System Power Amplifier (SPA)
Installation Guide

QSC™

SPA2-60 Amplifier	SPA4-60 Amplifier
SPA2-200 Amplifier	SPA4-100 Amplifier

EXPLANATION OF SYMBOLS

The term "**WARNING!**" indicates instructions regarding personal safety. If the instructions are not followed the result may be bodily injury or death.

The term "**CAUTION!**" indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term "**IMPORTANT!**" indicates instructions or information that are vital to the successful completion of the procedure.

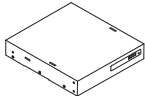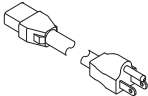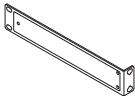The term "**NOTE**" is used to indicate additional useful information.
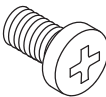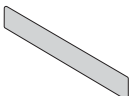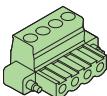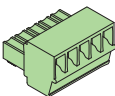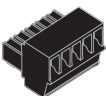
The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated "dangerous" voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.

What's in the Box

|			
(1x) SPA2-60 SPA2-200 SPA4-60 SPA4-100	(1x) AC Power Cord, US	(2x) Rack Ear QSC P/N CH-001344-00	(2x) Joining Plate QSC P/N CH-001345-00
(2x) Rack-Ear Spacer QSC P/N CH-001386-00	(6x) Phillips Pan Head M4 x 7 mm	(6x) Phillips Flathead M3 x 6 mm	(4x) Foam Spacer QSC P/N PL-001023-00
(1x) Rack-Ear Cover Label QSC P/N LB-001138-00	SPA 2-channel (1x) SPA 4-channel (2x) Euro Plug 3.5 mm, 4 pos, grn QSC P/N CO-000646-00	SPA 2-channel (1x) Euro Plug 3.5 mm, 5 pos, grn QSC P/N CO-000644-00	SPA 2-channel (1x) Euro Plug 3.5 mm, 4 pos, blk QSC P/N CO-000645-00
SPA 4-channel (1x) Plug 3.5 mm, 10 pos, grn QSC P/N CO-000647-00	SPA 4-channel (1x) Plug 3.5 mm, 10 pos, grn QSC P/N CO-000648-00	(1x) Warranty TD-000453	(1x) Safety Information TD-000337

Installation

Ventilation

- Recommend 1RU (1.75 in / 44.45 mm) space above the amplifier.
- Minimum open space of 6 inches measured from back of amplifier.

⚠️ **NOTE:** QSC System Power Amplifiers contain advanced protection circuitry which allows them to reduce output power in order to maintain safe operating temperatures. Insufficient ventilation may result in the amplifier reducing output power during normal operation (indicated by Limiter/Protect LEDs illuminating red). To reduce the possibility of thermal limiting, and allow proper heat dissipation, we recommend that you keep the space directly above and to the rear of these amplifiers free of obstacles.
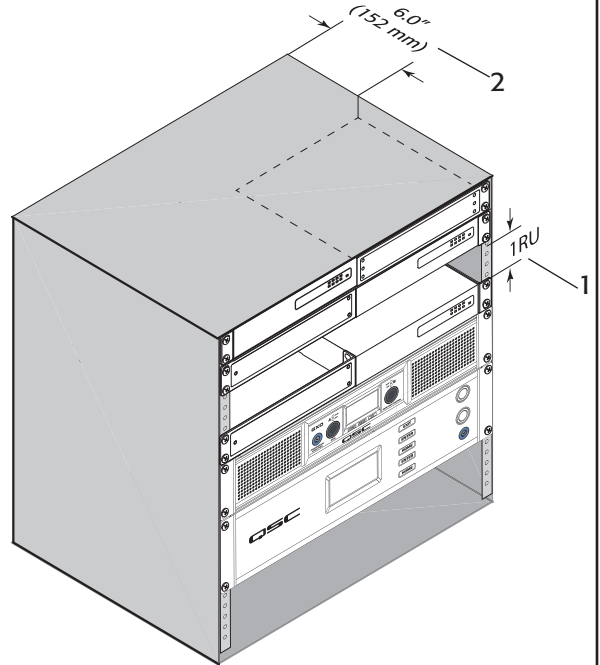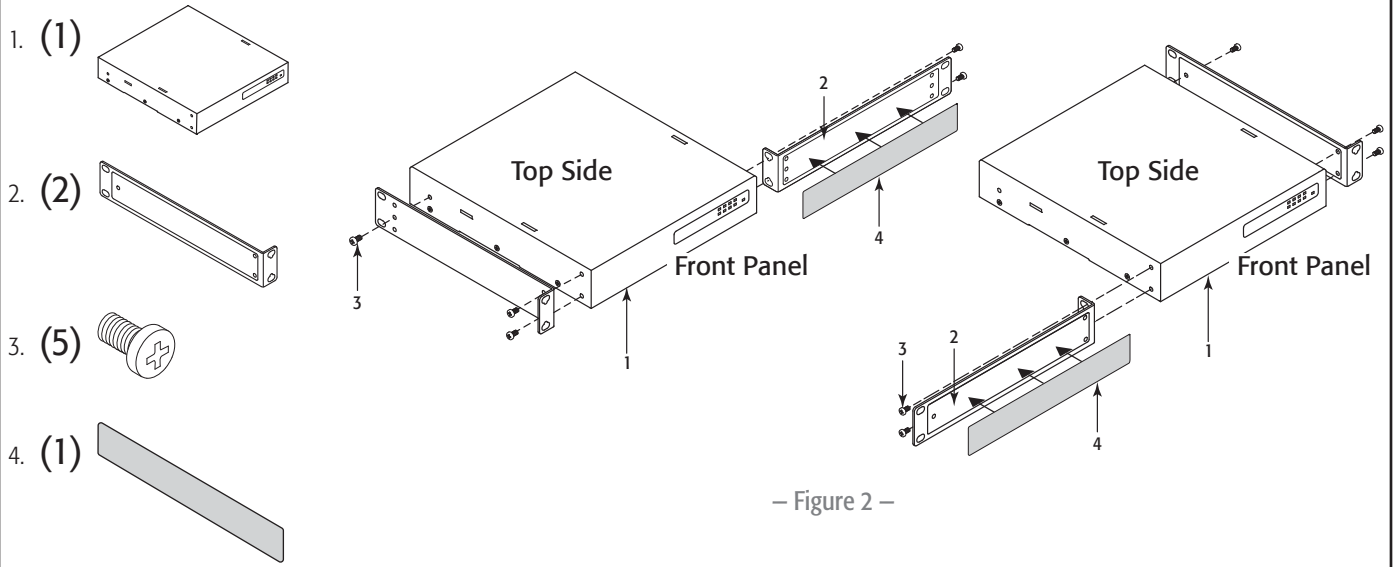
— Figure 1 —

Select the Amplifier Installation Configuration

Choose one of the following configuration options:

A. One Amplifier 19-inch Rack (Left or Right Mount) on page 3

B. Two Amplifiers 19-inch Rack (Front or Rear Facing Out) on page 3

C. One Amplifier Half Rack (Front or Rear Facing Out) on page 4

D. Under Table or on Wall on page 4

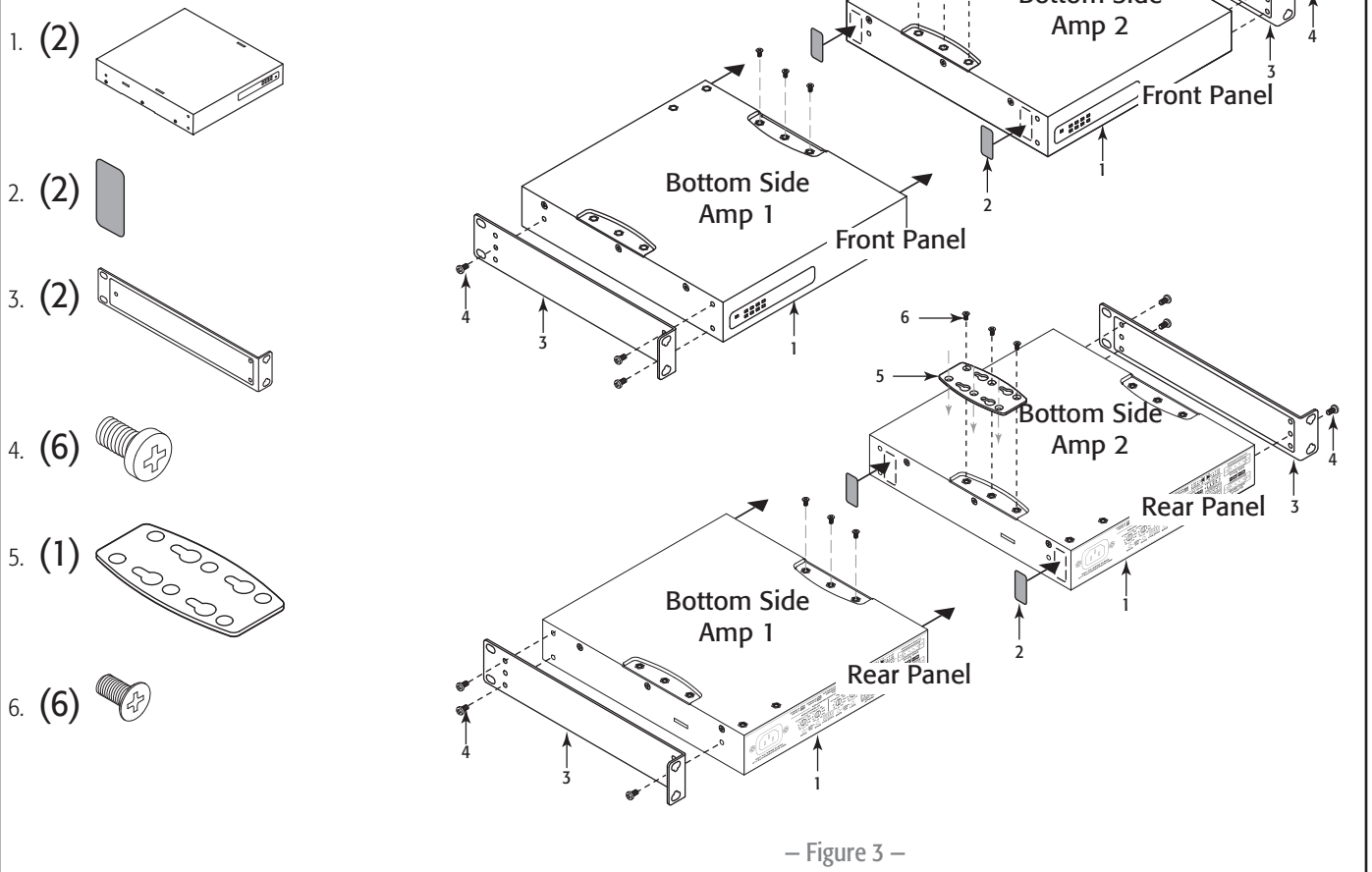E. Free-Standing on Desk/Table on page 5

F. Plenum Installation on page 5

A. One Amplifier 19-inch Rack (Left or Right Mount)

Figure 2

1. (1)
2. (2)
3. (5)
4. (1)

Top Side

Front Panel
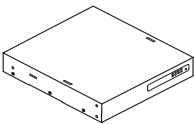
Top Side

Front Panel

— Figure 2 —

B. Two Amplifiers 19-inch Rack (Front or Rear Facing Out)

Figure 3

1. (2)
2. (2)
3. (2)
4. (6)
5. (1)
6. (6)

Bottom Side Amp 2

Front Panel

Bottom Side Amp 1

Front Panel

Bottom Side Amp 2

Rear Panel

Bottom Side Amp 1
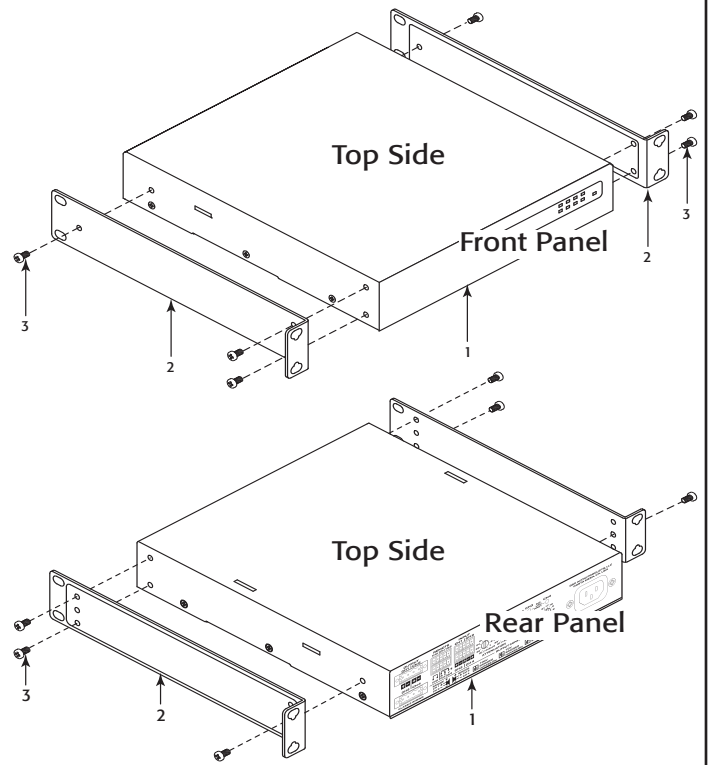
Rear Panel
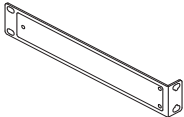
— Figure 3 —

C. One Amplifier Half Rack (Front or Rear Facing Out)

Figure 4

1. (1)

2. (2)

3. (6)

Top Side

Front Panel

3

2

3

2

1

Top Side

Rear Panel

3

2

1
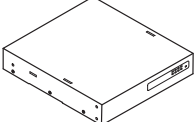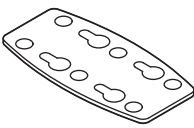
— Figure 4 —

D. Under Table or on Wall

Figure 5.

1. (1)

2. (2)

3. (6)

4. (4) Not supplied – use appropriate screws for mounting surface.

5. Mounting Surface

Mounting Surface

5

3

2

1

4

Bottom Side

Front Panel

— Figure 5 —

E. Free-Standing on Desk/Table

Figure 6

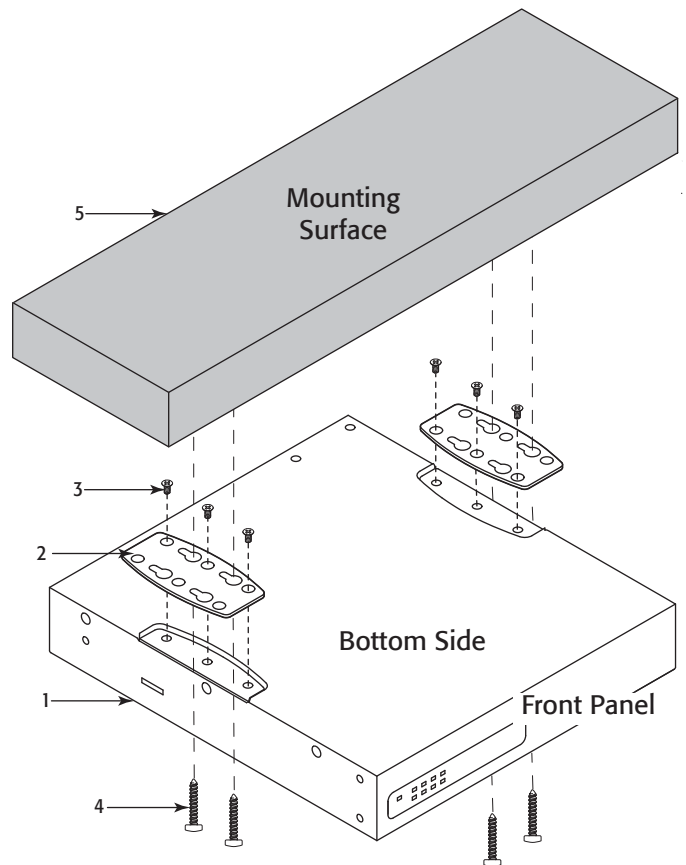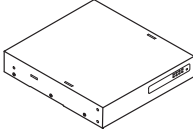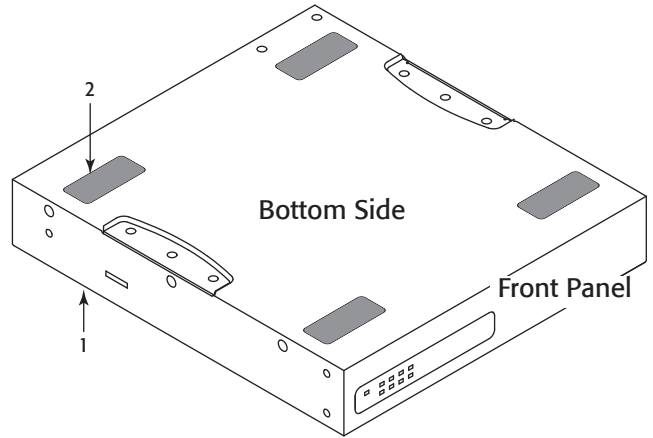1. (1)

2. (4)

2

Bottom Side

Front Panel

1
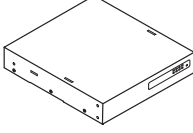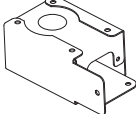
— Figure 6 —

F. Plenum Installation

Configure amplifier per option **D Under Table or on Wall**.

Figure 7

1. (1)

2. (1) Plenum Kit - Suitable for Air Handling Spaces only when used with optional Plenum Kit (FG-000995-00) sold separately.

2

Top Side

Front Panel

1
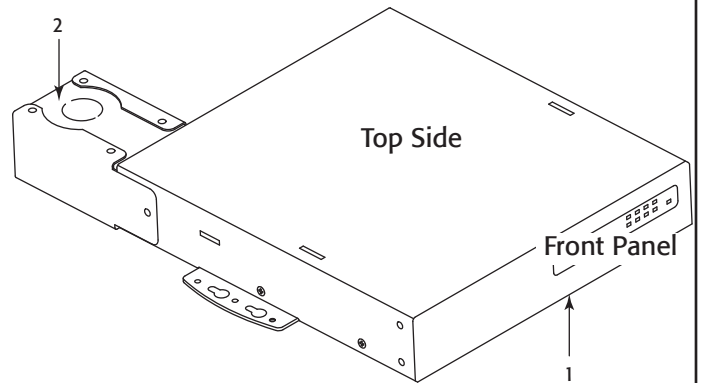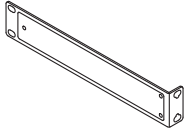
— Figure 7 —

Rack-Mounting Options

All Configurations

Figure 8

Using the examples shown, you can mount any of the amplifier configurations. The example at the lower right of **Figure 8** can be flipped to accommodate a single amplifier on the left side.

1. Equipment Rack (not supplied)

2. (2) Optional – to bring flush with Q-Sys Core 110

3. (2)

4. (4) Rack-Mounting Screws and Washers (not supplied)

1   2   3   4

1   2   3

4

— Figure 8 —

Front Panel

2 CHANNEL AMPLIFIER
SPA2

4 CHANNEL AMPLIFIER
SPA4

Limiter / Protect
Red – Protect / Mute
Orange – Limiter on

Input Signal
Blue – Present

Power
Blue – On
Orange – Standby

Limiter / Protect
Red – Protect / Mute
Orange – Limiter on

Input Signal
Blue – Present

Power
Blue – On
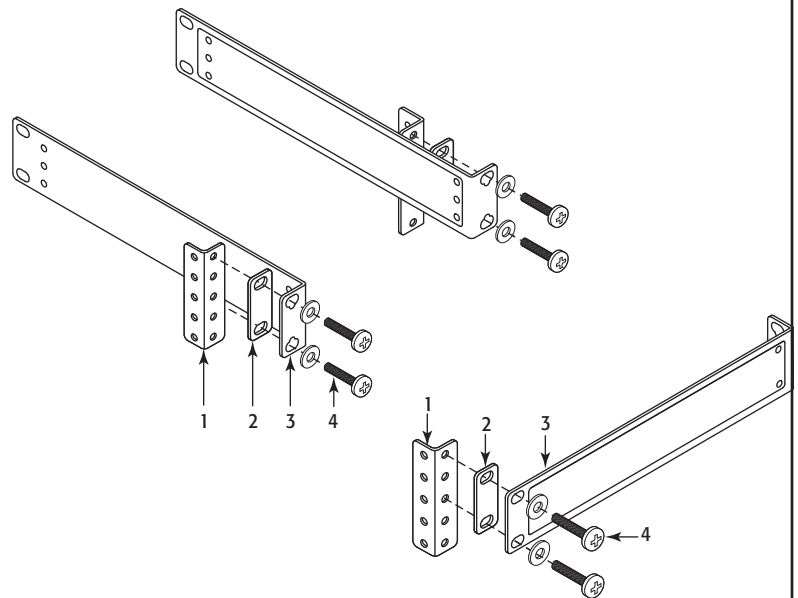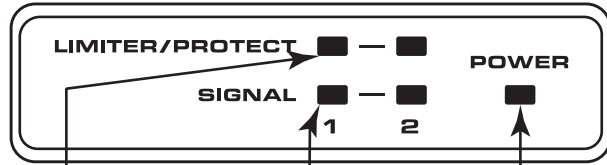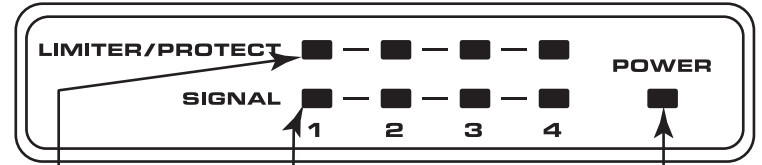Orange – Standby

– Figure 9 –

Rear Panel
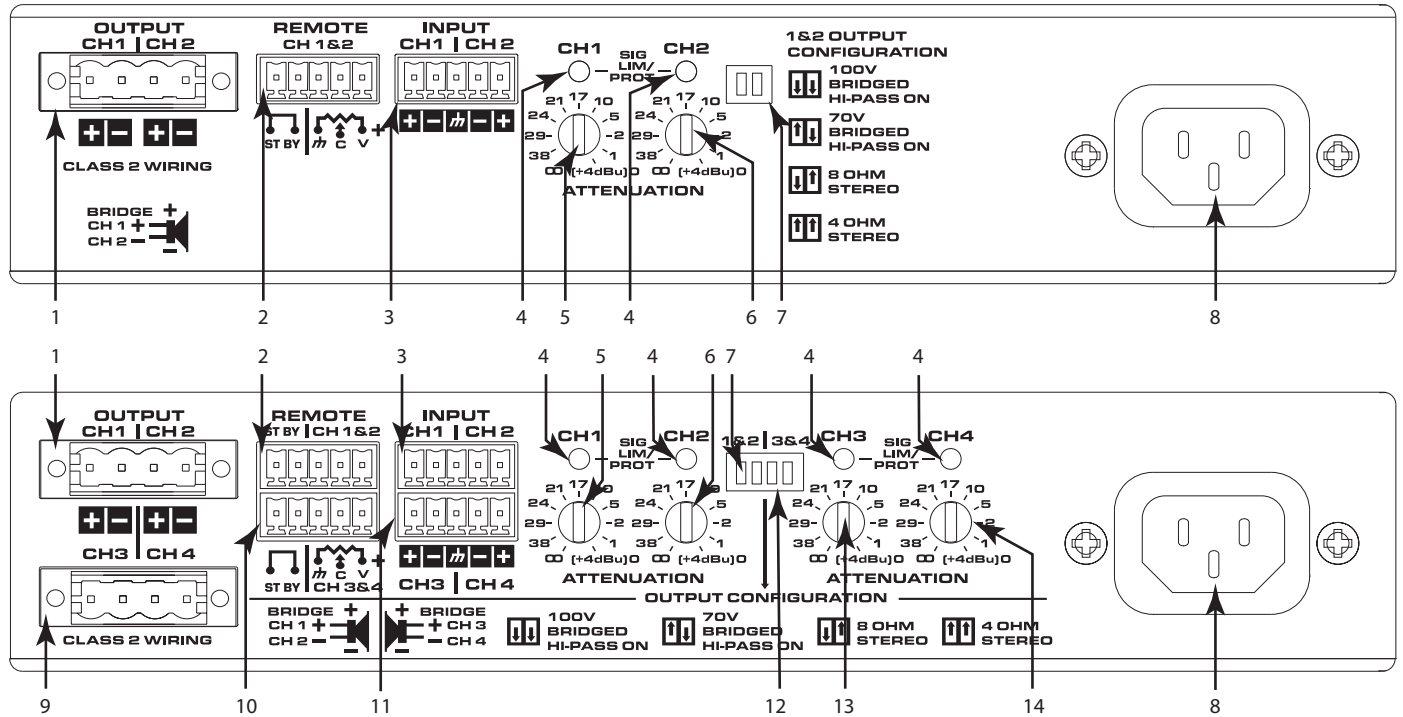
– Figure 10 –

1. Output Channels 1 & 2
2. Remote Control Channels 1 & 2
3. Input Channels 1 & 2
4. Channel 1 thru Channel 4 Status LEDs
   a. Green – Normal Signal Level
   b. Amber – Input or Output Overload/ Clipping or Thermal Limiting
   c. Red – Limit or Protect Mode
   d. Red – Thermal Limit or Protect Mode
   e. Red – Mute [1]

5. Channel 1 Attenuator Control
6. Channel 2 Attenuator Control
7. Mode Configuration Switches Channel 1 & 2
8. AC Power Connection
9. Output Channels 3 & 4

10. Remote Control Channel 3 & 4
11. Input Channels 3 & 4
12. Mode Configuration Switches Channel 3 & 4
13. Channel 3 Attenuator Control
14. Channel 4 Attenuator Control

1   No signal for 10 minutes, amplifier outputs are muted (LEDs are red). No signal for 25 minutes, amplifier is put in Standby Mode (Rear LEDs are off).

Connections

Wire

⚠️ **IMPORTANT:** Class 2 Wiring

5mm   1:1   Strip Length = 5mm

DO NOT TIN!

— Figure 11 —

Output Connectors

⚠️ **IMPORTANT:** Class 2 Wiring

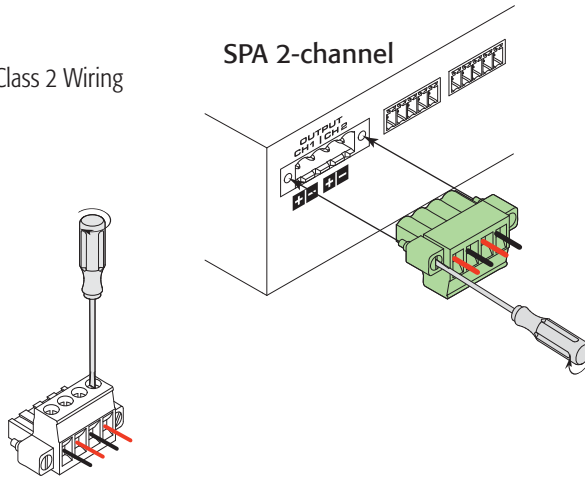Figure 12 – Figure 13

SPA 2-channel

(1)

SPA 4-channel

(2)
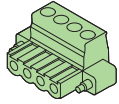
SPA 2-channel

SPA 4-channel
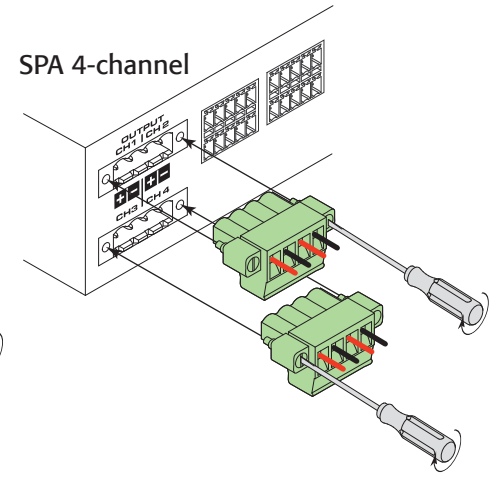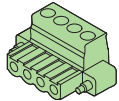
— Figure 12 —

— Figure 13 —

Input Connectors

SPA 2-channel Connector

Figure 14 – Figure 15

(1)
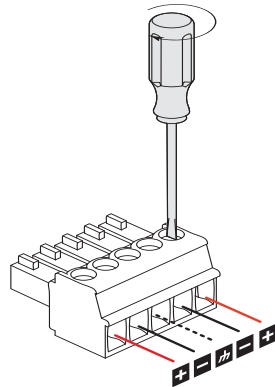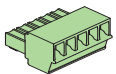
SPA 4-channel Connector

Figure 16 – Figure 17

(1)
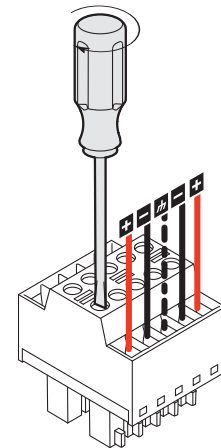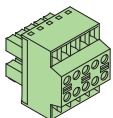
— Figure 14 —
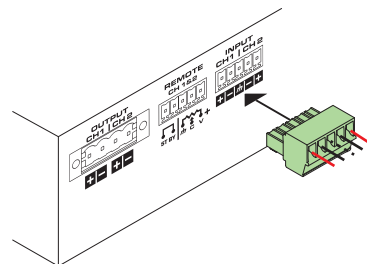
— Figure 16 —

— Figure 15 —
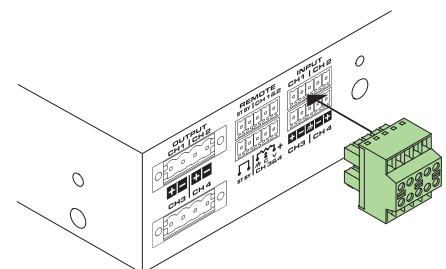
— Figure 17 —

Balanced and Unbalanced Inputs

Figure 18

Balanced

Unbalanced

CH1   CH 2

CH3   CH 4   **Unbalanced Inputs:**
jumper between (-) negative and ground.

CH 2

CH 4

CH1

CH3
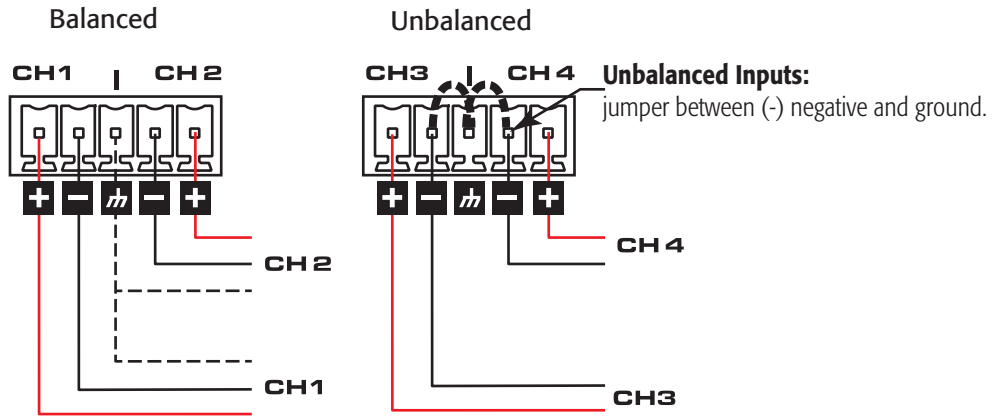
— Figure 18 —

Stereo Mode

Figure 19 – Figure 21
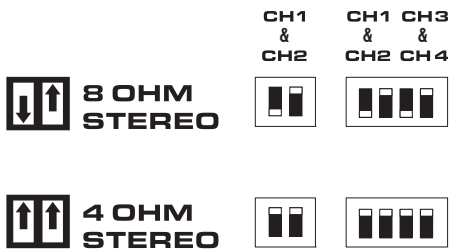
CH1
&
CH2

CH1 CH3
& &
CH2 CH 4

8 OHM STEREO

4 OHM STEREO

— Figure 19 —

⚠ **CAUTION!:**   Do not connect any output to ground.

Inputs

CH1   CH 2

CH3   CH 4

— Figure 20 —

Outputs

CH1 | CH 2

CH3 | CH 4

CH 2

CH 4

CH1

CH3
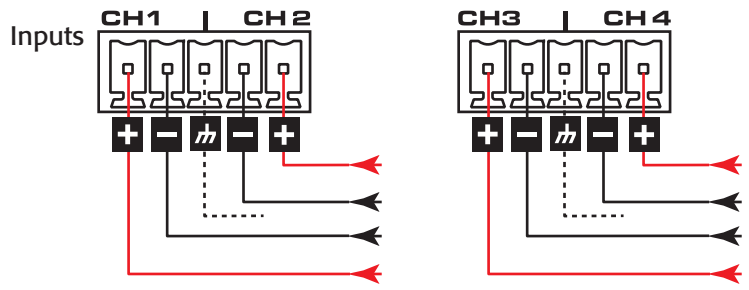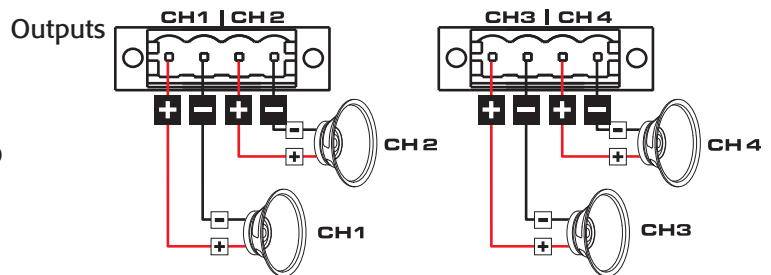
— Figure 21 —

4 or 8-ohm Bridged Mode

Figure 22 – Figure 25

8 OHM STEREO
8+ Ω Bridged Load

| CH1 & CH2 | CH1 & CH2 CH3 & CH4 |

4 OHM STEREO
4 - 8 Ω Bridged Load
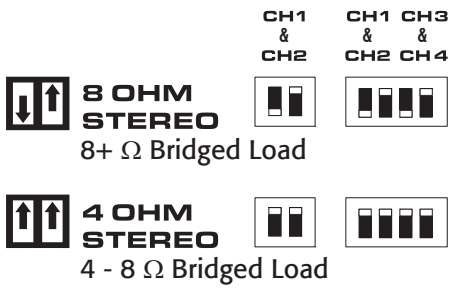
— Figure 22 —

⚠ **CAUTION!:** Do not connect any output to ground.

⚠ **IMPORTANT:** When using 4 or 8-ohm Bridged Mode, use both signal inputs of a channel pair (for example parallel CH1&2 inputs and parallel CH3&4 inputs), and set the attenuation for each channel pair to the same level.

Inputs

CH1 | CH2   CH3 | CH4

— Figure 23 —

Outputs

CH1 | CH2   CH3 | CH4

CH1 + CH2   CH3 + CH4

— Figure 24 —

CH1 | CH2   CH3 | CH4

ATTENUATION   ATTENUATION
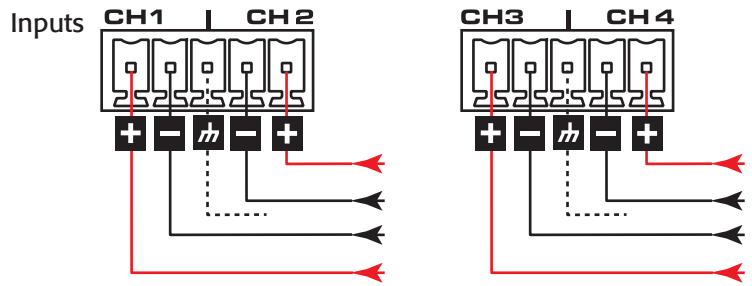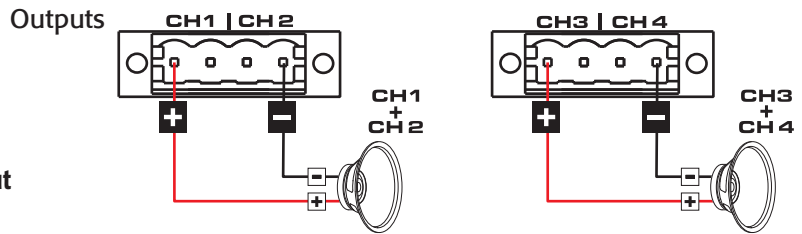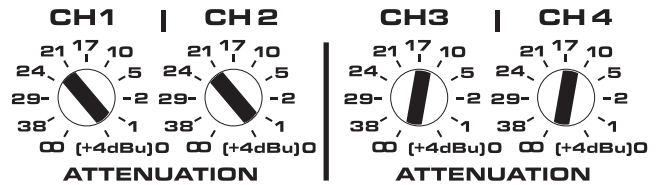
— Figure 25 —

70V / 100V Bridge Mode

⚠ **NOTE:** 80 Hz (high-pass filter) is auto-engaged in bridged 70 V and 100 V modes

Figure 26 – Figure 29

100V BRIDGED HI-PASS ON

| CH1 & CH2 | CH1 & CH2 CH3 & CH4 |

70V BRIDGED HI-PASS ON

— Figure 26 —

CH1 | CH2   CH3 | CH4

Bridged Inputs

— Figure 27 —

CH1 | CH2   CH3 | CH4

Bridged Outputs

CH1 + CH2   CH3 + CH4
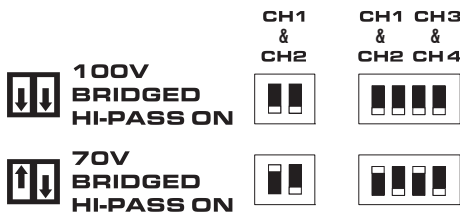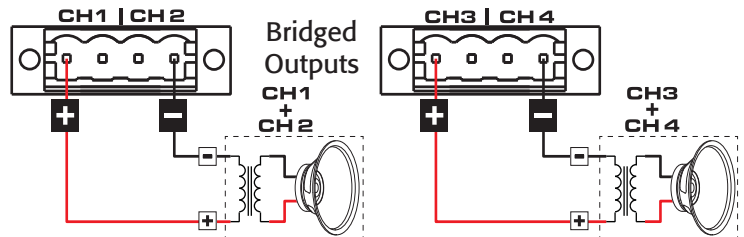
— Figure 28 —

Minimum Load Impedance:

• 70V Bridged = 16 Ω

• 100V Bridged = 26 Ω

CH1 | CH2   CH3 | CH4

ATTENUATION   ATTENUATION
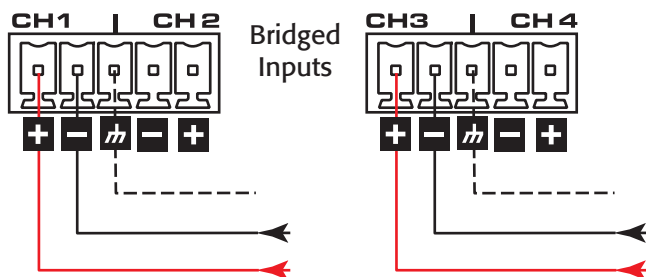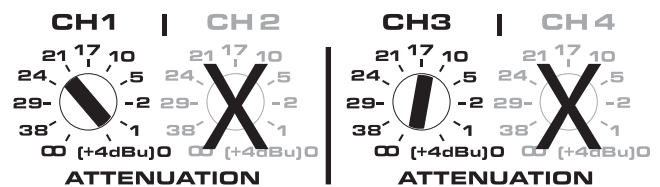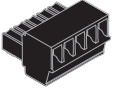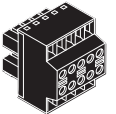
— Figure 29 —

Remote

Figure 30 – Figure 32

SPA 2-channel

(1) 3.5mm, 5-pin

SPA 4-channel

(1) 3.5mm, 10-pin

When the potentiometer is at the minimum position, the amplifier goes into Mute mode. On the SPA 4-channel amplifier, the remote level controls for channel 1 & 2 are independent from channels 3 & 4 remote level control.

On the SPA 4-channel model, closing the "Standby Switch" between the first two pins of either Ch1-Ch2 or Ch3-Ch4 causes all four channels to go into Standby.

CH 1&2

V = +10Vdc reference output
C = 0-10Vdc control input
     C @ 10V = Max Volume
     C @   0V = Mute

10 kΩ

Standby Switch in Run Mode

Standby Switch in Standby Mode

— Figure 30 —
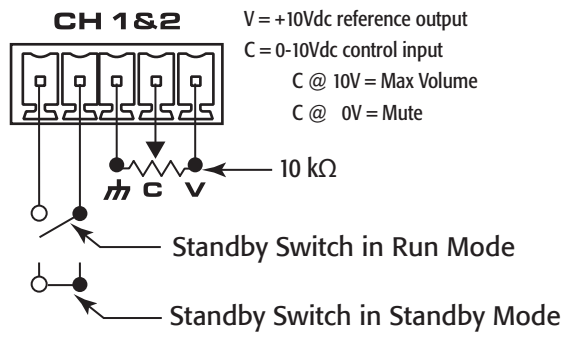
— Figure 31 —
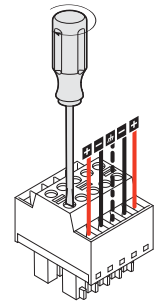
SPA 2-channel

SPA 4-channel

— Figure 32 —

Specifications

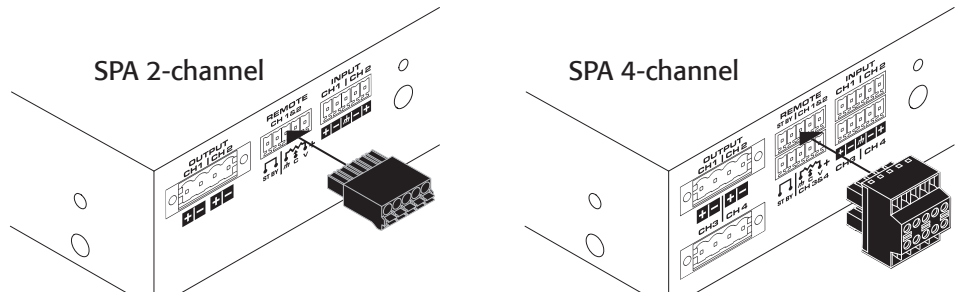|	SPA2-60 2 Channels	SPA4-60 4 Channels	SPA2-200 2 Channels	SPA4-100 4 Channels
Stereo Mode (all channels driven)				
8 Ω	60 W	60 W	200 W	100 W
4 Ω	60 W	60 W	200 W	100 W
Bridged Outputs (per bridged output pair)				
8 Ω and 4 Ω	200 W	200 W	400 W	200 W
70 V	250 W	250 W [1]	350 W	350 W [1]
100 V	250 W	250 W [1]	350 W	350 W [1]
Frequency Response (4 Ω and 8 Ω)	20 Hz - 20 kHz +/- 0.1 dB			
Signal to Noise (20 Hz - 20 kHz)	>100 dB			
Input Sensitivity	1.23 V (+4 dBu)			
Gain at 8 Ω	25 dB	25 dB	30 dB	27 dB
Output Circuitry	Class D			
Input Impedance	>10k, balanced or unbalanced			
Maximum Input Level	12.3 V (+24 dBu)			
Cooling	Convection			
Input Connectors 　SPA 2-channel 　SPA 4-channel	 3.5 mm Euro, 5 pin (green) 3.5 mm Euro, 10 pin (green)			
Remote Connectors 　SPA 2-channel 　SPA 4-channel	 3.5 mm Euro, 5 pin (black) 3.5 mm Euro, 10 pin (black)			
Output Connectors 　SPA 2-channel 　SPA 4-channel	 One 5 mm Euro, 4 pin (green) Two 5 mm Euro, 4 pin (green)			
Front Panel Indicators	Power, Signal (per channel), Limit/Mute/Protect (per channel)			
Rear Panel Indicators	Two-colored LED Signal/Limit/Mute/Protect (per channel)			
User-configurable Operating Modes (4-channel or equivalent operating mode can be independently configured per channel pair	Low Impedance 4 Ω and 8 Ω operation, or High-impedance bridged direct drive of 70V & 100V distributed audio systems			
General Purpose Inputs (GPI)	Remote Volume, Remote Standby, on 3.5 mm connectors (10k potentiometer is not included)			
Highpass Filter	80 Hz auto-engaged in Bridged 70 V & 100 V modes			
Dimensions	1.7" x 8.7" x 9.5" (43 mm x 220 mm x 241 mm)			
Net Weight	3.5 lb (1.6 kg)	4.0 lb (1.8 kg)	3.5 lb (1.6 kg)	4.0 lb (1.8 kg)
Shipping Weight	6 lb (2.7 kg)	6.5 lb (3.0 kg)	6 lb (2.7 kg)	6.5 lb (3.0 kg)
Power Requirements	Universal Power Supply (with active power factor correction), 100 - 240 VAC, 50 - 60 Hz			
Agency Approvals	UL, CE, Energy Star, RoHS/WEEE compliant, FCC Class B (Conducted and Radiated emissions), UL 2043 with PL-KIT			
Carton Contents	IEC Cable, Installation Guide, Connector Pack, Rack Mount Ears, Mounting Brackets			

1　Peak Power – dependent on channel loading

QSC

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