

TSDXtend Series

Servo/ Electromechanical Voltage Regulators

10,5-6000 kVA **3:3**
IN/OUT

Precise, Stable, Undistorted, Conditioned AC Power to Your Power Infrastructure

The TSD Xtend Servo Voltage Stabilizer presents, optimized, robust power conditioning and performance, delivers versatility for many environments, vast range of applications whilst reducing TCO & time for ROI.



TSDXtend at a Glance

- AVR Type : VI Servo/ Electrodynamical Voltage Stabilization
- Independent Phase Control and Voltage Regulation
- True RMS Analysis, High Speed Full Digital Microprocessor Control
- Selectable Output Voltage from 210V to 255V (L-N) / from 360V to 440V (L-L)
- Advanced & Reliable Protection Equipment, Fast Fuses, MCCB Disconnectors
- Smart Control Features and Adjustable Operation Parameters via User Interface
- Available Input Voltage Regulation Ranges, Standard Production 310~450Vac, 275~430Vac & 275~450Vac;
- The User Can Select the Optimum Voltage Range from Chart-A for Site Requirements
- User Interface with Operation Parameter Settings, Voltage and Frequency Info

Options & Accessories

- Isolation Transformer for Input and/ or Output
- Harmonic Filters Which Reduces The Harmonics As Low As 8% from 25~35% Levels,
- PFC Power Factor Correction & Capacitor Filter/ EMI/RFI Filters/ Custom Input Voltage Range
- IP Classified Enclosures are Available from IP21 to IP65
- Advanced Connectivity, Monitoring & Management via TCP/ IP Network Management, Dry Contact Relays, RS232, RS485 MODBUS, Remote Panel
- 7 inches Touchscreen Panel with User Friendly Interface, Power and Network Analyser

Features & Applications | TSDXtend

- Robust, Reliable, Conformity to Global Standards 
- 360/ 380/ 400/ 415/ 440/ 480Vac, 50 60 Hz Networks 
- Industry, Industrial Zones, Industrial Facilities, Factories, Plants, Production, Manufacturing Industries 
- Military, Army Bases, Airbases, Naval Forces, Shipyards, Marine & Maritime 
- Airports, Shopping Malls, Hotels, Residents, Towers 
- Hospitals, Medical Centers and Facilities, Medical Applications, Clinics, Banks, Financial Institutions 
- Field Operations of Oil & Gas Industry, Power Plants, Petro-Chemical Industry 
- Telecom Towers, Field Base Stations, Datacenters, Buildings 
- Transportation, Railways, Tunnels, Highways 

TSDXtend at a Glance

Stabilizer Type & Technology	VI Servo/ Electrodynamic Voltage Stabilization, Independent Phase Control and Voltage Regulation True RMS Analysis, High Speed Full Digital Microprocessor Control
MTBF/ MTTR	Over 250000 Hours/ 15 Minutes to 2 Hours
Selectable Output Voltage	Within The Controller Predefined Limits, Between from 210V to 255V (L-N) / from 360V to 440V (L-L)
Standards/ Certification/ Compliance	LVD, EMC, CE, COMPLIANT TO LATEST STANDARDS AND DIRECTIVES Safety [LVD] EN 61000-6-3, EN 61000-6-4, 2006/95 EEC Council Directives Electromagnetic Compatibility [EMC] EN 61000-4-5, EN 61000-4-6, EN 61000-4-2 Quality Management CE, ISO 9001:2015, ISO 14001, ISO 45001
Input Voltage Range	Standard Production 310~450Vac, 275~430Vac & 275~450Vac; The User Can Select the Optimum Voltage Range from Chart-A for Site Requirements
Protection Features	INPUT Overvoltage protection : Class I input surge arrestors - TVSS, Lightning Protection Class II output surge arrestors, NH Fast Fuses OUTPUT Load protection against overload, over/undervoltage, short circuit : Microprocessor Controlled, MCCB, with Auxiliary Contact INPUT/ OUTPUT Disconnection Devices : MCCB for each phase, in synch with auxiliary contacts Automatic Shut Down When The Utility is Not Within Predefined Limits, Automatic Restart When The Utility Comes Back To Normal Smart Control Features via User Interface : Output Low/High Voltage Setting, Overload MCCB Tripping Setting, Input Voltage Low/High Limits Settings Over Temperature : Thermostath Controlled Redundant Fans
Instrumentation, Display & Parameters	As a Standard, User Interface with Operation Parameter Settings, Voltage and Frequency Info An Optional 7 inches Touchscreen Panel with User Friendly Interface is Available with TCP/IP Network Management, Power and Network Analyser, Dry Contact Relays
Bypass Breaker	Pocket Breaker/ Disconnecter for Low Capacities, 1-0-2 or interlocked MCCB units for each phase.
MCCB for Protection	Standard for High Capacities, Standard for Mains Input of All Ratings
Material [Casing]/ Colour Protection Degree	HOT-ROLLED CARBON STEEL SHEETS, GALVANISED, RUST FREE UNDER CERTAIN CONDITIONS, 1.2MM TO 3MM THICKNESS DEPENDING ON THE WEIGHT OF THE AVR, 316 STAINLESS STEEL/ ALUMINIUM IS OPTIONAL FOR WHITE RAL 7032, 7035, GRAY 7016 or BLACK RAL 9005, Outdoor Paint is Optional IP20/ 21 AS STANDARD, AVAILABLE FROM
Cable Entry	REAR TOP FOR LOW CAPACITIES AND FRONT BOTTOM FOR HIGH RATINGS
Installation/ Cooling	All Standard Units are FOR INDOOR USE, OUTDOOR IP CLASSIFIED ENCLOSURES AVAILABLE, CONTAINERIZED SOLUTIONS ARE AVAILABLE Forced Air Cooling via Redundant Fans, Thermostath Controlled (Fans Start Rotating over 25°C)
Operating Conditions/ Environment	Ambient temperature -25/+45°C Storage temperature -25/+60°C Max relative humidity <95% (non condensing) Altitude <2000m, The AVRs degrades output power capacity by 0.5% in each 100m Audible Noise <45 dBA for 60-2000 kVA, < 60 dBA for 2000-6000 kVA
Connectivity/ Remote Monitoring & Management	OPTIONAL (As Hardware & Software), Dry Contact Relays, 7 inches Touchscreen Panel with User Friendly Interface, TCP/IP Network Management, Power and Network Analyser, RS232, RS485 MODBUS, Remote Panel
OPTIONS	Isolation Transformer for Input and/ or Output/ Harmonic Filters Which Reduces The Harmonics As Low As 8% from 25~35% Levels, PFC Power Factor Correction & Capacitor Filter/ EMI/RFI Filters/ Custom Input Voltage Range/ IP Classified Enclosures are Available from IP21 to IP65, TCP/ IP Ethernet Network Management, Dry Contact Relays, RS232, RS485 MODBUS, Remote Panel 7 inches Touchscreen Panel with User Friendly Interface, Power and Network Analyser,

Electrical Characteristics

Input Voltage & Frequency	Rated: 360/ 380/ 400/ 415/ 440Vac 3P+N+PE, 50/ 60 Hz \pm 5Hz
Input Voltage Range	Pls. see Chart A - Available Ratings & Input Voltage Variations @380Vac
Harmonic Distortion	Zero, No effect on the utility harmonics, Harmonic Filter is Available (Optional), Reduces Very High (Like 25-35%) Utility Harmonics to 8% Levels
Output Voltage, & Frequency Voltage Accuracy, Regulation Speed	Rated : 360/ 380/ 400/ 415/ 440Vac 3P+N+PE, 50/ 60 Hz < \pm 0,5% at Static, Linear Loads, < \pm 1,5% at Dynamic Loads; 120V/s for Input Fluctuations Within 10%
Selectable Output Voltage	Within The Controller Predefined Limits, Between 210V to 255V (L-N) / 360/ 380/ 400/ 415/ 440Vac from 210V to 255V (L-N) / from 360V to 440V (L-L)
Overload Capacity/ Acceptable Load Pf Accepted Load Variation, Unbalanced Load	2 minutes for 200% Rated Load/ 0.8 Lagging to Leading Up to 100/ 100% Since The Phases are Regulated Independently
Efficiency	>98 %, Losses on Transformers, Variacs, Electronic Controllers and Busbars/ Cabling is As Low as 2% max.

Chart A - Available Ratings & Input Voltage Variations @380Vac

Input Voltage Range	Capacities																				
	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3500	4000
* S.P. \pm 18%, 310~450Vac @ 380Vac	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3500	4000
* S.P. -27% ~+13%, 275~430Vac @ 380Vac	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3500	4000
\pm 10%, 340~420Vac @ 380Vac						200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3500	4000
\pm 15%, 320~440Vac @ 380Vac				120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3500	4000
\pm 20%, 305~455Vac @ 380Vac			100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000	3300	
\pm 25%, 285~475Vac @ 380Vac		75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500	3000		
\pm 30%, 265~495Vac @ 380Vac	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500			
- 35%~+15%, 245~435Vac @ 380Vac	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500			
- 45%~+15%, 210~435Vac @ 380Vac	60	75	100	120	150	200	250	300	400	500	600	700	800	1000	1250	1600	2000	2500			

* S.P. : These voltages ranges are most common AVR voltage ranges manufactured by TSINE Electronics Industries.

* TSINE reserves the right to change any information stated in this brochure without prior notice. The images of real product may differ with the one on the brochure.