

A.C. LINE VOLTAGE REGULATORS

MODEL AR-1215, AR-1215J, AR-2306



Model AR-1215

AR-1215 FEATURES

- Delivers a stable 120 \pm 5 VAC whenever the input AC line voltage is between 97V and 141V
- Eight outlets on the back panel, one on the front
- Output capacity 15 amps
- Eight-tap toroidal autoformer
- 10-LED bar-graph Input Voltage meter
- Extreme overvoltage/undervoltage causes instant shut down, protecting equipment
- Extreme Voltage Shutdown indicator LED
- Output In Regulation indicator
- Low stray magnetic field leakage

DESCRIPTION

The 15 amp **AR-1215 AC Line Voltage Regulator** is intended to protect audio, video, computer and other electronic equipment from problems caused by AC line voltage irregularities—sags, brownouts, or overvoltages that can cause sensitive digital equipment to malfunction, or, in extreme cases, to sustain damage.

The AR-1215 is designed to provide a steady, stable 120 VAC output. It accepts any input voltage from 97V to 141V and transforms it to a constant 120V, \pm 5V. Voltages beyond that range may also be converted to usable levels, depending on how far out of range they are. The AR-1215 can handle loads totaling up to 15 amps as long as the input voltage is above 124 volts. For voltages below that level, its capacity must be derated at approximately .15 ampere per volt.

The AR-1215 has been designed specifically with the unique needs of audio and video in mind. Its technology differs from that of computer-oriented voltage regulators in many important ways. For example:

The AR-1215 does not use a ferro-resonant transformer, which would be heavy and bulky, radiate a large magnetic field, and be too frequency-sensitive to be usable with generators. Instead, it uses a design based on an eight-tap toroidal autoformer. The toroidal design assures minimal leakage of stray magnetic fields.

The AR-1215 circuitry monitors the incoming line voltage with each cycle, comparing it to an extremely precise voltage reference, accurate to \pm 0.15%. If a voltage fluctuation requires that a different tap be selected, the new tap is electronically switched exactly at the zero-crossing, to avoid distorting the AC waveform. (Most commercial voltage regulators using multiple-tapped transformers switch taps at uncontrolled times, thereby creating voltage spikes, and often creating clicks that can leak into the audio.) Hysteresis of 1.5V in the switching circuits avoids "chatter." The design is not sensitive to small errors in line frequency, making them ideal for use with generators.

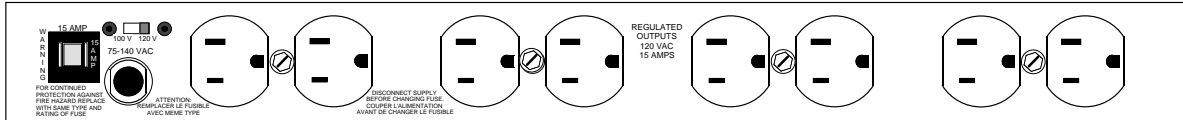
The AR-1215 also features power conditioning that is truly in a class by itself, thanks to the quantity, quality and configuration of the overvoltage suppression devices used. These include MOV's and high voltage inductors and capacitors. This unique combination can safely divert large spikes as well as filter audible high frequency noise.

An additional feature, Extreme Voltage Shutdown, senses dangerously high or low voltages and shuts down the output before any damage is done. The output remains off until the overvoltage or undervoltage is removed, with an LED indicating

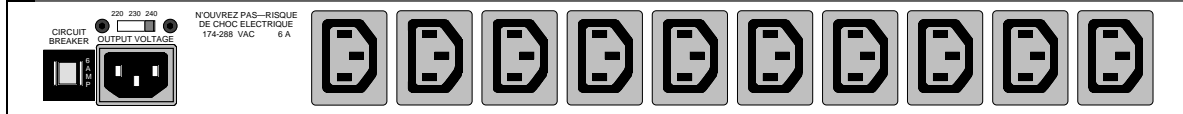


Model AR-2306

AR-1215, AR-2306 Rear Views



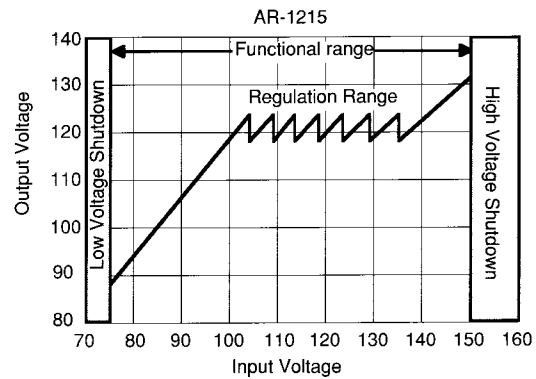
Output Voltage switch is present in Model AR-1215J only.



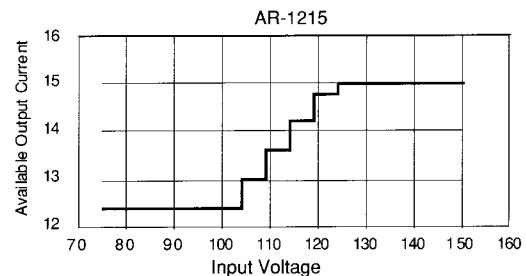
the shutdown condition. This invaluable feature provides positive protection to your equipment from accidental connection to incorrect line voltages (for example, 220V when 120V is expected—a not uncommon hazard in the entertainment industries.)

The AR-1215 has eight outlets on the rear panel, and one on the front panel. All outlets are regulated, spike-suppressed, and filtered against RFI with a 3-pole filter. There are no controls except the circuit breaker/on-off switch. A bar-graph meter comprised of 10 LED's indicates input voltage, while another LED indicates "In Regulation" status (i.e., that the output voltage is within $\pm 5V$ of 120V.) The unit is housed in a compact, single-space rack-mount chassis, 1.75" high and 8" deep (8.9 x 43.2 cm) and weighs only 12 lbs. (5 kg).

AR-1215 Output Voltage vs. Input Voltage



AR-1215 Available Output Current vs. Input Voltage



RELATED MODELS

- **AR-1215J:** Provides an output voltage of either 100V or 120V, depending on the setting of a rear-panel switch. Rated at 15 amps.
- **AR-2306:** Provides an output voltage of 220V, 230V, or 240V, depending on the setting of a rear-panel switch. Rated at 6 amps. Has ten IEC-320 outlets on rear, one on front.

Three Year Warranty

The Furman AR-1215 and AR-2306 are protected by a three-year limited warranty covering defects in materials and workmanship.

AR-1215, AR-1215J, AR-2306 SPECIFICATIONS

| | | | |
|-------------------------|---|-------------------------|---|
| Current Rating: | AR-1215/AR-1215J: 15 amperes for input voltages of 124V (104V for AR-1215J in 100V mode) or higher; derate at 113 mA per volt to a minimum of 12.3A | Voltmeter Accuracy: | AR-1215: $\pm 5V$ AR-2306: $\pm 10V$ |
| | AR-2306: 6 amperes for input voltages of 228V/238V/248V (depending on Output Voltage switch setting) or higher; derate at 23 mA per volt to a minimum of 4.9A | Spike Protection Modes: | Line to neutral, neutral to ground, line to ground |
| "In Regulation" Ranges: | AR-1215: Provides regulation $\pm 5V$ in 120V mode from 97 to 141V AR-1215J: Provides regulation $\pm 4V$ in 100V mode from 80 to 122V | Spike Clamping Voltage: | AR-1215/AR-1215J: Initial turn-on at 200V; TVSS rating of 400 volts peak at 500 A, L-N, N-G, L-G (tested to UL-1449) AR-2306: Initial turn-on at 390 volts peak L-N; 680 volts peak N-G, L-G |
| | AR-2306: Provides regulation ± 10 VAC in the following ranges: 220V mode, 174-264V; 230V mode, 181-276V; 240V mode, 190-288V. | Response Time: | 1 nanosecond |
| Shutdown Range: | AR-1215/AR-1215J: 120V mode, below 75V or above 150V; 100V mode, below 65V or above 135V | Maximum Surge Current: | 6,500 amps (8 x 20 ms pulse) |
| | AR-2306: 220V mode, below 146V or above 279V; 230V mode, below 152V or above 287V; 240V mode, below 158V or above 300V. | Maximum Spike Energy: | AR-1215/AR-1215J: 80 joules per node; 240 joules total AR-2306: 130 joules L-N, 160 joules N-G, L-G, 450 joules total |
| | | Noise Attenuation: | Differential mode: Greater than 40 dB Transverse and common modes: Greater than 60 dB, 1-200 MHz |
| | | Dimensions: | 1.75" H x 19" W x 8" D (4.5 x 48.3 x 20.5 cm) |
| | | Weight: | 12 lbs. (5 kg) |