MEZZO 604A AMPLIFIER

Architect's and Engineer's Specifications

The amplifier shall be a four-channel model comprising a universal switched-mode power supply, with power factor correction and rails voltage modulation, for improved efficiency, and switched-mode fixed frequency class D output circuit topology.

The amplifier shall operate from 100 V to 240 V (-10% / +10%) at 50/60 Hz. Each amplifier output channel shall be able to independently drive low-impedance loads (4/8 Ohms) and high-impedance 70V/100V distributed lines. When driving all channels symmetrically, the amplifier shall provide 150W at 8 Ohms per channel, for a total rated power of 600W. The amplifier shall be capable of distributing its rated power asymmetrically amongst all channels (power sharing), where the maximum power assignable to one single channel shall be equal or no less than 2dB from the total rated power of the amplifier, regardless of the load impedance.

The amplifier shall automatically go into low power mode, with power consumption not greater than 2W (at 115/230V), when no signal activity is detected for a determined amount of time. The wake-up time from the lower power mode shall be no longer than 2 seconds. When in idle mode, the amplifier shall not exceed a power consumption of 18W (at 115/230V).

The amplifier shall contain a Digital Signal Processor (DSP) for real-time audio processing, not exceeding a fixed latency of 2.5ms. The onboard DSP shall be integrated with input source selection and redundant input switch-over with delay compensation, a 4-in x 4-out matrix for all analogue and digital inputs, crossover and parametric IIR equalisation filters for each channel, a minimum of 80ms delay (per output) for preset alignment, output RMS voltage and peak limiters, and real-time impedance monitoring. The internal DSP shall also allow for monitoring and diagnostics of the amplifier status, including but not limited to channels and power supply temperature, fan and mains status, hardware faults, and enabling a channel protection mode in case of loudspeaker failure. Additionally, the DSP shall offer an internal pilot tone generator, pilot tone sensing on all inputs and outputs for load detection and monitoring, and pilot tone automated redundant input switch-over.

The amplifier shall be enabled for networking operation via RJ45 fast ethernet for the purpose of controlling the internal DSP and monitoring the amplifier status. Communication protocols for the amplifier's internal DSP shall be made available for control, via third-party devices, of parameters including but not limited to source selection, matrix, mute, gain, delay, parametric EQ, remote ON/OFF; and monitoring of load impedance, amplifier status, alarms, and level metering.

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The amplifier shall feature automatic measurement of the load impedance for each channel, and automatic setup of signal limiters, high-pass filters (12dB Butterworth), gain and asymmetrical power distribution amongst the different channels. The auto-setup function shall be triggered by a physical push-button on the amplifier or via internal ethernet controls. As a safety feature, it shall also be capable of detecting load impedance measurement inconsistencies and automatically muting specific channels for which such inconsistences have been detected.

The amplifier's rear panel shall contain one IEC 10A AC mains terminal; two 5mm 4-pole phoenix terminals for a total of four output channels; two 3.5mm phoenix terminals for a total of four balanced input channels; one unbalanced stereo mini-jack input (-10dBV); and one RJ45 ethernet port for DSP control. The relevant phoenix connectors and an IEC 10A detachable connector with region-specific power cord set shall be provided with the amplifier.

The amplifier shall also be equipped with at least four General Purpose Input and Output (GPIO) pins and one 5V power supply pin, all connectable via 3.5mm phoenix terminals on the amplifier's rear panel. The configuration of the GPIO pins shall be available via the amplifier's internal DSP and shall include but not be limited to source selection, volume control, zone selection, and remote standby.

The amplifier shall have a vented enclosure and contain internal heat sinks cooled by a continuously variable speed fan with a microprocessor temperature controller. Air flow shall be from front to rear. At maximum fan operation, the amplifier sound emissions shall not exceed 38dBA when measured at 1m from the source in a full-anechoic environment.

The amplifier shall have a synchronized off-on muting, acting for four seconds after turn-on and within 500mS after turn-off or loss of AC power. Each channel shall have DC protection in order to protect against infrasonic signals and very low frequencies at the output stage that could damage loudspeakers. Each channel shall have VHF protection in order to protect loudspeakers from strong, very high frequency signals. Each channel shall have circuitry to protect against short circuits or other stressful output circuits events. Each channel shall an independent clip limiter in order to prevent severely clipped waveforms from reaching the loudspeakers, whilst maintaining full peak power. Each channel shall have long term limiters in order to protect loudspeakers against non-musical signals such as sine waves, feedback signals etc.

The amplifier shall be half-rack and no more than one rack unit in size. Accessories, such as metal brackets, shall be provided for mounting one single unit in a rack space, and/or two units alongside each other in a rack space. Additional accessories shall be provided for surface mounting, such as on walls, ceilings and desks.

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