



AVR 5-120

Alternator Voltage Regulator



DESCRIPTION

AVR 5-120 Voltage Regulator is an electronic device which lets the alternator produce a fixed output voltage. The AVR 5-120 is a 120V,AC model.

It has an open chassis, resin molded design and is intended to be mounted in the alternator's terminal box.

AVR 5-120 measures the voltage between one of the alternator phases and the neutral point. It adjusts the DC voltage applied to the excitation winding until the desired voltage is reached.

The output stage of the device is a half-wave thyristor output associated with a free wheeling diode.

Basically, the unit is compatible with all brushless-type alternators. A stability adjustment potentiometer is also provided for this purpose.

The AVR 5-120 has a special relay-less electronic circuit design. The required minimum residual voltage for build up is 5V,AC. The unit does not include moving parts, therefore, it is able to operate in highly-vibrating environments.

The AVR 5-120 includes a low frequency protection circuit. This feature reduces the output voltage during overload or engine stop. This protects the diesel engine from excessive torque generated by high startup currents commonly found with large electrical equipment.

Similarly, the diesel engine may be stopped under load without damage.

The AVR 5-120 connects easily, making replacements on existing equipment fast and easy.

MINIMUM FIELD RESISTANCE

CONTINUOUS					
Sensing Voltage	277	240	208	139	120
ms	27.70	24.00	20.80	13.90	12.00
STARTUP (5 second limit)					
Sensing Voltage	277	240	208	139	120
ms	13.85	12.00	10.40	6.95	6.00

The rated minimum residual voltage for the AVR series is 5V.

FEATURES

- ❑ Universal operation
- ❑ Half-Wave thyristor output
- ❑ 0-5 Amp output current
- ❑ 0-115 Volt output voltage
- ❑ Relay-less circuit design
- ❑ Low frequency protection
- ❑ Built-in voltage adjustment
- ❑ Stability adjustment
- ❑ Remote voltage adjustment feature
- ❑ Connects easily
- ❑ Compatible with various types of alternators



For more information or the latest certifications, please contact:
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PC&S products are manufactured under a total quality system that provides total engineering integrity. Products have been engineered to satisfy specifications, performance, reliability and life cycle to exacting standards.

PC&S strives to meet customer requirements and exceed expectations. We do this through monitoring and measuring our process and product, customer satisfaction, internal auditing, analysis of production data, continual improvement including corrective and preventative action. Our quality management systems are certified in accordance with ISO 9001:2008 standards.

OPERATION

AVR 5-120 Voltage Regulator operates on 120 volt phase-to-neutral voltage. The output voltage, as well as the internal voltage supply, is directly picked up from the input sensing voltage. The device needs 5V,AC for start-up.

The half-wave thyristor output voltage is 115 volts maximum.

During operation, the device continuously monitors the input voltage and increases/decreases the excitation voltage in order to maintain the input voltage to a constant value.

The AVR 5-120 keeps the alternator voltage change in minimum limits in case of a load change, and helps to reach the required voltage value quickly.

The regulation is P-I type. The proportional reaction is fast and the slow acting integral reaction helps the unit recover the precise set voltage.

The stability potentiometer adjusts the reaction speed of the device. This helps the unit to comply with a large variety of alternators.

The AVR 5-120 is able to produce up to 5 amps continuous current output.

The alternator voltage may be adjusted via the built-in potentiometer. Also external voltage adjustment feature is provided; in this case the external potentiometer value shall be 1 kilo-ohm.

The low frequency protection circuit shuts off the excitation voltage in order to prevent damage during engine stopping under load. The factory set value for the protection is 45Hz.

The alternator EXCITATION terminals shall not be connected to any point but the unit. The NEUTRAL and EXCITATION (+) points are internally connected.

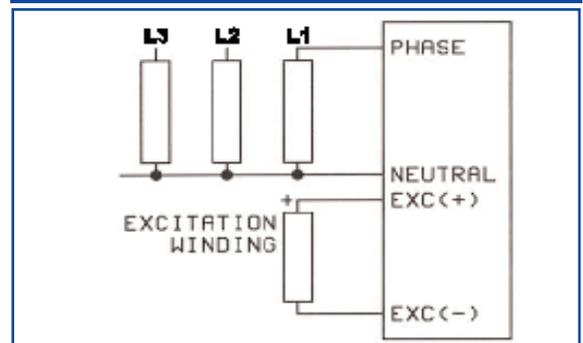
INPUTS AND OUTPUTS

PHASE-R	Alternator phase input
NEUTRAL	Alternator neutral input, internally connected to the Excitation (+) terminal
EXCITATION (+)	Excitation winding (+) terminal, internally connected to the Neutral terminal
EXCITATION (-)	Excitation winding (-) terminal

TECHNICAL SPECIFICATIONS

PHASE	Single phase
MINIMUM FIELD RESISTANCE	21 Ohms
VOLTAGE ADJUST RANGE	105-135 volts min
FREQUENCY	50/60 Hz
OUTPUT VOLTAGE	0-60V,DC at 120 volts
OUTPUT CURRENT	5A continuous 6A for 5 sec. forcing
RESIDUAL VOLTAGE FOR BUILDUP	5V minimum
REGULATION	± 2% typical
POWER OUTPUT	Half-wave thyristor
INTERNAL FUSING	5A (fast-acting fuses)
OPERATING TEMP	14°F to 140°F (10°C to 60°C)
STORAGE TEMP	-4°F to 176°F (-20°C to 80°C)
MAX. HUMIDITY	95% non-condensing
DIMENSIONS	4.92" L x 2.68" W x 1.38" H
FIXING CENTERS	4.93", 2x 6-32 thread screws
WEIGHT	0.62 lbs (180 grams)

CONNECTION DIAGRAM



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