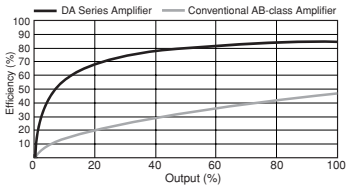
DA-550F/500FH
Multi-Channel Digital Power Amplifiers

DESCRIPTION

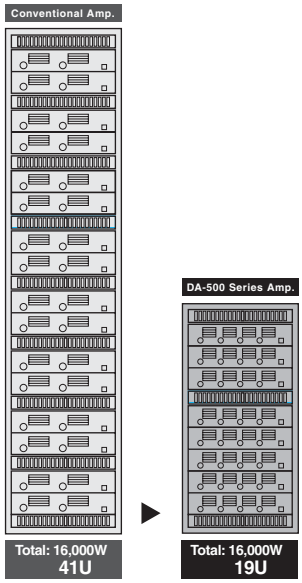
The TOA DA-550F and DA-500FH multi-channel power amplifiers offer a wider choice of power ratings, advanced Class D amplification circuitry, and a highly efficient AC mains to output power ratio, for the complete technological superiority it takes to support long-term installation applications. These energy-efficient, space-saving amplifiers are designed to combine high levels of performance and efficiency, and are well-suited to ensure sound reinforcement reliability in a wide range of venue types. The DA-550F is ideal for multi-zone applications such as presentation and press-conference rooms, restaurants and similar-sized locations. The DA-500FH is well-suited to such locations as exhibition halls, sports facilities, multipurpose halls and houses of worship.

FEATURES

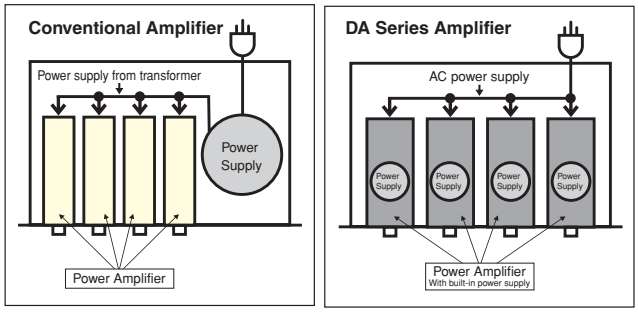
- **High efficiency**
  Extremely high amplification efficiency of 80-90%, resulting in reduction in power consumption by more than 60% compared with Class-AB amplifiers.



- **Highly durable**
  Stands up to extended hours of operation. The DA amplifier has undergone a large number of rigorous tests to prove its durability. In addition,TOA has been conducting a “non-stop driving test” of the DA Series.
- **High reliability**
  The DA amplifier has a comprehensive protection circuitry for protection against excessive current flow due to overload, short circuit, unusual DC voltage output, and power amplifier heat sink temperature rise (over 100°C), power supply temperature rise (over 80°).
- **Amplifier with world-class lightweight design***
  Installation has become much easier thanks to the lightweight design.
  *TOA comparative data (weight/watt)
- **Compact design**
  The DA-500 Series is 2-unit size, and they can be efficiently mounted on a rack, so they require only a small installation space. Because the amplifiers do not generate much heat, 5 units can be stacked together in a rack.



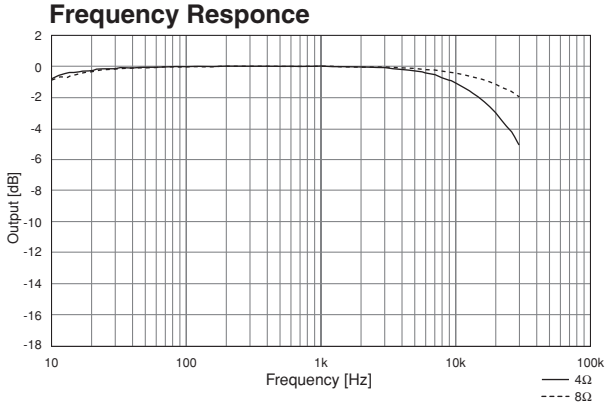
- **Independent power supply**
  Each of the channels has its own power supply. If the power supply of Channel 1 should fail, this won't affect the operation of Channels 2-4. It is also possible to use one of the channels as a spare amplifier.



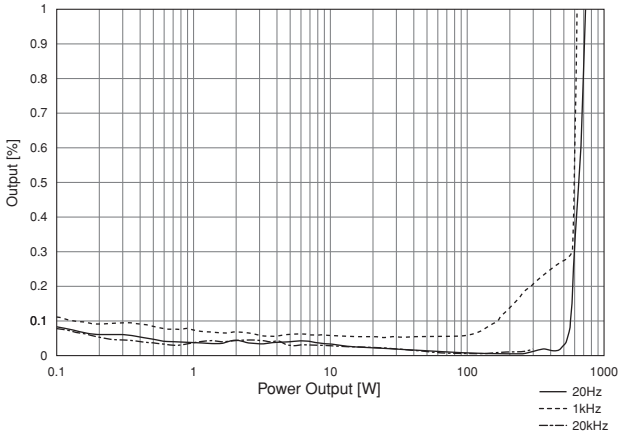
TOA

DA-550F

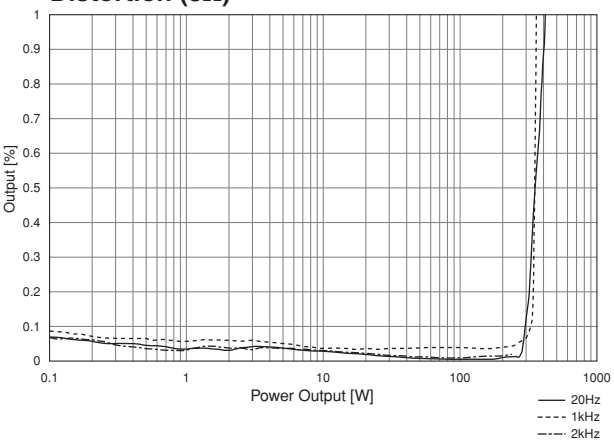
Frequency Responce



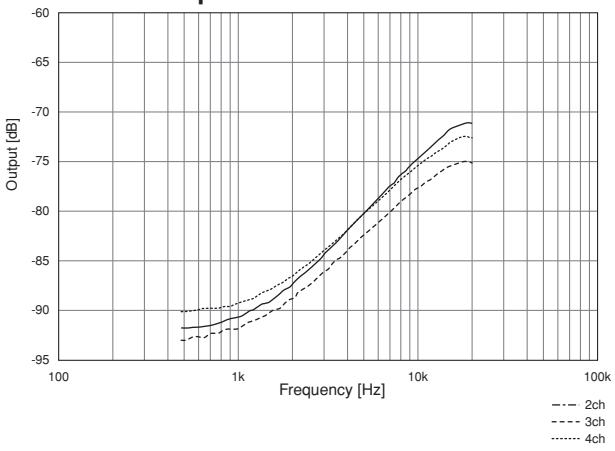
Distortion (4Ω)



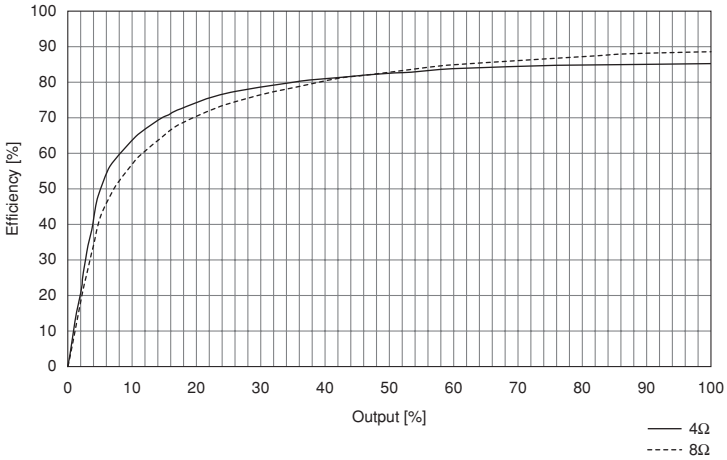
Distortion (8Ω)



Channel Separation

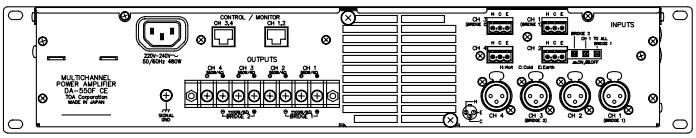


Efficency vs Output

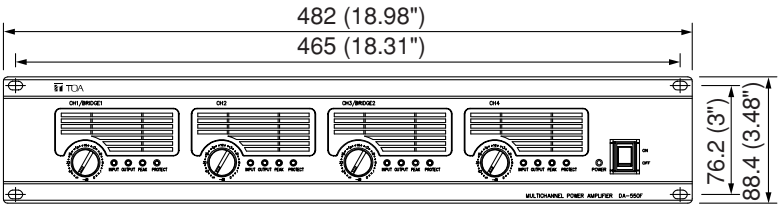


APPEARANCE AND DIMENSIONAL DIAGRAM

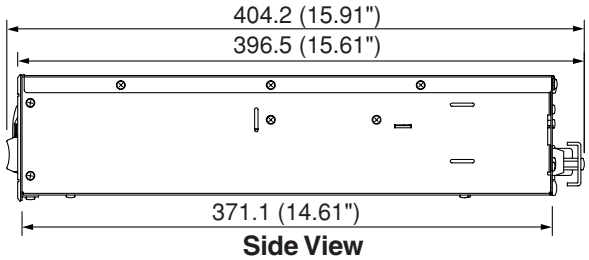
DA-550F



Rear View



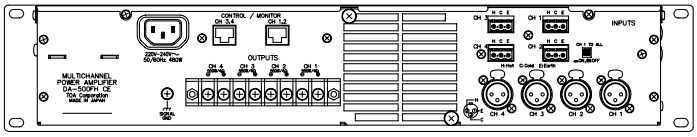
Front View



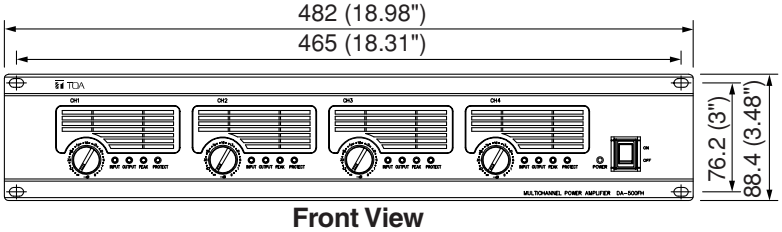
Side View

Unit: mm

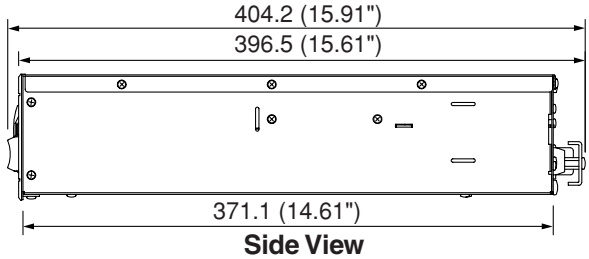
DA-500FH



Rear View



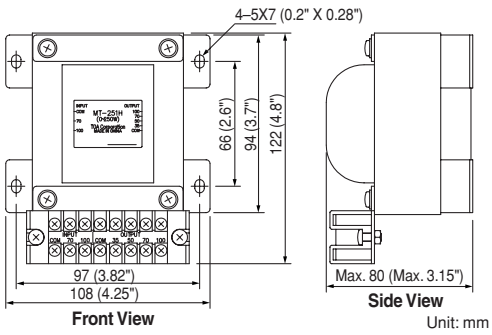
Front View



Side View

Unit: mm

MT-251H



Front View **Side View**

Unit: mm

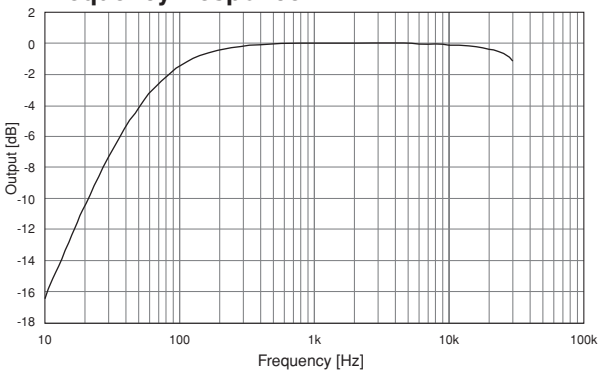
Matching Transformer

Designed for use with the DA-500FH Multi-Channel Power Amplifier (option), the MT-251H electrically isolates the high-impedance speaker lines from the amplifier.

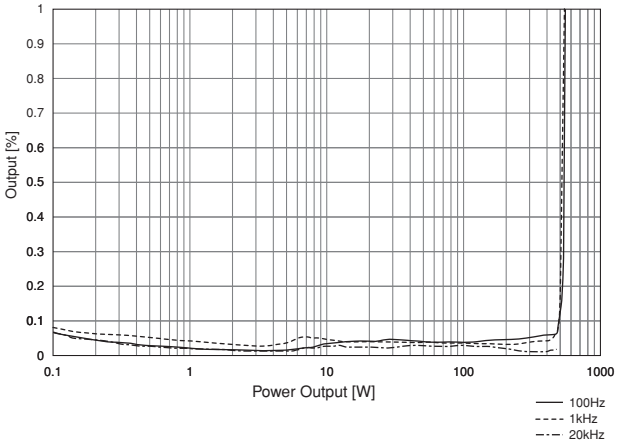
- **Capacity:** 0W – 250W
- **Primary Side:** 100V line, 70V line
- **Secondary Side:** 100V line, 70V line, 50V line, 35V line
- **Frequency Response:** 30 – 18,000Hz (+0dB, –3dB)
- **Connection Terminal:** M3 screw terminal, distance between barriers: 6.6mm
- **Dimensions:** 108 (W) x 80 (H) x 122 (D)mm
- **Weight:** 2.4kg

DA-500FH

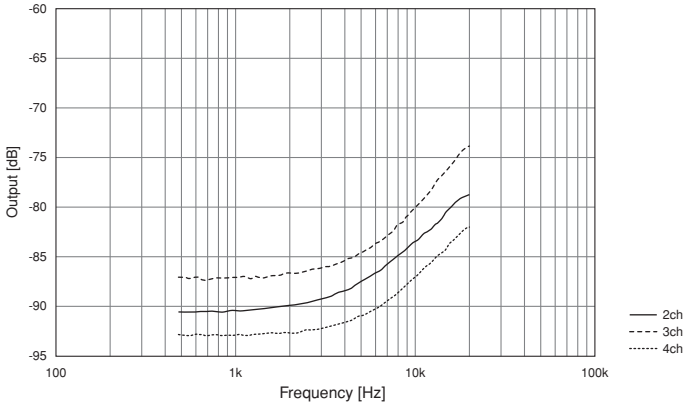
Frequency Responce



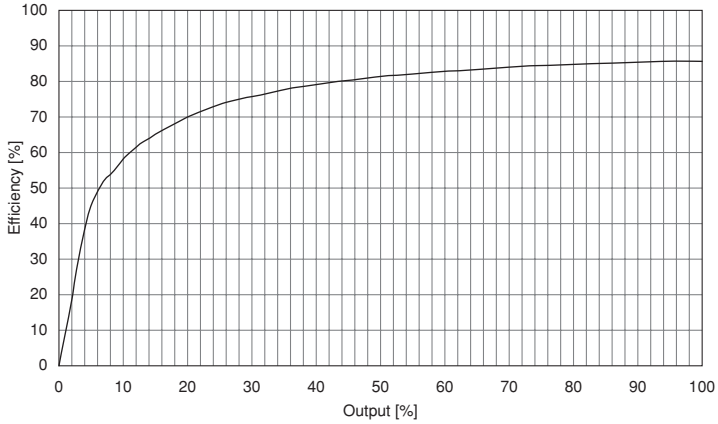
Distortion



Channel Separation



Efficency vs Output (20Ω)



ARCHITECTURAL AND ENGINEERING SPECIFICATIONS

DA-550F SPECIFICATIONS

The multi-channel power amplifier shall use digital class-D circuit topology and shall be configurable to allow two, three or four channel operation. Power output in four-channel mode with all channels driven shall be: 550 W at 4 ohms and 350 W at 8 ohms. Each pair of channels shall be independently bridgeable to produce 1100 W at 8 ohms. Total harmonic distortion (THD) shall be less than 0.1% @ 1 kHz, 0.15 % (20 to 20,000 Hz). The frequency response shall be 20 to 20,000 Hz (3 dB). The signal to noise ratio shall be 100 dB (A-weighted). The crosstalk shall be 70 dB (A-weighted). The input impedance shall be 10k ohms for each input into an electronically balanced input circuit. Rear panel switches shall allow selection of bridged operation for each pair of channel (1-2 and 3-4) independent of the status of the other pair of channels. A rear channel input mode switch shall allow the selection of input 1 to all mode, whereby the signal from input 1 is simultaneously fed to all other channels. Each input shall feature a 3 pin phoenix block and XLR connector. Rear panel output connector shall be a heavy-gauge M4 screw-terminal barrier strip suitable for use with spade lugs or up to #12 AWG bare wires. The front panel attenuators shall be recessed to prevent accidental level changes and may be removed and replaced by included security covers once levels have been properly set. The front panel shall have four sets of four LED indicators to indicate the following conditions: signal presence at input (greater than -20 dB), signal presence at output (greater than 1 W @ 8 ohms load), peak clipping and protection circuit activation. The front panel shall also have four removable air filters that may be removed for cleaning without removing the amplifier from the rack. The amplifier shall be forced-air fan cooled with the air intake at the front and exhaust at the rear.

Built-in protection circuitry shall monitor voltage and current levels to minimize potential damage from overloads, and disable output during shorts, DC offset, or excessive operating temperature at power amp heat sink over 100°C, or excessive operating temperature at power supply heat sink over 80°C via a relay for each channel. The relay shall also delay amplifier connection to the load during turn-on for about 2 seconds, so as to prevent any occurrence of noise at turn-on. Power consumption shall be 480 W (based on EN standards) and 2750 W (rated output 4 ohms x 4 channels), and 1550 W (rated output at 8 ohms x 4 channels). Each channel shall be equipped with control/monitor terminals to permit power on/off control of each channel, status monitoring of power on/off and protection for each channel and fan operation. The control panel and monitor display shall be a custom made non-TOA piece. The control/monitor connection shall be made via two RJ-45 connectors.

The amplifier shall use two standard rack-spaces or 88.4 mm and its dimensions shall be 482 (W) × 88.4 (H) × 404.2 (D) mm. Front panel finish shall be black anodized aluminum and case finish shall be sheet steel. Weight shall be 9 kg.

The amplifier shall be a TOA model DA-550F.

DA-500FH SPECIFICATIONS

The multi-channel power amplifier shall use digital class-D circuit topology and shall be configurable to allow two, three or four channel operation. Power output in four-channel mode with all channels driven shall be: 500 W at 100 V (20 ohms). Total harmonic distortion (THD) shall be less than 0.1% @ 1 kHz, 0.3 % (100 to 20,000 Hz). The frequency response shall be 50 to 20,000 Hz (4 dB). The crosstalk shall be 70 dB (A-weighted). The input impedance shall be 10k ohms for each input into an electronically balanced input circuit. Rear panel switches shall allow selection of bridged operation for each pair of channel (1-2 and 3-4) independent of the status of the other pair of channels. A rear channel input mode switch shall allow the selection of input 1 to all mode, whereby the signal from input 1 is simultaneously fed to all other channels. Each input shall feature a 3 pin phoenix block and XLR connector. Rear panel output connector shall be a heavy-gauge M4 screw-terminal barrier strip suitable for use with spade lugs or up to #12 AWG bare wires.The front panel attenuators shall be recessed to prevent accidental level changes and may be removed and replaced by included security covers once levels have been properly set. The front panel shall have four sets of four LED indicators to indicate the following conditions: signal presence at input (greater than -20 dB), signal presence at output (greater than 1 W @ 20 ohms load), peak clipping, and protection circuit activation. The front panel shall also have four removable air filters that may be removed for cleaning without removing the amplifier from the rack. The amplifier shall be forced-air fan cooled with the air intake at the front and exhaust at the rear.

Built-in protection circuitry shall monitor voltage and current levels to minimize potential damage from overloads and disable output during shorts, DC offset or excessive operating temperature at power amp heat sink over 100°C or excessive operating temperature at power supply heat sink over 80°C via a relay for each channel. The relay shall also delay amplifier connection to the load during turn-on for about 2 seconds, so as to prevent any occurrence of noise at turn-on. Power consumption shall be 460W (based on EN standards) and 2350W (rated output 20 ohms x 4 channels). Each channel shall be equipped with control/monitor terminals to permit power on/off control of each channel, status monitoring of power on/off and protection for each channel and fan operation. The control panel and monitor display shall be a custom made non-TOA piece. The control/monitor connection shall be made via two RJ-45 connectors.

The amplifier shall use two standard rack-spaces or 88.4 mm and its dimensions shall be 482 (W) × 88.4 (H) × 404.2 (D) mm. Front panel finish shall be black anodized aluminum and case finish shall be sheet steel. Weight shall be 9 kg.

The amplifier shall be a TOA model DA-500FH.

SPECIFICATIONS

Model	DA-550F	DA-500FH
Power Source	220 – 240V AC, 50/60Hz	
Number of Channels	4	
Total Output All Channel Driven	2200W (1kHz 4Ω) 1400W (1kHz, 8Ω)	2000W (1kHz, 20Ω: 100V line)
Output Voltage per Channel	46.9V (1kHz, 4Ω) 52.9V (1kHz, 8Ω)	100V (1kHz, 20Ω: 100V line)
Output Current per Channel	11.7A (1kHz, 4Ω) 6.6A (1kHz, 8Ω)	5A (1kHz, 20Ω: 100V line)
Power Output		
8 ohms per channel	350W	—
4 ohms per channel	550W	—
16 ohms bridged	700W	—
8 ohms bridged	1100W	—
Hi-Z: 100V per channel	—	500W
Power Consumption*		
Idle power consumption	57W, 0.4A	65W, 0.5A
Rated power consumption		
1kHz 8 ohms	1550W, 11.3A	—
4 ohms	2750W, 19.9A	—
100 Volts	—	2300W, 16.8A
1/8 Power Pink noise*1 8 ohms	325W, 2.2A	—
4 ohms	442W, 2.7A	—
100 Volts	—	493W, 3.1A
1/3 Power Pink noise*2 8 ohms	733W, 5.1A	—
4 ohms	1119W, 8.0A	—
100 Volts	—	1026W, 7.4A
1/8 Power 1kHz 8 ohms	273W, 1.8A	—
4 ohms	411W, 2.7A	—
100 Volts	—	399W, 2.6A
1/3 Power 1kHz 8 ohms	632W, 4.4A	—
4 ohms	958W, 6.9A	—
100 Volts	—	860W, 6.1A
Frequency Response	20Hz – 20kHz (–2dB, +1dB)	50Hz – 20kHz (-3dB, +1dB)
THD	0.1 % (1kHz) 0.15 % (20Hz – 20kHz)	0.1 % (1kHz) 0.3 % (100Hz – 20kHz))
S/N Ratio (A weighted)	100dB	
Crosstalk at 10kHz (A weighted)	70dB	
DC Offset*	±5mV	
Voltage Gain*	32.6dB	38.2dB
Damping Factor*	95 (1kHz, 8Ω)	240 (1kHz, 20Ω: 100V line)
Inputs Input impedance Input sensitivity Input clipping	10kΩ (unbalanced), 20kΩ (balanced) +4dB (1.23V) 12V (23.8dBu)	
Rear panel Input connectors Speaker output	Detachable Euro style terminal block connector (electrically balanced), XLR-3-31 connector Screw terminal (M4). Accept AWG12-22	
Protection Circuit Amplifier section Power supply section	DC output, overheat protection, load shorting, overload current, maximum output Overheat protection, AC rush current	
Cooling	Continuously constant speed fan with front-to-rear airflow, 100,000 hours life time at 25°C	
Operating Temperature	–10°C to +40°C	
Operating Humidity	Under 90% RH (no condensation)	
Dimensions	482 (W) × 88.4 (H) × 404.2 (D)mm	
Weight	9kg	
Finish	Panel: Aluminum, alumite process, black/Case: Plated steel sheet	
Accessory	Power cord × 1, Euro style terminal block connector (3-pin) × 4, Tamper-proof cap × 4, Rack mounting screw × 4	
Option	—	Matching transformer: MT-251H

0dB=0.775Vrms
* Typical data
*1 1/8 power with pink noise represents typical program with occasional clipping.
*2 1/3 power with pink noise represents severe program with heavy clipping.

TOA Corporation
www.toa.jp
Specifications are subject to change without notice.
Printed in Japan (0801) 833-52-394-7A u