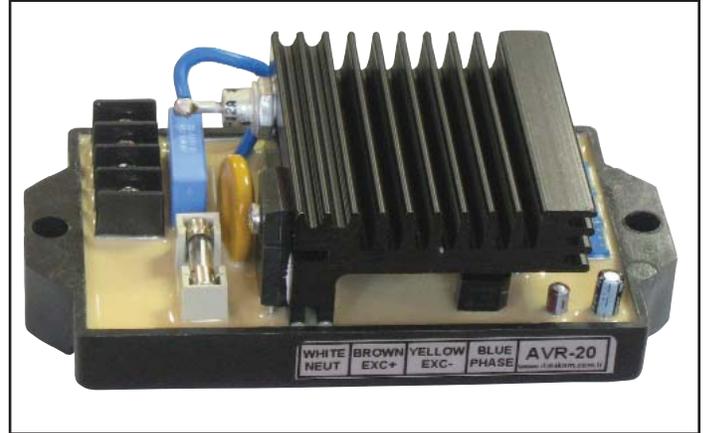




# AVR 20-120

## Alternator Voltage Regulator



### DESCRIPTION

AVR 20-120 Voltage Regulator is an electronic device which lets the alternator produce a fixed output voltage. The AVR 20-120 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 20-120 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 20-120 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 20-120 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 20-120 connects easily, making replacements on existing equipment fast and easy.

### MINIMUM FIELD RESISTANCE

CONTINUOUS					
Sensing Voltage	277	240	208	139	120
ms	6.93	6.00	5.20	3.48	3.00
STARTUP (5 second limit)					
Sensing Voltage	277	240	208	139	120
ms	3.46	3.00	2.60	1.74	1.50

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



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# AVR 20-120

Alternator Voltage Regulator



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 20-120 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 60 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 20-120 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 20-120 is able to produce up to 20 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

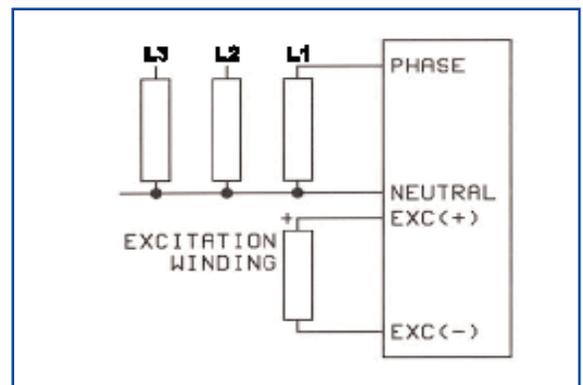
<b>PHASE-R</b>	Alternator phase input
<b>NEUTRAL</b>	Alternator neutral input, internally connected to the Excitation (+) terminal
<b>EXCITATION (+)</b>	Excitation winding (+) terminal, internally connected to the Neutral terminal

<b>EXCITATION (-)</b>	Excitation winding (-) terminal
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## TECHNICAL SPECIFICATIONS

<b>PHASE</b>	Single phase
<b>MINIMUM FIELD RESISTANCE</b>	7 Ohms
<b>VOLTAGE ADJUST RANGE</b>	105 - 125 volts min
<b>FREQUENCY</b>	50/60 Hz
<b>FREQUENCY PROTECTION RANGE</b>	40/50 Hz
<b>OUTPUT VOLTAGE</b>	60V,DC at 120 volts
<b>OUTPUT CURRENT</b>	10A continuous, 20A for 5 sec. forcing
<b>RESIDUAL VOLTAGE FOR BUILDUP</b>	Neutral terminal
<b>REGULATION</b>	± 2% typical
<b>POWER OUTPUT</b>	Half-wave thyristor
<b>INTERNAL FUSING</b>	10A (fast-acting fuse)
<b>OPERATING TEMP</b>	14°F to 140°F (10°C to 60°C)
<b>STORAGE TEMP</b>	-4°F to 176°F (-20°C to 80°C)
<b>MAX. HUMIDITY</b>	95% non-condensing
<b>DIMENSIONS</b>	4.92" L x 2.68" W x 1.38" H
<b>FIXING CENTERS</b>	4.93", 2x 6-32 thread screws
<b>WEIGHT</b>	0.62 lbs (200 grams)

## CONNECTION DIAGRAM



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