

AVR R438



AUTOMATIC VOLTAGE REGULATOR

The R438A Automatic Voltage Regulator (AVR) controls the alternator output voltage by monitoring the exciter excitation current as a function of that output voltage. Used when the alternator is configured with the AREP excitation system or the Permanent Magnet Generator (PMG) system on the following alternators:

- 1000 Series Alternator
- 2000 Series Alternator
- 3000 Series Alternator

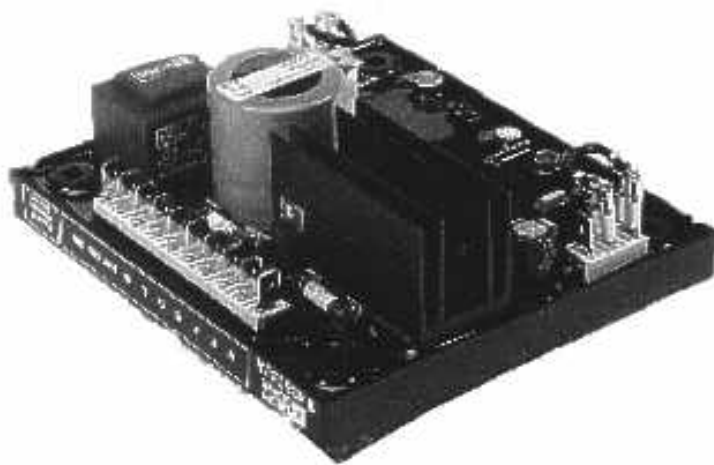
With the AREP excitation system the R438 AVR is powered by two auxiliary windings which are independent of the voltage detection circuit. With the PMG option the R438 AVR is powered by the PMG which is fitted at the rear end of the alternator.

SPECIFICATION:

- Voltage regulation $\pm 0.5\%$
- Short circuit capability: 300% for 10 seconds when in AREP or PMG configuration
- Voltage sensing:
95 to 140 volts (50/60 Hz) or
170 to 140 volts (50/60 Hz) or
340 to 520 volts (50/60 Hz)
- Response time:
Normal (1 sec) for $\pm 20\%$ voltage variation
or
Rapid (0.3 sec) for $\pm 20\%$ voltage variation
- Capable of remote voltage adjustment:
 $\pm 5\%$

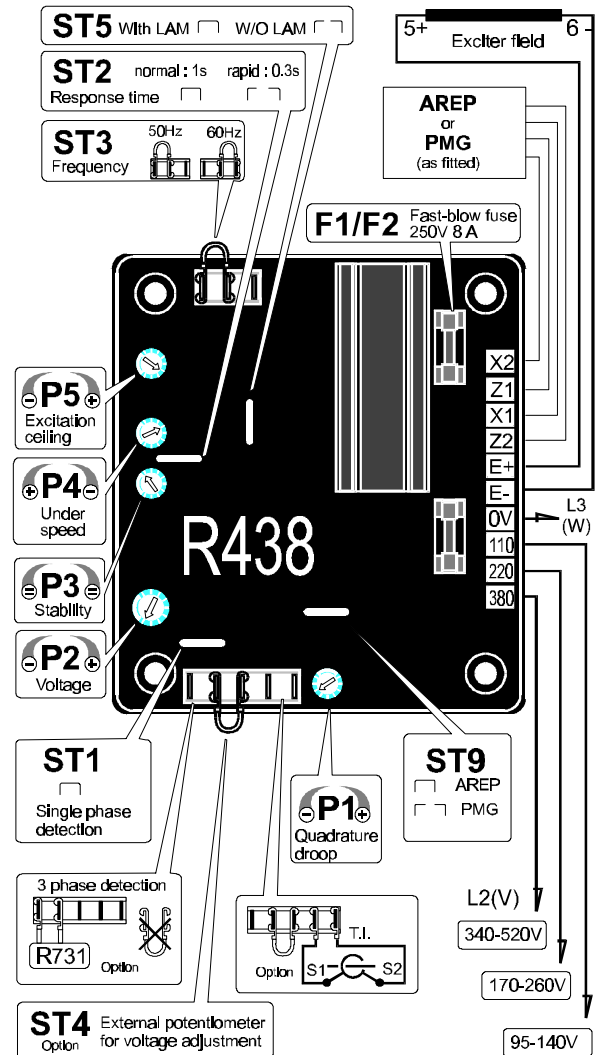
LOAD ADJUSTMENT MODULE (LAM):

On load impact, the rotation speed of the generator set decreases. When it passes below the preset frequency threshold, the LAM causes the voltage to drop by approximately 15% and consequently the amount of active load applied is reduced by approximately 25% until the speed reaches its rated value again. To avoid voltage oscillations, the trip threshold should be set approximately 2 Hz below the lowest frequency in steady state.



ADJUSTMENT CAPABILITY

- Potentiometer **P1** - Quadrature Droop Adjustment
- Potentiometer **P2** - AVR Voltage Adjustment
- Potentiometer **P3** - Stability Adjustment
- Potentiometer **P4** - Underspeed/LAM Threshold Adjustment
- Potentiometer **P5** - Excitation ceiling
- Link **ST1** - Link IN for single phase voltage detection (standard)
- Link **ST2** - Link IN for Normal response time or CUT for Rapid response time.
- Strap **ST3** - Strap between middle and left terminal for 50 Hz or between middle and right terminal for 60 Hz
- Strap **ST4** - Strap IN for no remote voltage adjustment or OUT and potentiometer (470 Ω , 0.5 W min: adjustment range $\pm 5\%$) connected to the terminals for remote voltage adjustment
- Link **ST5** - Link IN for LAM or CUT to disable LAM
- Link **ST9** - Link IN for AREP or CUT for PMG



R 4 3 8