DATASHEET

AR-20 II

VOLTAGE REGULATOR/POWER CONDITIONER WITH **SMP+** TECHNOLOGY

UNPARALLELED POWER PURIFICATION AND PROTECTION

FEATURES

SMP SERIES MULTI-STAGE PROTECTION · LiFT LINEAR FILTERING TECHNOLOGY · E.V.S. EXTREME VOLTAGE SHUTDOWN

- Precise Voltage Regulation delivers a consistent, stable 120 Volts output to safely power connected equipment and optimize performance regardless of fluctuations in the input level
- Series Multi-Stage Protection Plus (**SMP+**) for virtually maintenance free protection from surges and spikes. No sacrificed parts, no service calls, no downtime!
- Furman's unequaled Linear Filtering Technology (**LiFT**) rids systems of AC line noise for consistent audio/video clarity
- Automatic Extreme Voltage Shutdown (**E.V.S.**) powers down equipment during a prolonged or extreme over-voltage
- Ultra-low noise torodial autoformer assures no mechanical noise or hum-inducing magnetic field
- Fourteen AC outlets with two bi-directionally filtered banks to isolate digital and analog components
- Output capacity 20 amps

DESCRIPTION

The AR-20 delivers a stable stream of AC power to protect equipment from problems caused by AC line voltage irregularities such as sags, brownouts, or over-voltages - all of which can cause sensitive electronic equipment to malfunction or sustain damage. Featuring a generous 20 amp capacity, the AR-20 accepts any input voltage from 97V to 141V and transforms it to a constant 120V. Voltages beyond this range are also converted to usable levels, unless they are extremely far out of range, in which case the unit will automatically power down to prevent equipment damage.

Additionally, the AR-20 is the only 20 amp regulator that filters and purifies AC power, reducing line noise linearly and ensuring optimum performance. Your equipment will perform at optimum levels and will be fully protected from spikes and surges by Furman's exclusive **SMP+** technology. This virtually maintenance-free surge suppression system incorporates Linear Filtering Technology (**LiFT**), Extreme Voltage Shutdown (**E.V.S.**), and high current TVZ MOVs to provide the highest level of power protection available - all without the need for servicing or replacement of the unit. Just install it in your rack and forget about it!

Many competitive voltage regulators use noise-inducing, motorized transformer-based technology. This results in large, expensive, and less reliable units which cannot match the level of performance delivered by the AR-20. Essentially, Furman's advanced technology allows us to offer superior performance in a cost effective unit.

The AR-20's circuitry monitors the incoming line voltage with each cycle, comparing it to an extremely precise voltage reference, accurate to ±0.15%. The design is not sensitive to small errors in line frequency, making it ideal for use with generators. If a voltage fluctuation requires that a different tap be selected, the new tap is switched electronically at the zero-crossing, to avoid distorting

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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.)

The AR-20 has twelve outlets on the rear panel and two convenience outlets on the front panel. All outlets are regulated, spike-suppressed, and filtered against radio frequency and electromagnetic interference. The twelve rear outlets are divided into two separate banks with bi-directional filtering for either analog or digital components. There are no controls except for the on-off switch. A digital meter indicates input voltage, while another LED indicates "In Regulation" status (i.e., that the output voltage is within ±5V of 120V). The unit is housed in a compact, dual-space rack mount chassis, 3.5" high and 17.125" deep with rack ears (14.125" deep without rack ears).

Series Multi-Stage Protection Plus (SMP+)

SMP+ is Furman's proprietary surge suppression and noise filtration system. Designed over a period of two years by our California based engineering team, **SMP+** is composed of three separate and distinct technologies which work together in a precisely tuned circuit to filter or "clean" the incoming power and to protect connected equipment from potentially damaging AC events. These technologies are Linear Filtering, Series Multi-Stage Protection, and Extreme Voltage Shutdown.

Linear Filtering Technology (LiFT):
Unfortunately, traditional AC filter conditioners have been designed for unrealistic laboratory conditions. Prior technologies could actually harm audio and video performance more than they help, due to the resonant peaking of their antiquated, non-linear designs. Under certain conditions, these designs can actually add more than 10 dB of noise to the incoming AC line! Worse still, lost digital data, the need to re-boot digital pre-sets, or destroyed digital converters are frequently caused by excessive voltage spikes and AC noise contaminating the equipment ground. Furman's **LiFT** takes another approach, ensuring optimal performance through linear filtering and no leakage to ground.

Series Multi-Stage Protection (SMP):
Traditional surge suppression relies on circuits that "sacrifice" themselves when exposed to multiple transient voltage spikes, requiring the dismantling of your system and repair of your surge suppressor. With Furman's **SMP+**, however, damaging transient voltages are safely absorbed, clamped and dissipated. No sacrificed parts, no service calls, no downtime. Also unique to Furman's **SMP+** is its unparalleled clamping voltage. While other designs offer clamping voltages that are well above 300Vpk, Furman's **SMP+** clamps at 188Vpk, 133 VAC RMS, even when tested with multiple 6000Vpk - 3000 amp surges! This unprecedented level of protection is only available with Furman's **SMP+** technology.

Extreme Voltage Shutdown (E.V.S.):
When voltage rises to extreme levels because of a lost neutral line or an accidental connection to 208 or 240 VAC, Furman's Extreme Voltage Shutdown kicks in, automatically powering down all equipment quickly and safely in order to prevent damage from occurring. An indicator LED will then illuminate, alerting you to the situation until the over voltage condition is corrected.

AR-20 II SPECIFICATIONS

Spike Protection Modes
Line to neutral, zero ground leakage

Spike Clamping Voltage
188 Vpk @ 3,000 amps, 133 VAC RMS
(tested to UL-1449 6,000 Vpk @ 3,000 amps)

Response Time
1 nanosecond

Maximum Surge Current
6,500 amps

Voltmeter Accuracy
±1V

Shutdown Range
Above 145-150V (typically)

"In Regulation" Ranges
Provides regulation ±5V 120V from 97 to 141 V

Noise Attenuation
10 dB @ 10 kHz
40 dB @ 100 kHz
100 dB @ 10 MHz
Linear attenuation curve from 0.05 - 100 ohms line impedance

Dimensions
19" W x 17.125" D x 3.25" H (with rack ears)

Weight
36 lbs.

Current Rating
The AR-20 II is capable of 20 amps for input voltages of 124V (104V in 100V mode) or higher; derate at 113 mA per volt to a minimum of 12.3A

Three Year Limited Warranty
The AR-20 II is protected by a limited three year warranty covering defects in materials and workmanship.