load short circuit, this machine can cut off the output automatically) for electric safety of equipment.

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6 Outline Dimensions and Weight

Number of phases	Model & Spec.	Product dimensions, max L x W x H (mm)	Packing quantity (pcs)
Single-phase	TND-0.5	190 × 170 × 125	4
	TND-1	210 × 190 × 155	4
	TND-1.5	210 × 190 × 155	4
	TND-2	290 × 240 × 195	1
	TND-3	305 × 230 × 230	1
	TND-5 (benchtop)	305 × 230 × 230	1
	TND-7.5 (benchtop)	420 × 240 × 370	1
	TND-10 (benchtop)	420 × 240 × 370	1
	TND-15	420 × 380 × 740	1
	TND-20	420 × 380 × 740	1
	TND-30	420 × 380 × 740	1
Three-phase	TNS-1.5	490 × 320 × 170	1
	TNS-3	490 × 320 × 170	1
	TNS-4.5	490 × 320 × 170	1
	TNS-6	360 × 270 × 640	1
	TNS-9	390 × 310 × 760	1
	TNS-15	440 × 350 × 780	1
	TNS-20	520 × 400 × 860	1
	TNS-30	520 × 400 × 860	1
	TNS-40	650 × 530 × 1080	1
	TNS-50	650 × 530 × 1080	1
	TNS-60	650 × 530 × 1080	1
	TNS-75	670 × 570 × 1310	1

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## 7 Ordering Notice

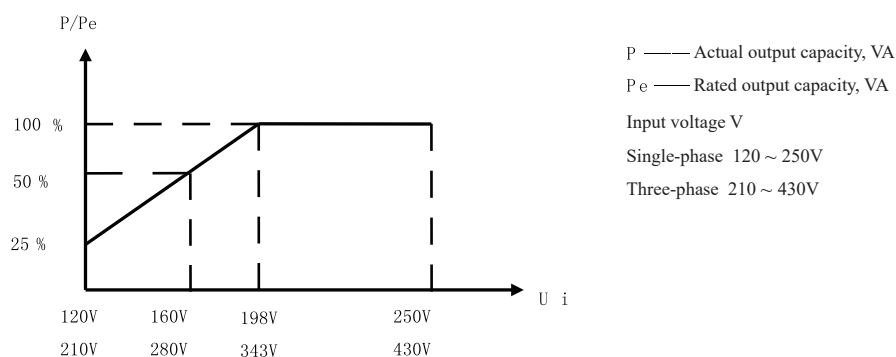
For suitable selection and safety in use, comply with the following requirements when ordering:

- 7.1 The input of this series of three-phase product is three-phase four-wire system connection, and neutral wire must be connected at input when operation.
- 7.2 When three-phase voltage stabilizer is working as single-phase or three-phase product, the maximum capacity of the output per phase is 1/3 nominal capacity of the machine.
- 7.3 Generally, when the input voltage is not below 90% of rated voltage (that is, single-phase:  $220V \times 90\% = 198V$ ; three-phase:  $380 \times 90\% = 342V$ ), the type and specification of voltage stabilizer can be reasonably selected according to the rated power, power-on surge current, and load type (such as inductive or capacitive) of the electrical equipment, and the sufficient margin shall be kept for product output capacity. For specific selection capacity coefficient, refer to the Table below:

Load type	Type of electrical equipment	Capacity coefficient (reference value)	Selected capacity of voltage stabilizer
Pure resistive load	Incandescent lamp, resistance heating wire, and electric stove	1.1~1.3	Greater than or equal to 1.1~1.3 times load power
Inductive or capacitive	Air conditioner, fluorescent lamp, fan, water pump, motor, refrigeration equipment (such as refrigerator and chiller), machining equipment (such as machine tool and punch press), and equipment used in many sites such as building, construction, factories and mins	2.5~3 (the power factor of the electrical appliances is generally not less than 0.8)	Greater than or equal to 2.5~3 times load power (greater than 4~6 times or above load power is selected for stone breaker, ball mill, and mining equipment)

For example: Generally main electrical apparatus in family include a 1.5P air conditioner with a power of about 2000W (generally 750 ~ 950W for 1P for refrigeration or refer to the maximum input power), a induction cooker 2000W, a refrigerator 200W, a fluorescent lamp 40W, a computer 300W, a 40" LED TV with a power of about 130W, and an exhaust fan 45W; when the input voltage is ranged 198V to 250V, the corresponding output capacity curve is 100%. The calculation formula for each one is  $(2000W+2000W+200W+40W+300W+130W) \times 2.5$  (capacity factor)  $\div 100\%$  (capacity ratio P/Pe) = 11675W; the selected model is TND – 15kVA (15000VA).

- 7.4 When the input voltage is below 198V for single phase, and 342V for three-phase, reduce the load by the voltage stabilizer or increase the capacity for selection of product. For details, refer to the product output capacity curve to avoid overload.



For example: When single-phase power is used by a user, main electrical apparatuses include two 1.5P air conditioners with about 2850W, one water pump 1000W, and five 100W exhaust fans, with the calculation formula  $(2850W+1000W+100W \times 5) \times 3$  (capacity factor) = 13050W; when the input voltage is 160V, the corresponding output capacity curve is 50%,  $13050W \div 50\%$  (capacity ratio P/Pe) = 26100W, so the model TND-30kVA (30000VA) is selected. For user using three-phase power, refer to the calculation method of single-phase, and the input voltage corresponds to three-phase 210~430V.

Description: a. The above output capacity curve can refer to the corresponding point. If there is no exact corresponding capacity ratio point, determine a large capacity ratio by referring to the basic range of capacity curve.

b. After selecting product according to the above reference method, 60% ~ 80% actual capacity range is generally recommended (so the product has less power consumption and high working reliability).

c. For specially customized or unconventional product, the output capacity and working conditions can be used properly according to the customization requirements or actual product design situations.