

# HW-ADV SERIES HMI Digital AC Voltage Stabilizer 30-500KVA(1-ph)/80-5000KVA(3-ph)

**HOWAPOWER**  
MAKE THE LIFE STABLE

## BENEFITS

### Ensure assets continuity, even operated with the worst electrical network conditions:

- ◆ Wide choice of input voltage ranges
- ◆ Symmetrical or asymmetrical voltage ranges
- ◆ Accept 100% unbalance load and 100% unbalance input voltage

### Maintain performances, whatever the downstream distribution conditions:

- ◆ +/-0.5% output voltage accuracy over the full input voltage range, from 0% to full load, irrespective of the power factor
- ◆ Independent regulation on 3-phase products that enables the unit to operate with 100% unbalanced distribution

### Reduce maintenance costs, thus optimizing OPEX:

- ◆ Frictionless voltage adaptation by patent split current design instead of traditional brushes
- ◆ Same control board on each version of the HW-ADV series to reduce storage costs of spare parts
- ◆ Patent software control makes the brush avoid over temperature

HW-ADV is a range of voltage stabilizers that offers great output voltage stability despite wide input voltage fluctuations. Patent split current design and patent control design could save about 20% space and avoid over temperature.



## Range Overview

HW-ADV is a range of servo-controlled voltage stabilizers. The main function of HW-ADV range is to supply critical AC connected loads with a regulated and stabilized AC voltage despite wide variations on the mains AC input supply voltage.

ADV range is available in 4 versions:

- ◆ HW-ADV-SA from 30KVA to 500KVA single phase.
- ◆ HW-ADV-SC from 30KVA to 500KVA single phase.
- ◆ HW-ADV-TA from 80KVA to 5000KVA three phase.
- ◆ HW-ADV-TC from 80KVA to 5000KVA three phase

To further cope with application requirements, HW-ADV range offers a set of options to meet on-side voltage conditions. Wider input voltage range. Asymmetrical input voltage range or specific voltages are some of the adaptations HW-ADV range can offer.

## Applications

Strong voltage fluctuations may be the consequence of undersized distribution lines, weak electrical network, high consumers in the neighboring area, start-up of heavy power loads, etc...

HW-ADV is particularly suited for applications facing such situations:

- ◆ Malls, leisure, and service sector
- ◆ Healthcare, administration and public sector
- ◆ Discrete manufacturing, food and beverage
- ◆ Public infrastructure and transportation
- ◆ Water treatment
- ◆ Mining



Example of HW-ADV-1000KVA

FULL BYPASS  
7" TOUCH HMI  
ACCEPT 100% UNBALANCE LOAD  
ACCEPT 100% UNBALANCE INPUT VOLTAGE  
THREE PHASE INDEPENDENT CONTROL  
PATENTED CARBON TEMP. REDUCE TECHNOLOGIES  
PATENTED CURRENT SPLIT VOLTAGE REGULATOR TECHNOLOGIES

# HW-ADV SERIES

## HMI Digital AC Voltage Stabilizer

### 30-500KVA(1-ph)/80-4000KVA(3-ph)

#### Key Features

- ◆ Continuous operation at full load at 45°C ambient to meet industrial-level reliability requirements
- ◆ Compatible with any type of load, linear or non linear, balanced or 100% unbalanced
- ◆ Maintained output voltage stability over the full load variation, from 0 to 100%
- ◆ Negligible output voltage distortion to safely supply the connected loads
- ◆ Low internal impedance allowing the capability to sustain high output surge current

#### Operation Principle

The design of HW-ADV is based on electromechanical voltage regulation that is controlled by digital technology: the embedded DSP (Digital Signal Processor) permanently compares the output measured voltage value with the reference one. Should the output voltage deviates outside tolerances, the control system immediately reacts and drives the servo motor to adjust the position of the brushes up to a point where the variable transformer will correct the voltage through a buck-boost transformer connected in series:

- ◆ If the input voltage is low, the variable transformer adds a voltage in phase to the input; in the case, the variable transformer acts as a boost.
- ◆ If the input voltage is high, the variable transformer subtracts a voltage by adding a voltage in opposition of phase to the input; in the case, the variable transformer acts as a buck.

#### Schematics

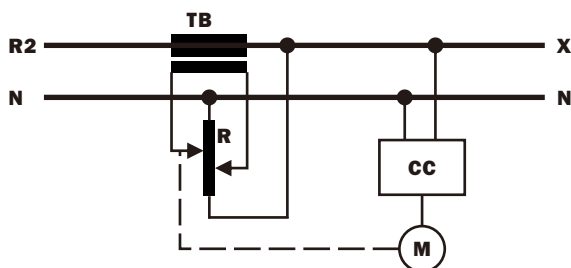


Figure1: HW-ADV-S SERIES

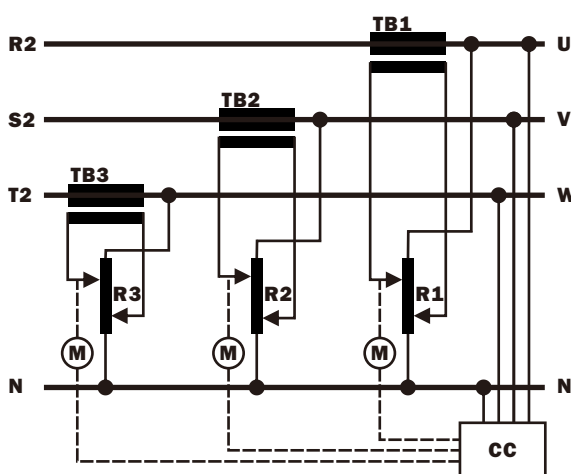


Figure1: HW-ADV-T SERIES

TB=Series transformer CC=Electronic control circuit  
R= Variable autotransformer M= Servo motor

#### Technical data

SERIES	HW-ADV-S	HW-ADV-T
Type of Model	1-ph in/ 1-ph out	3-ph in/ 3-ph out
Range of ratings per Model:		
HW-ADV-SA	30KVA-500KVA	---
HW-ADV-SC	30KVA-500KVA	---
HW-ADV-TA	—	80KVA-5000KVA
HW-ADV-TS	—	80KVA-5000KVA

INPUT		
AC VOLTAGE	1x230Vac	3X400Vac+N (208V/220V/380V/415V/440V and with N or without N for option)
Voltage tolerance	±15% or ±20% as standard	
Frequency	50Hz/60Hz	
Frequency tolerance	±5%	

OUTPUT		
AC VOLTAGE	1x230Vac	3X400Vac+N (220V/230V/240Vselectable) (380V/400V/415V selectable)

Voltage regulation:		
Accuracy	±0.5% (0.5%~5.0% adjustable)	
Speed	12 to 16ms/V	12 to 36ms/V
Acceptable load variation	from 0 to 100%	
Influence of load power factor	None	
Harmonic voltage distortion	≤0.2%	
Overload capability	200% / 2min	

SUPERVISION	
Display type	Touch Digital HMI
Display items	Input/output voltage Input/output current Running state Fault History Loading capacity

PROTECTIONS	
Regulator circuit	circuit breaker or electronic protection
Auxiliary circuit	circuit breaker
Power circuit	circuit breaker
Electronic protection	over/under voltage, Over current

GENERAL DATA	
Operating temperature	-25 to +45°C
Storage temperature	-25 to +60°C
Relative humidity	< 95% non condensing
Operating altitude	1000m max without derating
Cooling	fan- assisted
Efficiency	96 to 98% according to rating
External protection	IP21 (standard)
Installation	indoor
Cabinet color	Grey RAL 7035
Dimensions	Refer to tables Ratings
Weight	Refer to tables Ratings

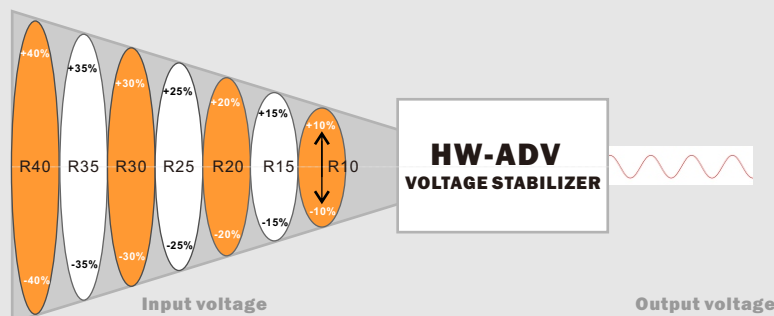
OPTIONS	
Input tolerance, symmetrical:	±25%; ±30%; others
Input tolerance, asymmetrical:	+15%/-25%; +15%/-35%; others
Input nominal voltage, 1-ph:	110V/208V/220V/240V
Input nominal voltage, 3-ph:	208V/220V/380V/415V/440V/480V
Power circuit protection:	interruption or protection device
Bypass:	uninterrupted Bypass line or Manual bypass line

# HW-ADV SERIES

## HMI Digital AC Voltage Stabilizer

### 30-500KVA(1-ph)/80-4000KVA(3-ph)

#### Input voltage options



When there is a reasonable good mains supply, a HW-ADV voltage stabilizer with an input variation range of  $\pm 15\%$  (R15 Models) will usually be more than acceptable, but in more remote locations, or countries where the national supply infrastructure is less developed, variations of  $\pm 20\%$  or greater may be needed to be accommodated by the HW-ADV voltage stabilizer.

**Please Take a Note** – These voltage stabilizers are not designed to support / protect voltage “back feeding” applications, where energy is required to be also fed back into the mains supply.



DESIGNATION	INPUT VOLTAGE TOLERANCE	RATING (KVA)	MAX INPUT CURRENT (A)	DIMENSIONS HxWxD (mm)	WEIGHT (kg)
<b>HW-ADV-S SERIES 1-PH INPUT/1-PH OUTPUT</b>					
HW-ADV-SA R20-30	$\pm 20\%$	30KVA	143A	1670x350x800	225
HW-ADV-SA R15-40	$\pm 15\%$	40KVA	190A	1670x350x800	225
HW-ADV-SA R20-40	$\pm 20\%$	40KVA	190A	1670x350x800	240
HW-ADV-SA R15-50	$\pm 15\%$	50KVA	238A	1670x450x1000	240
HW-ADV-SA R20-50	$\pm 20\%$	50KVA	238A	1670x450x1000	253
HW-ADV-SA R15-80	$\pm 15\%$	80KVA	381A	1670x450x1000	253
HW-ADV-SA R20-80	$\pm 20\%$	80KVA	381A	1670x450x1000	276
HW-ADV-SA R15-100	$\pm 15\%$	100KVA	477A	1670x450x1000	276
HW-ADV-SA R20-100	$\pm 20\%$	100KVA	477A	1670x450x1000	316
HW-ADV-SA R15-120	$\pm 15\%$	120KVA	572A	1670x450x1000	316

DESIGNATION	INPUT VOLTAGE TOLERANCE	RATING (KVA)	MAX INPUT CURRENT (A)	DIMENSIONS HxWxD (mm)	WEIGHT (kg)
<b>HW-ADV-T SERIES 3-PH INPUT/3-PH OUTPUT</b>					
HW-ADV-TA R20-80	$\pm 20\%$	80KVA	120A	1770x350x800	280
HW-ADV-TA R20-100	$\pm 20\%$	100KVA	150A	1770x450x1000	340
HW-ADV-TA R20-150	$\pm 20\%$	150KVA	225A	1770x450x1000	453
HW-ADV-TA R20-200	$\pm 20\%$	200KVA	300A	1770x450x1000	510
HW-ADV-TA R20-250	$\pm 20\%$	250KVA	375A	1870x500x1200	635
HW-ADV-TA R20-300	$\pm 20\%$	300KVA	400A	1870x500x1200	655
HW-ADV-TA R20-350	$\pm 20\%$	350KVA	525A	1910x600x1400	690
HW-ADV-TA R20-400	$\pm 20\%$	400KVA	600A	1910x600x1400	790
HW-ADV-TA R20-500	$\pm 20\%$	500KVA	750A	2010x800x1600	830
HW-ADV-TA R20-550	$\pm 20\%$	550KVA	825A	2010x800x1600	850
HW-ADV-TA R20-600	$\pm 20\%$	600KVA	900A	2010x800x1600	870
HW-ADV-TA R20-650	$\pm 20\%$	650KVA	975A	2010x800x1600	900
HW-ADV-TA R20-700	$\pm 20\%$	700KVA	1050A	2010x1000x1800	1290
HW-ADV-TA R20-750	$\pm 20\%$	750KVA	1125A	2010x1000x1800	1380
HW-ADV-TA R20-800	$\pm 20\%$	800KVA	1200A	2010x1000x1800	1690
HW-ADV-TA R20-1000	$\pm 20\%$	1000KVA	1500A	2010x1000x1800	1710
HW-ADV-TA R20-1500	$\pm 20\%$	1500KVA	2250A	2010x1000x1800	1870
HW-ADV-TA R20-2000	$\pm 20\%$	2000KVA	3000A	2010x2000x1800	2200
HW-ADV-TA R20-3000	$\pm 20\%$	3000KVA	4500A	2010x3000x1800	3500
HW-ADV-TA R20-4000	$\pm 20\%$	4000KVA	6000A	2010x4000x1800	5500
HW-ADV-TA R20-5000	$\pm 20\%$	5000KVA	7500A	2010x6000x1800	7000



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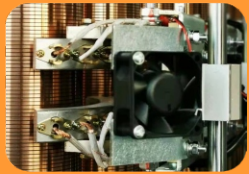
## Technology according to the rating



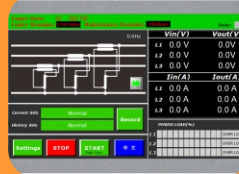
**PATENT PROGRAM CONTROL  
FOR MICRO PROCESSOR CHIP**



**WITHOUT BOBBIN WINDING  
MAKES HEAT DISSIPATION  
EXCELLENT**



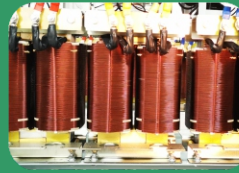
**PATENT SPLIT CURRENT DESIGN  
SAVE THE COST AND MAKES  
DESIGN COMPACT, UP TO SAVE 60%  
SPACE FROM TRADITIONAL DESIGN**



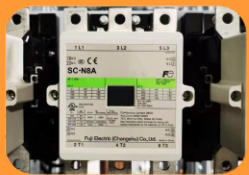
**7" TOUCH HMI  
FULL PARAMETER DISPLAY INCLUDE  
INPUT/OUTPUT CURREN, VOLTAGE,  
FAULT INFO AND FAULT HISTORY  
LANGUAGES BE SELECTABLE**



**FULL MECHANICAL BYPASS  
HASSLE FREE BY-PASS OPTION WITHOUT  
CUTOFF LOAD POWER**



**THREE PCS INDEPENT TRANSFORMERS  
ACCEPT 100% UNBALANCE LOAD AND  
100% UNBALANCE INPUT VOLTAGE**



**HIGH QUALITY PARTS TO BE USED  
MAKES HIGH AVR QUALITY AND  
MAKES AVR MORE RELIABLE**



**HIGH TEMP. RESISTANCE MATERIAL  
AVR CAN BARE TEMPRETURE UP TO 200C  
DUE TO HIGH RESISTANCE INSULATION  
MATERIAL TO ABSORB TWO TIMES  
CURRENT**



**THREE PCS SERVO MOTORS  
PHASE INDEPENDENT CONTROL AND  
ACCEPT INPUT VOLTAGE  
100% UNBALANCE**



**ONE YEARS WARRANTY PROMISE  
MAKES CUSTOMERS USE MORE AT EASE**

## Typical clients



Al-Karam Towel Industries (Pvt.) Ltd.