

Super-Smart AVR (Three Phase) Model # MVR60K



Intelligent logic assembles function programming, it is suitable for all kinds of load and premises. The product lines have complete series and are all CE certified. Also, it's with compact size, high efficiency, and easier to operation. Electrical and servo module mass producing, with several patents and anti-mistake circuit design, the producing procedure meet international standard, with high reliability quality and long MTBF. The products are highly accepted and welcome by CNC industry, computer and instrument industries.

Features

- Intelligently logic regulation
- Self-detecting function
- Powerful overload 150% ability
- With bypass device and protect function
- Big Range high/low voltage protect device
- Phase failure, instant black-out, short circuit protection
- Start over voltage protection
- Independent regulation and protection design
- Full series with the same control system
- Front panel with LED indicator displayed AVR regulating status
- With O/P voltmeter to monitor O/P voltage
- With dip sw. and easier for setting
- Electronics double circuitry switch design
- Separated voltage regulation design, 3 phase unbalance 100%
- Taiwan patent no. 160215, 162577
- Double overload and short circuit protection
- With surge suppressor/LC filter/EMI filter (option) to provide pure power.

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Applications



Key Design Features

- **Intelligently Logic Regulation**

The Powerful PS series can completely adjust the regulating speed and regulation range in accordance with power's variation and the load character on the spot by a precise and unique motor to gain the most satisfactory power regulation required

- **Separate Regulators Design**

Whenever AC power encounters three phase unbalanced, non-linear power or heavy load, the Separate Regulators will still maintain its accurate output

- **Innovative Panel Design**

Almost every average user who considers AVR only as one of the power product seldom pays confirm its nominal reading. To renovate the traditional meter reading, this Super-Smart AVR provides user a very clear reading only by checking the indicators' colors to realize it is normal or abnormal. The green indicator stands for normal, red indicator shows abnormal

- **All Module Design**

All the technical design inside the Super-Smart AVR is of Module Designed and separately assembled, components used on PCB are very stringently quality controlled and tested by computerized ICT satisfactory quality reliability

- **Self-Detect Function Design**

The Self-Detect result is displayed by light indicators providing an immediate, exact malfunction information to users making maintenance more easy and efficient

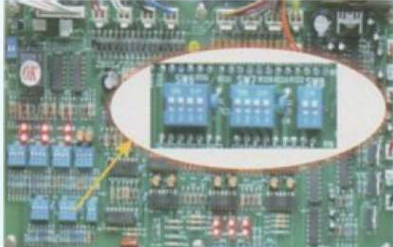
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- **Powerful Overload Capability**
The Super-Smart AVR is specially designed to withstand 150% of its nominal load and cause nothing to output voltage, no voltage decrease
- **Start Over Voltage Protection**
Whether it is switch on or recovers from power outage, the Start Over Voltage Protection will always to start from low voltage to protect the load side equipment
- **Humanized Anti-Mistake Circuit Design**
To prevent from inappropriate operation or touch by which causing AC output switch ON or AC output switch OFF, Super-Smart AVR has a very delicate Electronic Double-Circuit Control design, one must simultaneously push two ONs or two OFFs to start or shut down the Super-Smart AVR
- **Big Range High / Low Voltage Protection**
Whatever the load side it may be like, for instance, heavy load equipment or precise equipment, even there is a very massive power variation, the Super-Smart AVR has a very special feature design of Various/Multi/Big range Select to pre-set the most appropriate and precise adjustment in accordance with the load requirement
- **Phase Failure Protection**
If there is any failure within three phase power, the Super-Smart AVR will immediately complete the detect and have it displayed and trip off to protect the load side equipment
- **Instant Trip Device**
This Instant Trip Design will always trip before AC recovers from an instant black-out, it features a re-set function making sure a stable power is in operation again while AC power gets back to normal. The purpose of this is to protect the load equipment from damaging by a frequently happened abnormal high voltage
- **Bypass Device**
The AVR can still provide High/Low Voltage Protection, Phase Failure Protection...and all the other featured Protection when it is in status of Bypass under maintenance or repairing.

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Technological Features

Logic Assemble Function
Programming



Adopt with multilayer and big range DIP SW logic assemble design, include high/low voltage, delay, and O/P accuracy setting. All setting can operate and select easier, user can pre-set the most appropriate adjustment in accordance with the load requirement

Monitor / Feedback / Buzzer/
Dry Contact



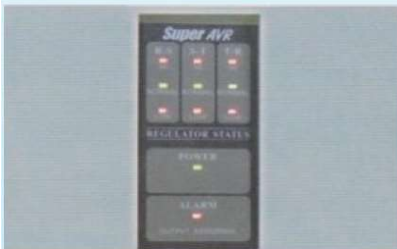
Output voltmeter monitor three phase voltage. With individual three phase feedback buzzer, mute switch and remote monitor dry contact

Electronic Bypass Design for
Each Phase and Section



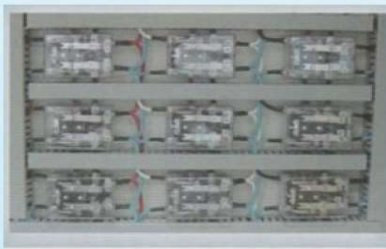
Each phase and each section available separate with their own bypass switch, even under bypass condition which still keep the over/under voltage and phase loss warning function

Innovative Panel Design



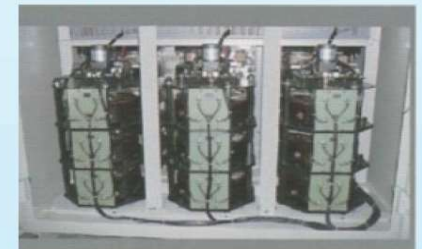
The display panel provides user a clear viewing which also may seen the indicator's color to realize normal or abnormal. The green LED stands for normal, the red LED with buzzer shown abnormal

SOVP Device



Whether it is on or recover from power outage, the Start Over Voltage Protection will always re-start from low voltage

3 Phase Detect & Regulated
Separately



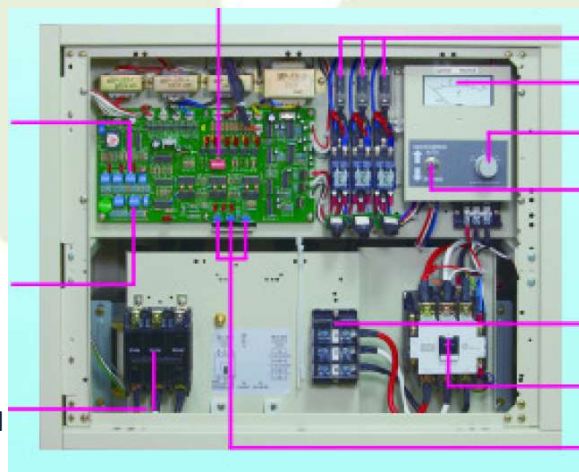
PSN's design is good to detect and adjust three phase individually, the high accurate regulation, output voltage won't oscillation

Excellent and Precision Main control circuit

High /Low voltage
protection based on
various preset select to
suite load requirement

Intelligent mode built in
to match up various
voltages on the spot

Concealed power switch
equipped with additional
over load protection



3-ph Short circuit protection

3-ph meter

3-Ph Voltage selection knob

Electronic Bypass switch
equipped with High/Low voltage
protection and Phase failure
protection even in the Bypass

Output Terminals

Abnormal voltage trip device

Most precise output voltage
adjustment knob

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Technical Specifications

Technology	Servo Electronic - Variable Transformer controlled, series regulation transformer (buck-boast transformer with secondary wired in series with the load).
Input Voltage Swing	$\pm 15\%$ (or $-17\% +18\%$ or $-19\% +21\%$) Three Phase, 4 Wire (with Neutral + Ground / Earth).
Output Voltage	Pre-settable for any voltage between 380/220V, 400/230V & 415/240V (Customer to specify), Three Phase, 4 Wire.
Output Voltage Accuracy	$\pm 0.5\%$, $\pm 3\%$ or $\pm 5\%$ - auto selection based on input voltage swing.
Frequency	47 - 65Hz
Response Time	<1.5ms
Correction Time	A 10% supply variation will be corrected to within 2.5% in 0.6 seconds.
Efficiency	98%
Power Factor	Any lagging to 0.95 leading
Surge Ratings	10 x max. current rating for 2 seconds
	3 x max. current rating for 1 minute
	2 x max. current rating for 2 minutes
Surge Suppression	TVSS - Protects loads against high-energy Spikes and Transient Voltages.
Total Harmonic Distortion	Less than 1%
Control	Maintains each phase voltage stable irrespective of load unbalance, even up to 100% load unbalance.
Soft-Switch On	Ensures the output voltage is set at minimum upon Switch-On before commencing stabilization - protects load equipment from damaging start up voltage surges.
Environment	Temperature range -15 to 45°C . De-rate by 2% for each additional $^{\circ}\text{C}$ Up to max 60°C .
	Suitable for indoor tropical use 95% RH (non-condensing). Maximum altitude 1000m.
	De-rate by 2.5% for each additional 500m.
Construction	Enclosures to IP20 (NEMA 1 Style) - BS EN 60529.
Paint Color	RAL 7032 (Grey - Epoxy Powder Coating)
EMC Conformance	Complies with BS EN 55022 and the relevant parts of the BS EN 61000 series of standards.
CE Conformity	CE Marked - being fully compliant with European Union Directives 2004/108/EC (The EMC Directive) and 2006/95/EC (The Low Voltage Directive).

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Standard Warranty	Two Years from date of supply /Extended warranties up to 5 years
Standard Features	Input Circuit Breaker
	Over/Low Voltage Protection
	Phase Failure Protection
	Bypass Control Switch
	Voltmeter / Phase Selector Switch (internal)
Optional Accessories	Output Circuit Breaker
	Manual Maintenance Bypass Switch
	Ammeter (with Phase Selector Switch)
	Lightning Surge Arrestors
	No Volt Remote Monitoring Contacts
	Drip Proof Cowl for IP21 Ingress Protection
	Digital Power Metering (with RS-485 interface)

Note

Magnizon also has any customized solution catering to the special needs with tailor made specifications. Most of the high capacity models with extended warranties will be supplied with minimum spare parts to cater to the immediate service resolutions.

Input Voltage Windows

Nominal Single Phase Voltage	Output Voltage accuracy	INPUT VOLTAGE SWINGS			
		S15	S20	S25	S30
380V	± 0.5%	323v to 437v (± 15%)	304v to 456v (± 20%)	285v to 475v (± 25%)	266v to 494v (± 30%)
	± 3%	315v to 448v (-17% / +18%)	296v to 467v (-22% / +23%)	277v to 486v (-27% / +28%)	258v to 505v (-32% / +33%)
	± 5%	308v to 460v (-19% / +21%)	289v to 479v (-24% / +26%)	270v to 498v (-29% / +31%)	251v to 517v (-34% / +36%)
400V	± 0.5%	340v to 460v (± 15%)	320v to 480v (± 20%)	300v to 500v (± 25%)	280v to 520v (± 30%)

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	± 3%	332v to 472v (-17% / +18%)	312v to 492v (-22% / +23%)	292v to 512v (-27% / +28%)	272v to 532v (-32% / +33%)
	± 5%	324v to 484v (-19% / +21%)	304v to 504v (-24% / +26%)	284v to 524v (-29% / +31%)	264v to 544v (-34% / +36%)
415V	± 0.5%	353v to 477v (± 15%)	332v to 498v (± 20%)	311v to 519v (± 25%)	291v to 540v (± 30%)
	± 3%	344v to 490v (-17% / +18%)	324v to 510v (-22% / +23%)	303v to 531v (-27% / +28%)	282v to 552v (-32% / +33%)
	± 5%	336v to 502v (-19% / +21%)	315v to 523v (-24% / +26%)	295v to 544v (-29% / +31%)	274v to 564v (-34% / +36%)

Note

In situations where there is a reasonably good mains supply, AVR offering an input variation swing of $\pm 15\%$ (S15 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 AVR. Magnizon also has any customized solution catering to the special needs.

Physical Details

Model No	Rating KVA	Maximum Rating Amp per Phase			Dimension in MM WxHxD	Weight (Kg)
		380V	400V	415V		
MVR60K	60	91.14	86.59	83.46	380 x 670 x 780	144