

# IT-20 II

BALANCED POWER CONDITIONER



UNPARALLELED POWER PURIFICATION AND PROTECTION

## FEATURES

**SMP+**  
SERIES MULTISTAGE  
PROTECTION**LiFT**  
LINEAR FILTERING  
TECHNOLOGY**E.V.S.**  
EXTREME  
VOLTAGE SHUTDOWN

- Ultra-low noise balanced isolation transformer provides over 80 dB of common noise reduction from 20Hz-20kHz, assuring the lowest noise floor possible for today's sensitive recording equipment
- Toroid transformer assures contained magnetic field, allowing any component to operate in close proximity without inducing noise
- GFCI protected outlets with Ground Lift switch to eliminate AC hum and ground induced noise
- Furman's unequalled Linear Filtering Technology (**LiFT**) provides well over 40dB of differential mode noise reduction from 100kHz-1Ghz for unequalled audio clarity
- Series Multi-Stage Protection Plus (**SMP+**) for virtually maintenance-free protection from surges and spikes. No sacrificed parts, no service calls, no downtime!
- Automatic Extreme Voltage Shutdown (**E.V.S.**) powers down equipment during a prolonged or extreme overvoltage
- 20 amp capacity with 12 spec grade ultra-low resistance isolated Hubbell AC outlets, plus two front panel convenience outlets

## DESCRIPTION

Designed for the most critical, ultra-low noise installations, the IT-20 II can supply 20 amps of Balanced AC power for recording studios, broadcast stations, or video production facilities. To understand the incredible need for clean noise-free AC power, it's important to note that today's sophisticated studio equipment features tremendous dynamic range. Most of the signal content that defines *high resolution* such as harmonics, instrument timbre, high frequency extension, spatial cues, and fast transient attacks in audio are inherently low in signal level. Further, when AC noise is induced into audio processors, pre-amplifiers, microphones, powered monitors, computers, and mixing consoles these all important low level signals are distorted or masked. Once signals are masked there is no way to retrieve the lost content. Advanced AC filtering is critical when audio or video resolution is at stake. With Furman's IT-20 II, for the first time you will hear audio content and see video images as they were meant to be – pristine. Add to this our **SMP** non-sacrificial surge suppression, **E.V.S.** protection, Linear Filtering Technology (**LiFT**), and laboratory grade digital voltmeter and you will be assured that AC noise and surges are a thing of the past.

### Balanced AC Power

In much the same way that balanced audio lines can reduce the pickup of hum and other types of electromagnetic interference (EMI), the use

of balanced AC power lines in sensitive audio, video, or computer installations can make an enormous difference in system noise and signal integrity. But power distribution in North America, unfortunately, is not balanced. The distribution standards currently in use were derived from practices established over a century ago, when electric power use was limited to lighting and motors—long before any AC noise sensitive applications existed. The emphasis then was on convenience (from the power utilities' standpoint) and safety, but not noise cancellation. The result was a three-wire distribution scheme in which 120V branch circuits have a hot wire and a neutral wire, with the neutral tied to a third wire connected for safety to an earth ground. The third wire does not carry any current unless there is a fault. This unbalanced scheme can create hum in audio circuits for two main reasons. First, the current flowing in the hot wire induces hum in any other nearby wires, which may carry vulnerable low-level audio or video signals. Second, because the impedance of chassis and cable shielding to ground is always greater than zero ohms, ground current flowing from power supply capacitors and from EMI pickup causes a voltage drop at 60Hz and its harmonics. This low level noise becomes part of the audio signals.

With a center-tapped isolation transformer, the AC power feeding a studio can be balanced at its source. The current-carrying wires then are

*(Continued on reverse)*

no longer "hot" (120V) and "neutral" (0V), but two 60V lines of opposite polarity (referenced to ground connected to the center tap), whose difference is 120V. This type of power, when run around a room, does not induce hum into nearby audio wiring, because the two conductors induce equal and opposite voltages that cancel each other out. Similarly, ground currents are all but eliminated by the same common-mode cancellation effect. No longer is it necessary to adopt cumbersome and expensive star-ground systems or use massive bus bars or heavy ground rods. Further, with features such as our center tap ground lift, ground induced noise may be reduced even further.

Of course Balanced AC Power is only the beginning of a system free of AC noise. Asymmetrical noise or what is called "differential mode" is responsible for well over half of the noise present in today's AC lines. For this reason we employ our exclusive Linear Filtering Technology (LiFT). This assures that your audio, video, or computer signals are as pure and uncorrupted as possible.

#### 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 Plus (SMP+):

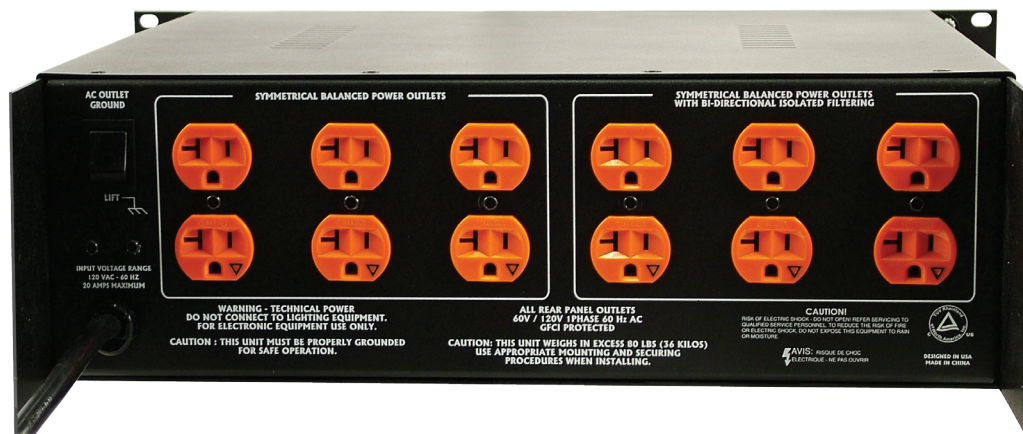
Traditional surge suppression relies on circuits that "sacrifice" themselves when exposed to multiple transient voltage spikes, requiring the dismantling of your system and repair of your surge suppressor. With Furman's **SMP+**, however, damaging transient voltages are safely absorbed, clamped and dissipated. 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.

#### Optional RRM-2 Rear Rack Mount Ears (sold separately)

Adjustable depth rack mount ears for the IT-20 II. Adjustment depth is 17" to 18.25" from inside front panel.



## IT-20 II SPECIFICATIONS

#### Output Current

20 amps (2400 watts at 60/120V)

#### Shutdown Voltage

At 135-140 VAC

#### Inlets

Heavy duty power cord with 20A three-prong plug

#### Outlets

12 rear (isolated), 2 front (GFCI) each rated at 20 amps

#### 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

#### Differential Noise Attenuation

10 dB @ 10 kHz  
40 dB @ 100 kHz  
100 dB @ 10 MHz

#### Common Noise Attenuation

Greater than 80 dB @ 20Hz to 20 KHz  
Greater than 40 dB @ 20KHz to 1 MHz  
Linear attenuation curve from 0.05-100 ohms line impedance

#### Turns Ratio

1:1; windings separated with Faraday Shield

#### Transformer Regulation

3% at full load

#### Power Consumption

12 watts for display and control circuits

#### Voltmeter Accuracy

±1V

#### Dimensions

19"W x 5.25"H x 17" D, 80 lbs.

#### Three Year Limited Warranty

The IT-20 II is protected by a limited three year warranty covering defects in materials and workmanship.