泰利電器實業股份有限公司
TAILI ELECTRIC CORPORATION

CATALOG

AUTOMATIC VOLTAGE REGULATOR(AVR)

TL-AVR

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V1

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TL-AVR-I

Introduction

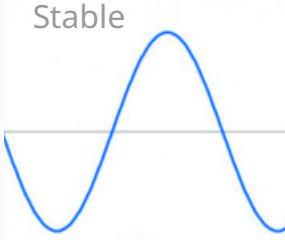
Induction Electronic Voltage Stabilizer (TL-AVR-I)

Oil-immersed Cooling Type e.g.1000KVA

Air-forced Cooling Type e.g. 400KVA

Unstable

Stable



The TAILI TL-AVR-O Induction Electronic Voltage Regulator utilizes high-grade insulation oil compliant with JIS C2320 and IEC60296 international standards to ensure stable, safe, and reliable operation. The series offers Oil-immersed Self-cooling models ranging from single-phase 3 kVA to three-phase 1000 kVA, and Dry-type Air-cooled models from 10 kVA to 500 kVA, both supporting input voltages of 100–480V with regulation ranges from ±15% to ±50% (custom specifications and larger capacities available upon request). With a long-standing commitment to high-quality voltage regulation and testing equipment, TAILI serves diverse global sectors—including overseas embassies, public utilities, and large-scale manufacturing and chemical plants—earning widespread trust and industry recognition.

Applications

CNC Industrial Equipment	IT Data Centers
Manufacturing & Production Lines	Commercial Office Buildings
Research Laboratories	Telecommunication Base Stations
Medical Equipment	Government Institutions
Various Machine Tools	Transportation Infrastructure
Semiconductor Manufacturing Equipment	EV Charging Stations

TL-AVR-I

Features

Oil-immersed Cooling Type

Convenient Hanging for Easy Mobility

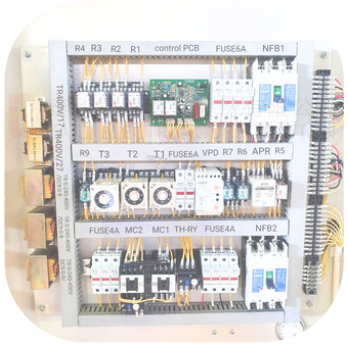
The convenient hanging device allows effortless transport and repositioning of equipment. Designed for intuitive operation, it features a sturdy and durable structure, enhancing mobility efficiency while ensuring safe use.

Mobililty

Comprehensive Safety Protection

TAILI's induction electronic voltage regulators are equipped with comprehensive protection features, including alarm buzzers and LED indicators, as well as safeguards against phase loss, overload, overheating, and input over/under voltage. Furthermore, the output includes a safety switch function to ensure maximum electrical safety for users during equipment operation.

Protection



High-Performance Heat Dissipation Fins

The heat circulation fins are specially designed to enhance thermal dissipation, rapidly removing heat to maintain stable equipment operation. Combining precise structure with durable materials, they provide reliable cooling performance, extending system lifespan and improving overall efficiency.

Thermax

TL-AVR-I

Air-forced Cooling Type

Secure Wiring Space Design

The wiring space is designed with user convenience and electrical safety under load in mind, utilizing specialized insulation barriers to isolate the cable wiring area. This design ensures the safe and reliable operation of the induction electronic voltage regulator.

Clear Status Display Switching

The status display switching function enables users to effortlessly toggle between monitoring views, quickly accessing operational information for different equipment or systems. Its intuitive operation enhances monitoring efficiency and maintenance convenience, ensuring precise and reliable equipment management.

Four-Sided Ventilation for Optimal Cooling

The equipment features a four-sided ventilation design, promoting efficient airflow and rapid heat dissipation to maintain stable operation. This high-performance cooling structure extends component lifespan and enhances overall system reliability and continuous performance.

TL-AVR-I

- **Digital Display & Multi-Phase Monitoring:** Clearly shows input voltage, output voltage, and output current for each phase, providing comprehensive system visibility.
- **Durable, Wear-Free Design:** Brush-less structure with no sliding contacts, eliminating sparks and wear; lifespan exceeds 20 years.
- **Comprehensive Safety Bypass Switch:** When the system is switched to bypass mode for maintenance, the built-in protection functions—including over/under voltage, phase loss, and instantaneous power failure protection—remain active, ensuring that equipment maintains fundamental electrical safety even during servicing.
- **Comprehensive Alarm System:** Visual and audible alerts protect against overcurrent, phase loss, over/under voltage, and overtemperature conditions.
- **High Reliability in Harsh Environments:** Wide input voltage range, low losses, high efficiency (≥98%), and near-unity power factor for stable industrial operation.
- **Precise Linear Voltage Regulation:** Electromagnetic induction design ensures stable and accurate output voltage without contact movement or transformer taps.
- **Exceptional Load-Carrying Capability:** Supports overloads and high inrush currents, with instantaneous loads up to 500% for 6 seconds.
- **Self-Diagnostic & Status Indicators:** Internal circuit monitoring with color-coded indicators simplifies fault detection and troubleshooting.
- **Lightning and Surge Protector:** The equipment features built-in professional-grade lightning and surge protection, effectively absorbing and suppressing instantaneous high voltage to prevent damage to precision equipment from abnormal power surges. Enhanced optional components are available for specific models, establishing the most robust safety barrier for your electrical environment.
- **Customizable & External Signal Outputs:** Provides terminals for abnormal signals and offers tailored solutions based on customer requirements.

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TL-AVR-I

Type Number Designations

TL-AVR-IO32500-15

- TAILI
- AVR
- Induction Electronic Voltage Stabilizer
- O: Oil-immersed Cooling Type
  A: Air-forced Cooling Type
- 1: 1Φ
  3: 3Φ
- KVA
- -XX: The range of stabilizing I/P voltage
  1: 100V, 110, 120V
  2: 200V, 220V, 240V
  3: 380V
  4: 400V, 415V, 440V, 480V
  X.X: 4-digit above volt.

Technical Information

Custom specifications available

Type		Oil-immersed Cooling Type (TL-AVR-IO)	Air-forced Cooling Type (TL-AVR-IA)
Cooling method		ODAF	AF
Phase(Φ)		Single Phase(1Φ) Three Phase(3Φ)	
Frequency(Hz)		40~60Hz	
Voltage(V)		1P2W, 1P3W: 100~240V 3P3W, 3P4W: 200~480V	
The range of stabilizing I/P voltage		±15~50%	
Waveform Distortion		0	
Capacity(KVA)		1Φ: 3~500KVA 3Φ: 5~1000KVA	10~500KVA
Response time		0.5~2s (depend on the range of voltage)	
Efficiency		>97%	
Insulation class		A, B, H, F(depend on the specification)	
Protective design&function	Bypass	o	o
	Lightning & Surge Protection	o	o
	Phase failure protection	●	●
	Over/undervoltage	●	●
	Overload protection	●	●
	Oil empty indicator	●	●
Ambient conditions	Over temperature protection	●	●
	Noise level	<40dB	
	Temperature	-20~+40°C	
	Humidity	0- 90% 非凝結	
International Safety Standards	International protection marking	IP20	
	International standard specifications	BS 7452:1991 IEC 60989:1991	
	International standard certification for insulating oil	JIS C2320 IEC 60296	-
	International standard for enclosures	NEMA 1 style BS EN 5490 IEC 60529	

TL-AVR-P

Introduction

TAILI is dedicated to providing high-quality power stabilization technology with a professional regulator series covering an extensive range from single-phase 3kVA to three-phase 1200kVA. Specifically engineered for CNC machinery, semiconductor equipment, medical monitoring, and precision laboratories, these units are characterized by their compact size and high conversion efficiency. With an exceptional Mean Time Between Failures (MTBF), the series delivers outstanding stability and durability in high-reliability industrial and research environments.

In terms of core technology, the series offers two advanced logic control modes: the PS series utilizes Intelligent Logic Regulation for automatic adjustments based on load characteristics, while the PR series employs a Microprocessor Unit (MCU) with True RMS signal processing to eliminate instability caused by waveform distortion. Furthermore, the "Independent Phase Regulation" design ensures that the output remains pure and precise even under 100% three-phase input imbalance, non-linear power supplies, or extreme heavy-load conditions.

Safety and intelligent monitoring are the pillars of this product line, featuring multi-layered over/under-voltage protection and a Start-up Over-Voltage Protection (SOVP) device that ensures a low-voltage start to eliminate high-voltage risks. The system provides comprehensive defense against phase loss, short circuits, and instantaneous power interruptions. Additionally, the electronic automatic and manual bypass functions ensure that equipment receives basic protection and remains operational during internal anomalies or routine maintenance.

The series demonstrates formidable load adaptability, supporting an instantaneous overload capacity of up to 150% without voltage drops. The user interface features a dual-loop anti-misoperation design and a secure four-digit password (PR series) to prevent unauthorized setting changes. Manufactured using high-precision SMD and SMT processes and subjected to rigorous automated testing, TAILI regulators—when paired with optional EMI and surge filters—provide a distortion-free, purified power supply for high-value production assets.

Applications

CNC Industrial Equipment	IT Data Centers
Manufacturing & Production Lines	Commercial Office Buildings
Research Laboratories	Telecommunication Base Stations
Medical Equipment	Government Institutions
Various Machine Tools	Transportation Infrastructure
Semiconductor Manufacturing Equipment	EV Charging Stations

TL-AVR-P

Features

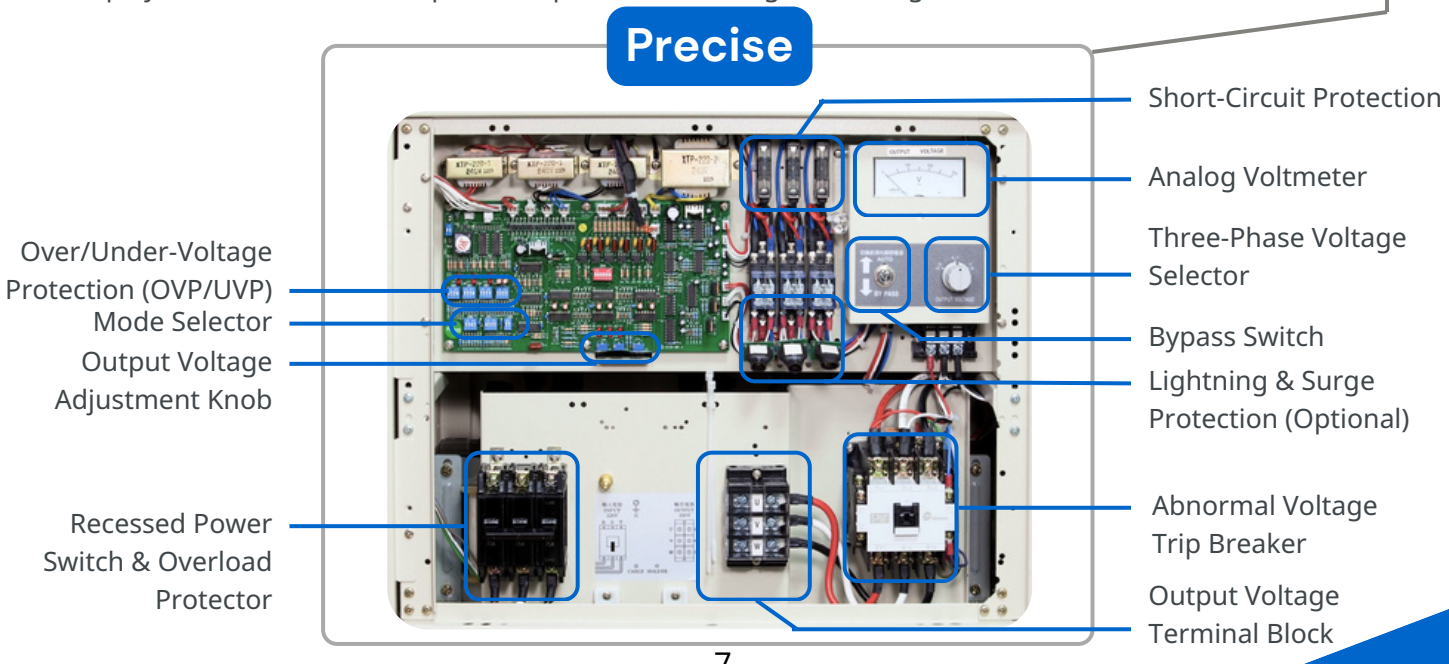
PS

Intuitive Monitoring&Operational Safety

This interface combines intuitive LED guidance with rigorous safety mechanisms, featuring real-time alerts that make voltage status clear at a glance. For power switching, a "dual-finger" press design is utilized at the hardware level to eliminate the risk of accidental triggers, ensuring every operation is simple, precise, and secure.

Precision Regulation

Combining rigorous protection with user flexibility, this control board features built-in safety trips and a bypass switch for continuous power. With customizable regulation and an intuitive three-phase display, it enables effortless, precision power monitoring and tuning.

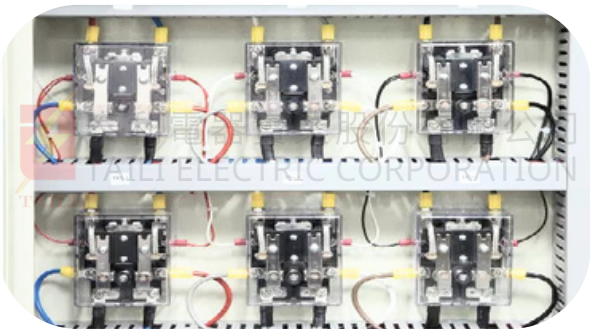


TL-AVR-P

Comprehensive Low-Voltage Start (SOVP)

Equipped with an advanced SOVP device, the system forces a low-voltage start during power-on or recovery. This eliminates instantaneous high-voltage risks, providing a reliable power buffer for your downstream equipment.

SoftStart



Full-Time Lightning & Surge Protection

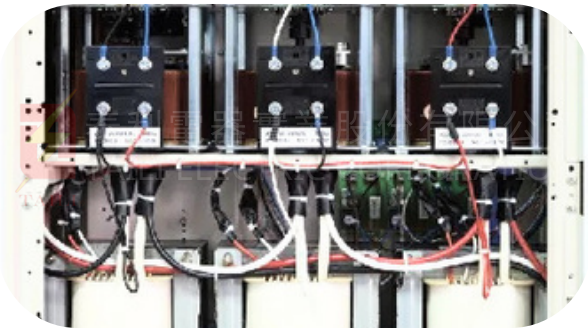
Built-in professional-grade surge protection absorbs and suppresses high-voltage spikes. For specific models, an optional enhanced module is available to build a robust safety barrier for precision instruments.

SurgeGuard

Class H High-Standard Insulation

The transformer utilizes industry-leading Class H insulation materials, offering superior heat resistance and durability. This ensures stable operation and significantly extends equipment life even in harsh, high-temperature environments.

HeatShield



TL-AVR-P

- **Full-Time Low-Voltage Start (SOVP)**: Prevents high-voltage surges by forcing a low-voltage start during power-on or recovery.
- **Smart Logic Regulation:** Uses pulse-circuit logic to auto-adjust regulation speed and range based on load and fluctuations.
- **Protected Bypass Mode:** Maintains over/under-voltage, phase-loss, and sag protection even during maintenance bypass.
- **150% Overload Resilience:** Sustains up to 150% rated capacity without voltage drops, easily handling high inrush currents.
- **Instant Trip Protection:** Blocks high-voltage impacts during power restoration by tripping until voltage stabilizes.
- **Self-Diagnostics:** Real-time monitoring and LED feedback quickly pinpoint fault locations for efficient maintenance.
- **Phase-Loss Protection:** Instantly trips and identifies fault phases to prevent motor burnout from single-phasing.
- **Modular Design & ICT Testing:** Modular hardware with ICT-automated testing ensures top-tier reliability and quality.
- **Multi-Level Power Shield:** Customizable protection parameters tailored for unstable grids and heavy-duty equipment.
- **Intuitive Safety Interface:** Color-coded LEDs (Green/Normal, Red/Fault) and a dual-button "two-finger" safety switch prevent accidental operation.
- **Independent Phase Regulation:** Ensures precise, pure output voltage even with unbalanced loads or non-linear power sources.

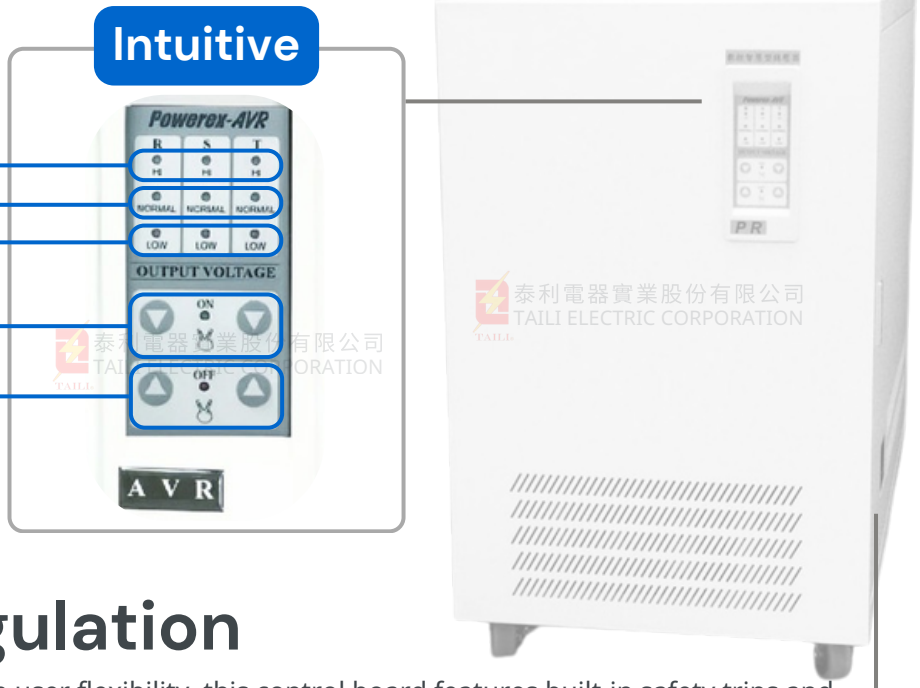


TL-AVR-P

PR

Intuitive Monitoring&Operational Safety

This interface combines intuitive LED guidance with rigorous safety mechanisms, featuring real-time alerts that make voltage status clear at a glance. For power switching, a "dual-finger" press design is utilized at the hardware level to eliminate the risk of accidental triggers, ensuring every operation is simple, precise, and secure.



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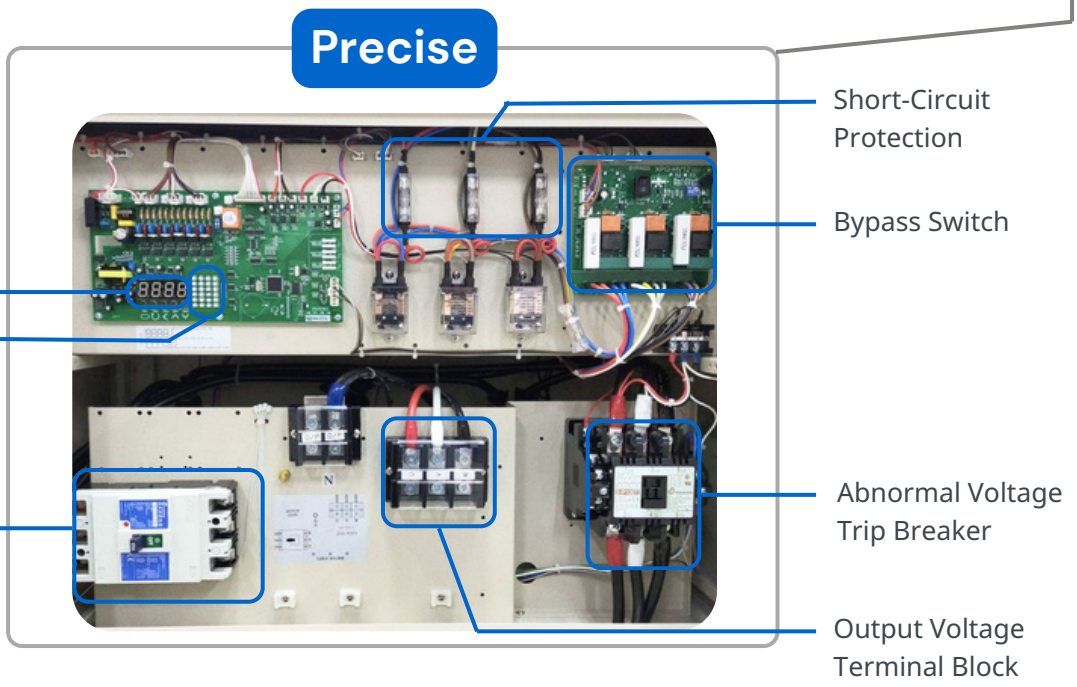
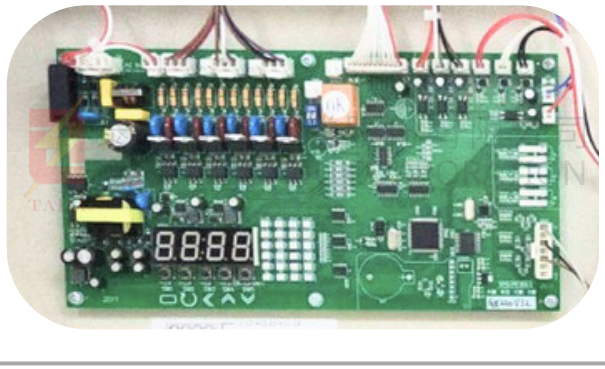


TL-AVR-P

Digital Power Display & Control

This device integrates digital displays with intuitive indicators to provide real-time data on per-phase voltage, frequency, and other core metrics. With precision digital settings and a multi-functional status bar, users can monitor operational details and power quality at a glance, ensuring fast and accurate maintenance decisions.

SmartDisplay



Advanced Arc Quenching & Noise Suppression

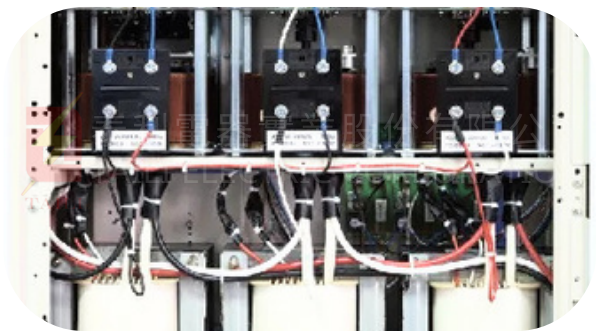
Equipped with professional-grade arc-quenching and anti-interference devices, this system effectively eliminates switching arcs and blocks external electromagnetic noise. By filtering power interference, it maintains high-purity output voltage to protect precision electronics, providing a quieter and more stable environment for sensitive equipment.

CleanWave

Class H High-Standard Insulation

The transformer utilizes industry-leading Class H insulation materials, offering superior heat resistance and durability. This ensures stable operation and significantly extends equipment life even in harsh, high-temperature environments.

HeatShield



TL-AVR-P

- **Next-Gen EMP & MCU Smart Control:** Utilizing a multi-phase, multi-tasking Single-Chip (EMP) coordinated with a Microcontroller (MCU). This significantly boosts processing speed and measurement accuracy, transitioning the voltage regulator into a fully computerized control era.
- **Intelligent Self-Adaptive Logic:** Dynamically optimizes control parameters based on real-time site conditions—including input voltage fluctuations and load variations—for true intelligent regulation.
- **True RMS Measurement & Calculation:** The system employs True RMS for all signals, a unique industry standard that resolves measurement errors typically caused by waveform distortion.
- **Solid-State Zero-Transition Drive (STD):** Utilizes solid-state components and zero-crossing technology to eliminate noise and interference, ensuring a cleaner and more stable power output.
- **Superior Voltage Regulation:** Features a regulation angle exceeding 690°. Managed by a microprocessor, it ensures peak output precision while effectively preventing system oscillation.
- **Full-Range Stabilization:** Equipped with a built-in wide-range DC power supply that supports simultaneous single-phase and three-phase inputs, providing the broadest stabilization coverage.
- **Multi-Functional Display & Self-Diagnostics:** Functions as both a regulator and a three-phase power analyzer. Users can monitor and test per-phase voltage and frequency in real-time, with self-diagnostic LEDs reflecting operational status.
- **Wide-Range Over/Under-Voltage Protection:** Multi-layered protection settings tailored for precision instruments or heavy-duty loads in unstable grid environments.
- **Dual Overcurrent & Short-Circuit Protection:** Equipped with three-phase fuses and an input No-Fuse Breaker (NFB) to provide instantaneous protection against overloads and shorts.
- **Phase-Loss & Instantaneous Sag Protection:** Immediately trips upon detecting phase loss, sag, or voltage anomalies, ensuring only purified power is delivered once the grid stabilizes.
- **Auto/Manual Bypass & Delayed Auto-Reset:** The system forces a bypass during internal high-voltage anomalies to protect core components. It also features a delayed auto-reset function, allowing safe power restoration without manual intervention.



TL-AVR-P

Techinical information

Custom specifications available

Phase		1		3				
Model		PS	PR	PS	APS-B	PR	APR	PRN
KVA		3~10	10~75	10~150	12~15	75~150	120~300	300~1200
Hz		50/60Hz						
Voltage		1Φ2W: 110, 220, 380V 1Φ3W: 110-0-110V		(1) I/P=O/P: 3Φ3W: 220, 380, 415V 3Φ4W: 110/190V, 220/380V (Indicate Line voltage/phase voltage) (2) I/P≠O/P: 3Φ3W I/P 380V O/P 220V (3) I/P 3Φ3W, O/P 3Φ4W	3Φ3W: I/P 380V O/P 220V 3Φ4W: I/P 220/380V O/P 127/220V	(1) I/P=O/P: 3Φ3W: 220, 380, 415V 3Φ4W: 110/190V, 220/380V (Indicate Line voltage/phase voltage) (2) I/P≠O/P: 3Φ3W I/P 380V O/P 220V (3) I/P 3Φ3W, O/P 3Φ4W	3Φ3W: 220, 380V 3Φ4W: 110/190V 120/208V 220/380V 230/400V	3Φ3W: 220, 380V 3Φ4W: 220/380V 230/400V
Voltage Transformation Function		-	-	o	●	o	-	-
The range of stabilizing I/P voltage		±10~25% Custom voltage specifications available						
O/P accuracy		±1%						
Main Structure		Intelligently logic voltage regulation	Brand-New Intelligent Voltage Regulation	Intelligently logic voltage regulation		Brand-New Intelligent Voltage Regulation		
Voltage Regulating Signals		-	TRMS	-	-	TRMS		
Efficiency		≥98%						
Response time		<0.1s						
Waveform Distortion		0						
Overload		150% 10s						
Bypass		●						
Safety Alarm & Protection System	Overvoltage	o	o	●	●	●	●	●
	Undervoltage	o	o	●	●	●	●	●
	Overload	-	-	-	●	-	-	-
	Phase loss	-	-	●	●	●	●	●
	Short-circuit	-	-	-	●	-	-	●
	Abnormal	-	-	-	-	-	-	●
Power Status Indicators	Voltgae	●	●	●	●	●	●	●
	Current	-	●	-	-	-	-	-
	Power	-	-	●	●	●	●	●
	Abnormal	-	-	●	●	●	●	●
Safety Password Lock		-	-	-	-	●	●	●
Ambient conditions	Temperature	0~45°C						
	Humidity	0~95% Non-condensing						
	Noise level	<40dB						

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