

DBW-SW 系列单相无触点稳压器

DBW-SW Series Single-phase Contactless Voltage Regulator



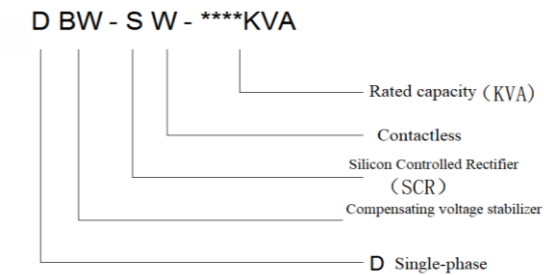
Product Overview

The DBW-SW series single-phase intelligent thyristor contactless AC voltage regulator is a new-generation smart, rapid, and energy-efficient voltage stabilizer designed by our company by introducing and adapting advanced foreign technologies while adapting them to China's national conditions for stable AC voltage regulation. Its central control system employs microcontroller-based intelligent control and features a multi-language LCD display, highlighting the equipment's safety, stability, energy efficiency, and user-friendly interface. Compared with traditional compensating voltage regulators and conventional contactless AC voltage regulators in the industry, it offers five significant advantages: intelligent control and display, high precision, rapid voltage stabilization, quiet operation with energy savings, and output without abrupt fluctuations. Notably, its contactless high-precision rapid voltage stabilization and output stability without abrupt changes represent an industry-first technology, placing it absolutely at the forefront of the sector.

This product is primarily designed for applications in industrial and agricultural sectors, transportation, postal and telecommunications services, oil fields, railways, schools, hospitals, hotels, national defense, and scientific research facilities—any environment requiring stable power voltage. Examples include highway lighting or surveillance systems, as well as long-distance power transmission via photovoltaic inverters.

Models, specifications and main technical indicators

1. The model designation for DBW-SW series single-phase contactless voltage regulators is as follows:



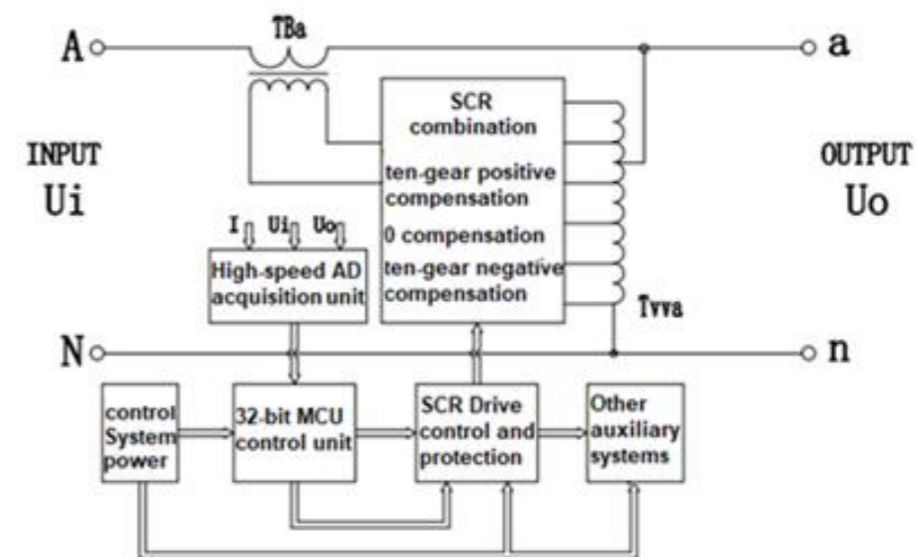
2. Specifications and Main Technical Specifications

Model	Capacity / KVA	Specified Current	input voltage	Output voltage	Productive -ness	wave form aberration	service frequency	Voltage regulation accuracy	respond time	stabilize time	noise
DBW-SW-10KVA	10	45	Single-phase AC 230V±30%	Single-phase AC 230V	≥98%	<0.5%	50~60Hz	±7%	10ms	100ms	below 55dB

Main Performance Indicators of Conventional Products

import	Allow input range	1Φ2W+PE, AC 141-299 V
	Voltage regulation range	1Φ2W+PE, 230V ± 30%
	frequency range	47Hz-63Hz
output	rated voltage	1Φ 2W+PE, AC 230 V
	Voltage regulation accuracy	$U_o \pm 7\%$ (input 161-299 V), $U_o -15\% \sim -7\%$ (input 141-161 V),
	response speed	10ms
	stabilization time	100ms
	waveform distortion	No additional waveform distortion is generated (static)
	overall efficiency	≥98%
protect	Output overvoltage	The output voltage exceeds 10% (adjustable), with protection duration determined by response time.
	output under-voltage	The output voltage is below 15% (adjustable), with protection duration determined by response time.
	Overload and Overcurrent	Electronic detection of overload at 100% - 200%, protected according to inverse-time characteristic, with protection time ranging from 600 seconds to 2 seconds; Electronic detection of overcurrent at 300% or above, with instantaneous protection (protection time ≤ 100 milliseconds)
	Fuse alarm	Available. Refer to the parameter display settings for protection methods.
	auto bypass	Maintains uninterrupted automatic bypass switching during faults
	Manual bypass	Equipped with manual bypass direct-through function for easy maintenance (main loop bypass can be customized at additional cost)
	Overheat protection	The temperature exceeds 105±5°C, causing the temperature control switch to cutoff for protection.
indicate	input voltage	LCD display with single-phase input true effective value
	output voltage	LCD display with single-phase output true effective value
	Electric current	LCD display with true effective value output working current
	work pattern	Voltage Stabilization Mode/ mains Power Mode
	Alarm message	Output overvoltage, output undervoltage, overload/overcurrent, fuse blown
human-computer interface	The intelligent LCD human-machine interface operation panel facilitates the setting and querying of various parameters.	
operate mode	It features two operating modes: "voltage stabilization" and "grid power supply," with manual grid power bypass capability.	
communication interface	Supports RS485 (default) or RS232 (optional, additional fee)	
insulation resistance	The main loop input to ground is ≥2.0 MΩ	
insulation strength	Main circuit to ground: 50Hz/1500V, no breakdown for 1 minute (excluding control and display functions)	
cooling conditions	Natural cooling.	

Product Structure: The DBW-SW series single-phase intelligent thyristor contactless AC voltage regulator primarily consists of a compensation transformer TBa, a 10-level voltage regulation transformer TVVa, and a control adjustment unit comprising 21 thyristor combinations (positive 10-level, zero, and negative 10-level settings) for positive, zero, and negative compensation. It also includes a central control unit based on a 32-bit microcontroller, a voltage and current acquisition unit utilizing a 12-bit high-speed ADC system, a control system power supply, and input/output components. The detailed configuration is illustrated below



Working principle: When the grid voltage U_i fluctuates or the load changes, the output voltage U_o correspondingly varies, processed by a 12-bit high-speed A/D converter.

The microcontroller's central control system then compares the input signal with the set value, processes the comparison through its software program, and outputs the control command accordingly.

Under the action of a current-zero synchronization pulse, the corresponding silicon-controlled rectifier (SCR) is turned on or off, switching the SCR combination to deliver the required positive, zero, or negative compensation at the output of the controllable transformer.

The compensation system features 21 voltage adjustment levels, implemented through the compensating transformer TBa.

This generates the required compensation voltage ΔU_a , resulting in an output voltage $U_{oa} = U_{ia} + \Delta U_a$, thereby rapidly achieving the goal of a stable output voltage U_{0a}



