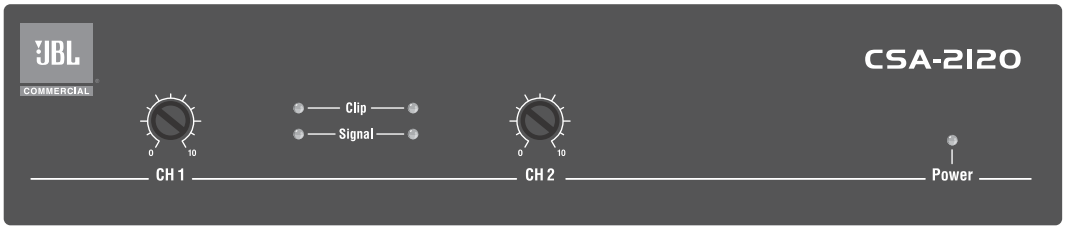
Commercial Solutions Series

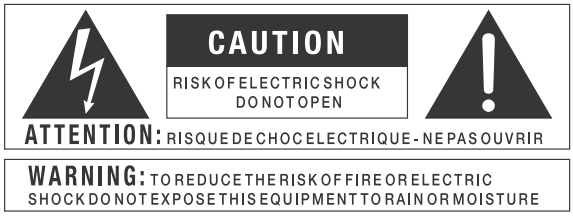
CSA-2120
CST-2120

Public Address System
Operation Manual

CSA-2120 Amplifier & CST-2120 Transformer



IMPORTANT SAFETY INFORMATION



The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE SHALL BE CONNECTED TO A MAINS SOCKET OUTLET WITH A PROTECTIVE EARTHING CONNECTION.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the units chassis.

CONDUCTOR		WIRE COLOUR	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

WARNING FOR YOUR PROTECTION READ THE FOLLOWING:

KEEP THESE INSTRUCTIONS

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING LIQUID AND NO OBJECT FILLED WITH LIQUID, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS

CLEAN ONLY WITH A DRY CLOTH.

DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.

ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Use only with the cart stand, tripod bracket, or table specified by the manufacture, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. Refer all servicing to to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

POWER ON/OFF SWITCH: For products provided with a power switch, the power switch DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rack-mount or installation where plug is not accessible, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated into the electrical installation of the rack or building.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

MULTIPLE-INPUT VOLTAGE: This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

If connected to 240V supply, a suitable CSA/UL certified power cord shall be used for this supply.

IMPORTANT SAFETY INFORMATION

U.K. MAINS PLUG WARNING

A molded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET. Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and MUST be ASTA approved to BS1362.

ELECTROMAGNETIC COMPATIBILITY

This device complies with part 15 of the FCC Rules and the Product specifications noted on the Declaration of Conformity. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Operation of this unit within significant electromagnetic fields should be avoided.

- use only shielded interconnecting cables.

If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling.

Private household in the 25 member states of the EU, in Switzerland and Norway may return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For Countries not mentioned above, please contact your local authorities for a correct method of disposal.

By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.

EC - DECLARATION OF CONFORMITY

Brand: JBL
Equipment Type: Amplifier and Transformer
Model names: CSA-2120, CST-2120

We, Harman International, declare under our sole responsibility that the product, to which this declaration relates, is in conformity with the following standards.

Report No.	Description
EN 55103-1:1997	EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions
EN 55103-1:1997	Magnetic Field Emissions – Annex A @ 10cm and 20cm
EN 61000-3-2:2005 & AMD1:2008	Limits for Harmonic Current Emissions (equipment input current less than or equal to 16A
EN 61000-3-3:2008	Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply systems Rated Current less than or equal to 16A
EN 55022:2010	Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated & Conducted, Class B Limits
EN 55103-2:1997	EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity
EN 61000-4-2:2001	Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge)
EN 61000-4-3:2006	Radiated, Radio-Frequency, EMC Immunity (Environment E2, Criteria A)
EN 61000-4-4:2007	Electrical Fast Transient/Burst Immunity (Criteria B)
EN 61000-4-5:2006	Surge Immunity (Criteria B)
EN 61000-4-6:2006	Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A)
EN 61000-4-11:2001	Voltage Dips, Short Interruptions and Voltage Variation

Safety Standard:	
IEC 60065:2001 – 7th Ed. & AMD1:2005	Safety Requirements – Audio, Video, and Similar Electronic Apparatus

Due to line current harmonics, we recommend that you contact your supply authority before connection.

We certify that the product identified above conforms to the requirements of the EMC Council Directive 89/336/EEC as amended by 92/31/EEC, and the Low Voltage Directive 73/23/EES as amended by 93/68/EEC.

European Representative's Name and Address:

David Budge
10 Harvest Close
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United Kingdom

Responsible for the technical documentation is:

Wilson Zhou
Wilson.Zhou@harman.com

1.0 Welcome

The JBL® CSA-2120 power amplifier is a professional tool designed and built for installed sound applications. The amplifier is a two-channel model providing simple analog amplification, with a switch-mode universal power supply.

The amplifier includes a rack mounting kit. A transformer module can be purchased for use in high impedance distributed sound systems. With the rack mounting kit, you can install the amplifier to a cabinet or wall. If your loudspeaker system requires higher impedance, the transformer module can be connected between the amplifier and loudspeaker systems to obtain the impedance matching.

1.1 Features

- High power output, compact size, light weight
- Accurate, uncoloured sound with very low distortion for the best in music and voice
- Over heat auto protection
- Low voltage auto protection
- Auto-Standby mode
- Detachable Euroblock input and output
- Switch-mode universal power supply

1.2 How to Use This Manual

This manual provides you with necessary information to safely and correctly setup and operate your amplifier. It does not cover every aspect of installation, setup or operation that might occur under every condition.

We strongly recommend you read all instructions, warnings and cautions contained in this manual.

2.0 Setup

2.1 Unpacking Your Amplifier

Please unpack and inspect your amplifier for any damage that may have occurred during transit. If damage is found, notify the transportation company immediately. Only you can initiate a claim for shipping damage. We will be happy to help as needed. Save the shipping carton as evidence of damage for the shipper's inspection.

We also recommend that you save all packing materials so you will have them if you ever need to transport the unit. Never ship the unit without the factory pack.

WARNING: Before you start to set up your amplifier, make sure you read and observe the Important Safety Instructions found at the beginning of this manual.

2.2 Installing Your Amplifier

CAUTION: Before you begin, make sure your amplifier is disconnected from the power source and all level controls turned completely down (counterclockwise).

To install the amplifier, you can use one of the following approaches:

- Rack mount the amplifier with the rack mounting kit, see Figure 2.2.3 and Figure 2.2.4.
- Install the amplifer to the wall with the mounting kit, see Figure 2.2.5.
- Stack amps without using a cabinet. For amplifier dimensions, see Figure 2.2.1.

NOTE: When transporting, amplifiers should be supported at front.

Figure 2.2.1 Dimensions

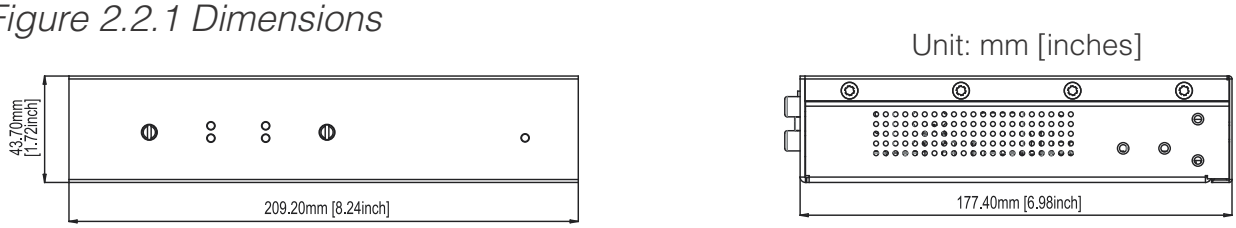


Figure 2.2.2 Mounting Kit

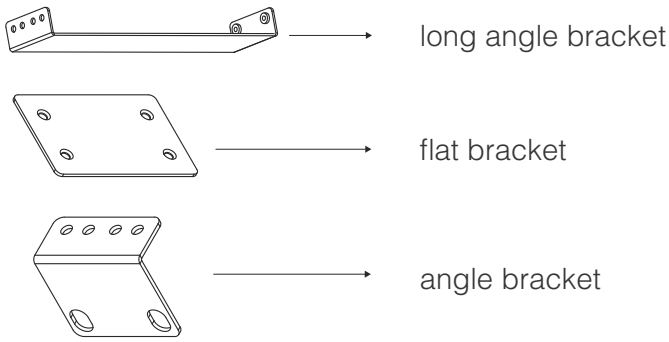
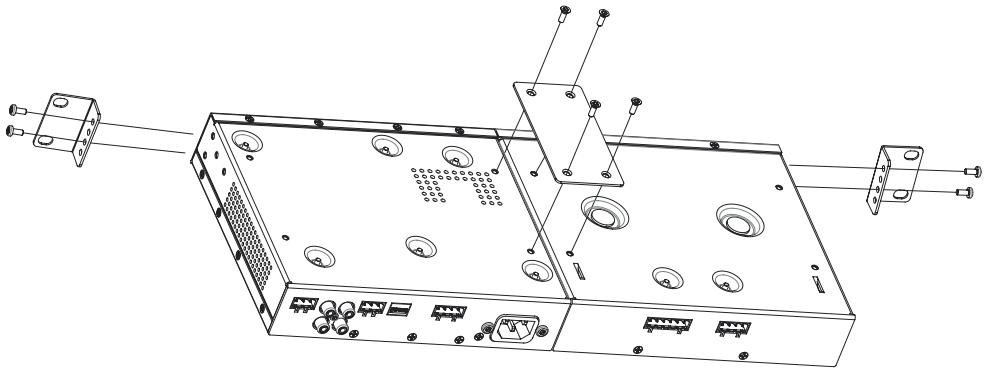


Figure 2.2.3 Rack mounting an amplifier and CST-2120 Transformer Module

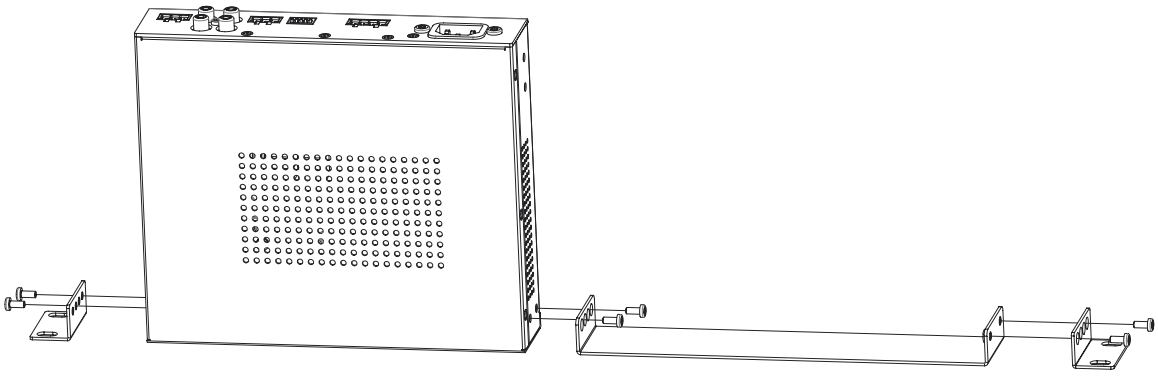


Solution A: Rack Mounting an Amplifier and CST-2120 Transformer Module

To install an amplifier and a CST-2120 transformer module in your cabinet system, refer to Figure 2.2.3 and follow the steps below:

1. Align two modules side by side, with the front panel towards the same direction.
2. Connect them with the flat bracket.
3. Attach an angle bracket to each side of the amplifier assembly with screws.
4. Install the amplifier assembly into the cabinet. For details of installation in the chassis of the cabinet, refer to the user guide of your cabinet.

Figure 2.2.4 Rack Mounting Single Amplifier

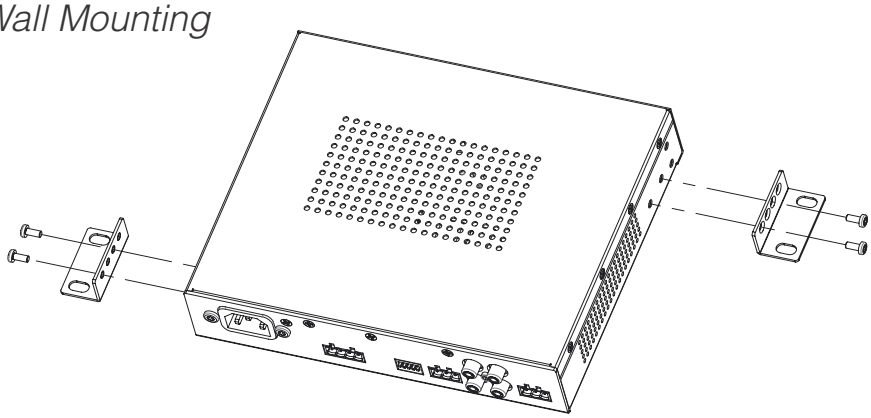


Solution B: Rack Mounting Single Amplifier

To install single amplifier in your cabinet system, refer to Figure 2.2.4 and follow the steps below:

1. Attach the long angle bracket to one side of the amplifier that you need to reserve as dummy module with screws.
2. Attach an angle bracket to the side of the long angle bracket.
3. Attach an angle bracket to another side of the amplifier with screws.
4. Install the amplifier assembly into the cabinet. For details of installation in the chassis of the cabinet, refer to the user guide of your cabinet.

Figure 2.2.5 Wall Mounting

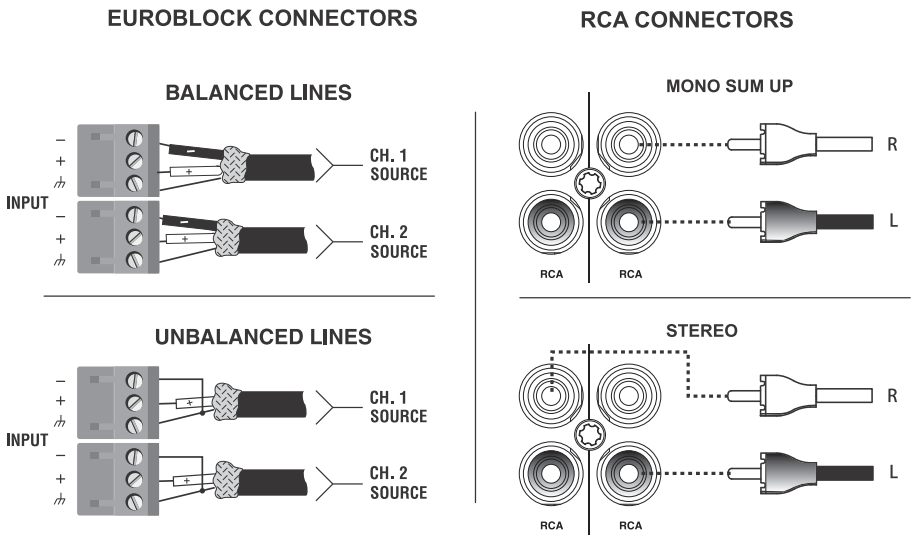


Solution C: Wall Mounting

To install the amplifier to wall, refer to Figure 2.2.5 and follow the steps below:

1. Attach two angle brackets to both sides of the amplifier with screws.
2. Install the amplifier assembly to a flat and secure position on the wall (for drywall it is recommended to use #12 x 1-1/2 in. or M6 x 40mm screws into a #12-14 x 1 – ½ in. anchor.) A minimum clearance of 4” should be provided on all sides of the assembly to allow for heat dissipation.

Figure 2.4 Input Wiring



Note: *Do not use both Euroblock and RCA audio input connectors on a single channel at the same time.*

2.3 Ensuring Proper Cooling

When using an equipment rack, mount units directly on top of each other. DO NOT block side air vents. The back of the rack should be open.

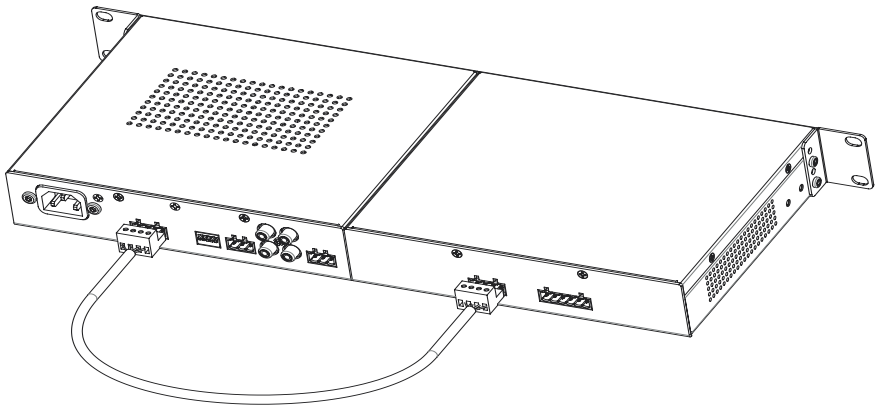
2.4 Choosing Input Wire and Connectors

We recommend using pre-built or professionally wired balanced line (two-conductor plus shield) 22-24 gauge cables to connect the amplifier balanced input by using shipped two 3-pin Euroblock connectors, see Figure 2.4. Unbalanced lines may be used, but may result in hum or RF noise very long cable runs.

You can also use RCA connectors to connect audio devices, for example, CD/DVD player. However, do not use both Euroblock and RCA audio input connectors on a single channel at the same time.

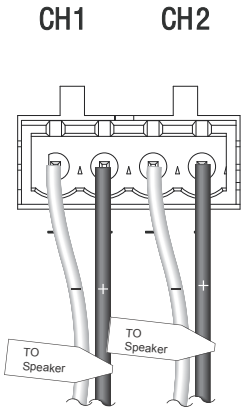
NOTE: Custom wiring should only be performed by qualified personnel.

Figure 2.5.1 Connecting To a CST-2120 Transformer Module



NOTE: If driving a 70V or 100V distributed speaker system, use the optional CST-2120 transformer module (see Appendix A).

Figure 2.5.2 Connecting to Speakers



2.5 Output Wiring

To drive distributed speaker systems designed to operate at 70V or 100V, connect the amplifier to a CST-2120 transformer module with the jumper cable that shipped with the CST-2120 transformer module, see Figure 2.5.1.

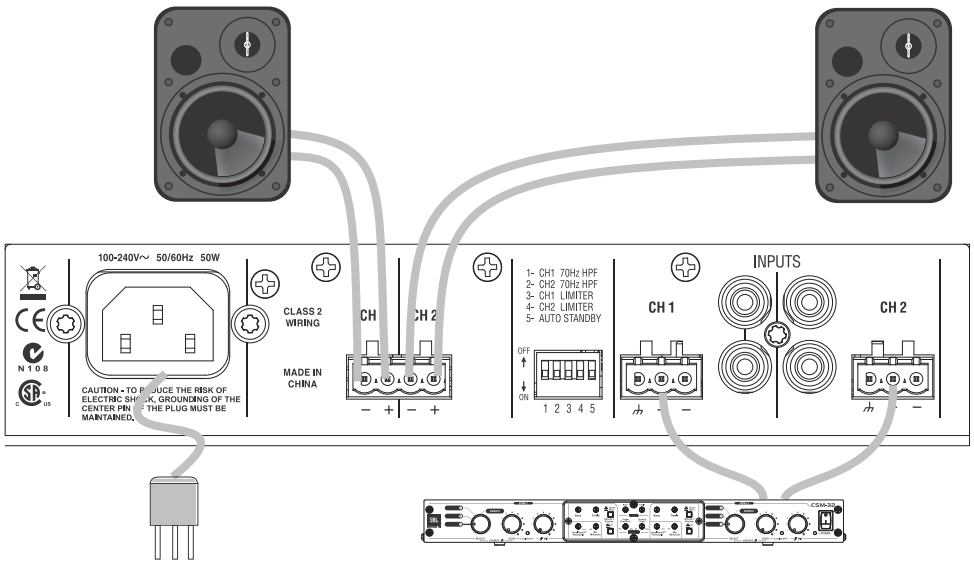
JBL recommends using pre-built or professionally wired, high-quality, two-conductor, heavy gauge speaker wire. Speakers wires should be twisted cable, if possible. To prevent the possibility of short-circuits, the wires should be stripped back no greater than 6 mm (1/4 inch), see Figure 2.5.2.

Suggested below are guidelines to select the appropriate size of wire based on the distance from amplifier to speaker. Check with local code as this may vary.

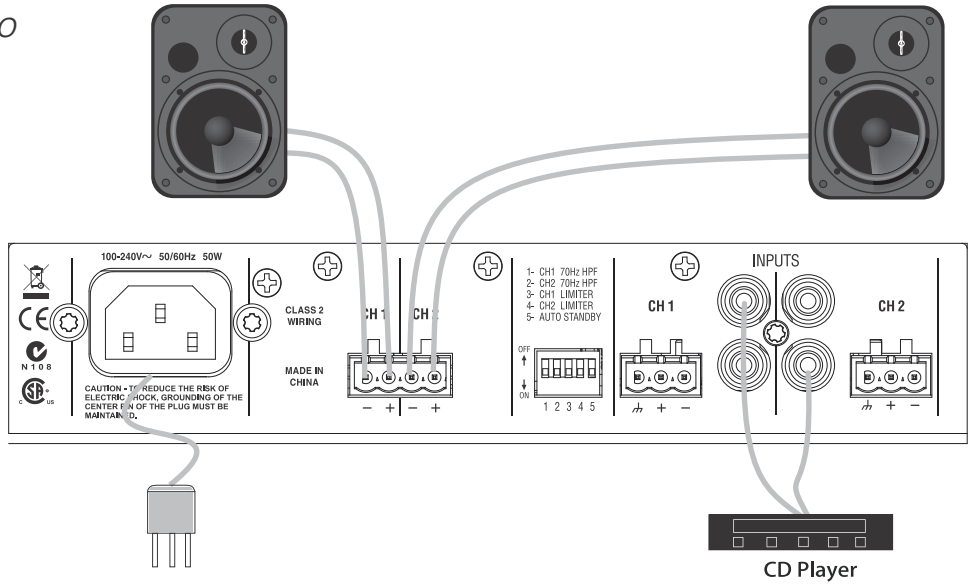
Distance	Wire Size
Up to 25 ft. (7.6m)	16AWG
26-40 ft. (7.9-12.2m)	14AWG

Figure 2.6 Wiring Audio System

Professional audio system



Personal audio system



2.6 Wiring Your Audio System

Typical input and output wirings are shown in Figure 2.6.

INPUTS: Connect input wiring for both channels using either the RCA or the Euroblock input for each channel.

OUTPUTS: Maintain proper polarity (+/–) on output connectors.

Connect Channel 1 loudspeaker's positive (+) lead to Channel 1 positive (+) terminal of amp; repeat for negative (–). Repeat Channel 2 wiring as for Channel 1.

The minimum impedance one of the amplifier channels can drive is 4 Ohms. Therefore, you can connect up to four 16 Ohms speakers, or two 8 Ohms speakers, or one 4 Ohms speaker to each amp channel.

2.7 Connecting to AC Mains

Connect your amplifier to the AC mains power source (power outlet) with the supplied AC power cord. First, connect the IEC end of the cord set to the IEC connector on the amplifier; then, plug the other end of the cord set to the AC mains.

WARNING: The third prong of this connector (ground) is an important safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

Amplifiers don't create energy. The AC mains voltage and current must be sufficient to deliver the power you expect. You must operate your amplifier from an AC mains power source with not more than a 10% variation above or below the specified line voltage and within the specified frequency range indicated on the back panel of the amplifier. If you are unsure of the output voltage of your AC mains, please consult your electrician.

2.8 Protecting Your Speakers

It's wise to avoid clipping the amplifier signal. Not only does clipping sound bad, it can damage high-frequency drivers. The built-in clip limiter prevents clipping.

Also, avoid sending strong subsonic signals to the amplifier. High-level, low-frequency signals from breath pops or dropped microphones can blow out drivers. You can switch on the highpass filters, and this avoids to send subsonic signals under 70 Hz to the amplifier. Use of the high-pass filter is necessary when using the CST2120 transformer module to drive a 70V or 100V distributed loudspeaker system in order to prevent distortion due to transformer saturation.

2.9 Startup Procedure

Use the following procedure when first turning on your amplifier:

1. Turn down the level of your audio source.
2. Turn down the level controls of the amplifier.
3. Power up the amplifier. The Power indicator should light.
4. Turn up the level of your audio source to an optimum level.
5. Turn up the Level controls on the amplifier until the desired loudness or power level is achieved.

If you ever need to make any wiring or installation changes, don't forget to disconnect the power cord.

3.0 Operation

3.1 Precautions

Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

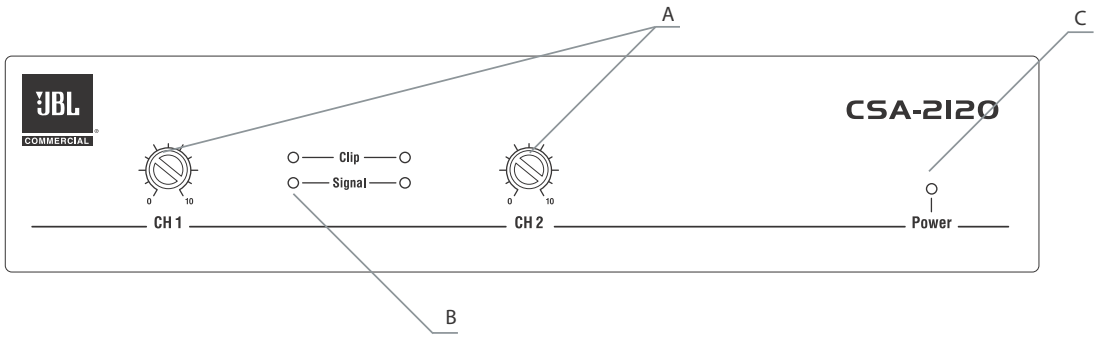
1. Before use, your amplifier first must be configured for proper operation, including input and output wiring hookup. Improper wiring can result in serious operating difficulties.

   For information on wiring and configuration, please consult the Setup section of this manual.
2. Use care when making connections, selecting signal sources and controlling the output level.
3. Do not short the ground lead of an output cable to the input signal ground. This may form a ground loop and cause oscillations.
4. WARNING: Never connect the output to a power supply, battery or power main. Electrical shock may result.
5. Tampering with the circuitry, or making unauthorized circuit changes may be hazardous and invalidates all agency listings.
6. Do not operate the amplifier with the red Clip LEDs constantly flashing.
7. Do not overdrive the mixer, which will cause clipped signal to be sent to the amplifier. Such signals will be reproduced with extreme accuracy, and loudspeaker damage may result.
8. Do not operate the amplifier with less than the rated load impedance. Due to the amplifier's output protection, such a configuration may result in premature clipping and speaker damage.
9. Use the amplifier in a well-ventilated environment and do not use it in ambient temperature conditions in excess of 40°C. Failure to do so will result in the auto disconnection from power supply, and the overheat auto protection function will be activated. The power indicator will be turned off and there will not be any audio signal coming out of the amplifier. In this case, turn down the volume to the minimum, and the amplifier will resume working. When the amplifier returns to normal temperature then you may turn the volume up to the required level.
10. If the line voltage to the amplifier is too low, the low voltage protection function will be activated. The power indicator will be turned off.

CAUTION: JBL is not liable for damage that results from overdriving other system components.

3.2 Front Panel Controls and Indicators

Figure 3.2 Front View



A. Level: Rotary level control, one per channel.

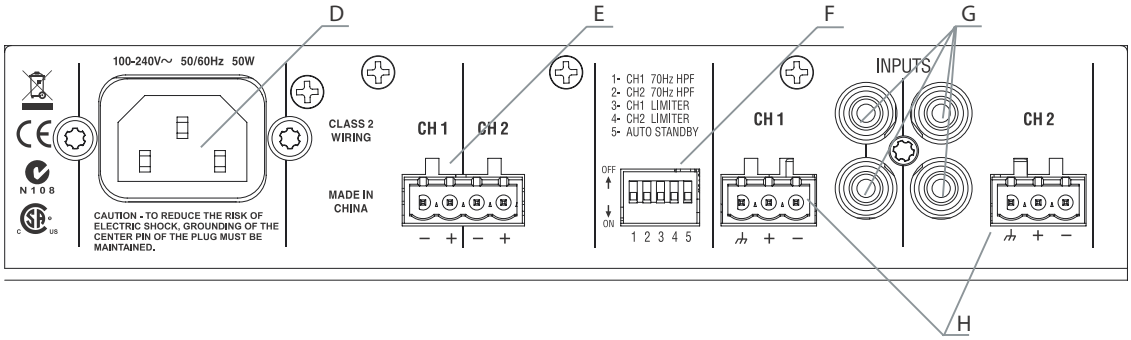
B. Meter Group (one per channel):

- Clip Indicator: Red LED turns at the threshold of audible distortion.
- Signal Indicator: Green LED flashes when a very low-level signal (Threshold -40dB) is present at input. May be used for troubleshooting cable runs.

C. Power Indicator: Indicates that AC power is being applied to the unit.

3.3 Rear Panel Controls and Connectors

Figure 3.3 Rear View



D. AC Line Connector

E. Output Connectors: 4-pin Euroblock connectors for dual loudspeakers.

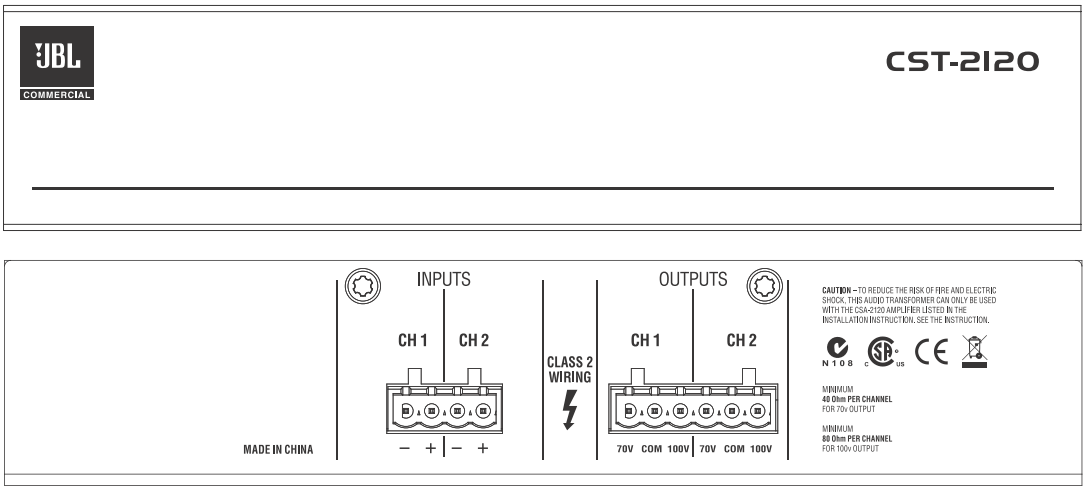
F. Amplifier Parameter Switches: Slide DOWN to turn on these functions. Slide UP to turn them off. The parameter switches are numbered as below:
   1. CH1 70Hz highpass filter
   2. CH2 70Hz highpass filter
   3. CH1 peak limiter
   4. CH2 peak limiter
   5. Auto-Standby

G. RCA Connectors

H. Euroblock Connectors: Two 3-pin Euroblock connectors each accept a balanced or unbalanced line-level input signal.

Appendix A: Optional Item - Transformer Module

CST-2120 Overview



The rack-mountable JBL Commercial® CST-2120 transformer module provides impedance and voltage matching from the CSA-2120 amplifier to drive 70V and 100V distributed speakers systems.

This unit allows amplifiers without direct 70V or 100V output capability to drive distributed speaker systems designed to operate at those voltages.

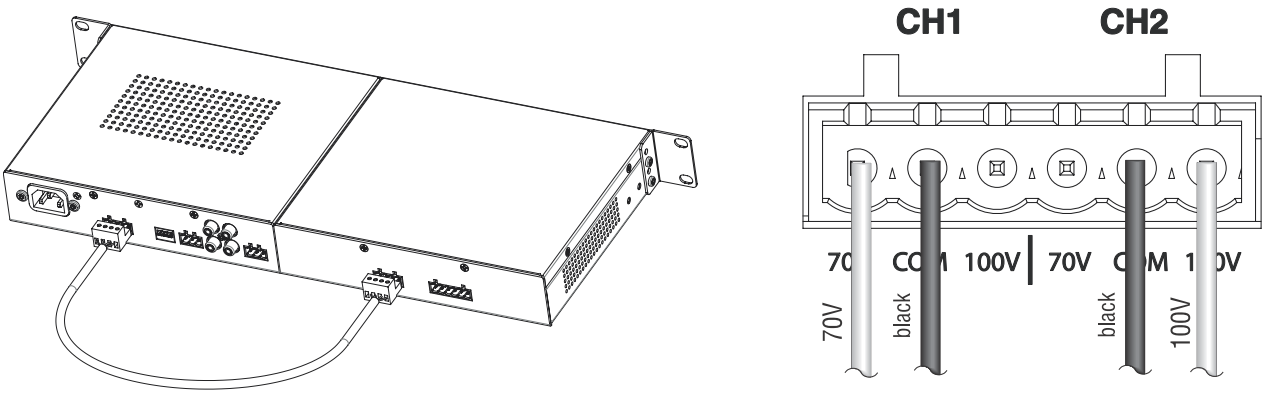
Features

- Provides two channels of impedance matching for “Constant-Voltage” operation
- Provides 70V and 100V output when used with CSA-2120 amplifiers
- Allows the CSA-2120 to be easily integrated into distributed systems
- Detachable Euroblock input and output connectors are included.

Specifications

Max Input Power:	120 W / CH. 31Vrms (amp rated at 120W @ 8 ohms)
Insertion Loss:	< 1dB
Frequency Response:	+0/–1 dB (70Hz – 15kHz, at 70 V tap/40 ohms load or 100 V tap/80 ohms load, 1 watt output)
Dimensions (W x H x D) :	8.2” X 1.7” X 7” (209 mm x 44 mm x 178 mm)
Net Weight:	2.1 Kg (4.6 lbs)
Shipping Weight:	2.5 Kg (5.6 lbs)

CST-2120 Connection



Installation

CAUTION: Before you begin, make sure that the amplifier is disconnected from the power source and all level controls are turned completely down (counter-clockwise).

1. If you need to mount the transformer module to rack, use a standard 19-inch (48.3-cm) equipment rack (EIA RS-310B) . You can have the following options according to your application:
   - Rack mounting the transformer module with a CSA-2120 amplifier
   - Rack mounting single unit
   - Wall mounting
2. Connect the input of the transformer module to the output of the CSA-2120 amplifier with the shipped 4-pin cable.
3. Determine the proper transformer module tap to use, based on the desired constant-voltage of your system.

Appendix B: Amplifier Specifications

Output Power (two channels at 1 kHz power, THD+N<0.5%):	4 Ohms 120 W 8 Ohms 120 W
Frequency Response (1 watt into 4 or 8 Ohms):	+1/-1 dB
Load Impedance:	Rated for 4 or 8 Ohms
Sensitivity (8 Ohms load):	1.4 Vrms
Signal to Noise Ratio (below rated 8-Ohm power at 1 kHz, A weighted):	>100 dB
Crosstalk (Below rated power):	>70dB from 20Hz to 1kHz; >50dB at 20kHz
Input Impedance (nominal):	Balanced: 20 k Ohms Unbalanced: 10 k Ohms
AC Line Voltage and Frequency Configurations Available:	100-240 V, 50/60 Hz
Maximum Input Signal:	+20 dBu typical
Operating Temperature:	0° C to 40° C at 95% relative humidity (non-condensing)
Auto-Standby:	Auto-Standby recovery time: <1ms Auto-Standby recovery threshold: – 60dBu
Dimensions (W x H x D) :	8.2” x 1.7 x 7” (209 mm x 44 mm x 178 mm)
Net Weight:	1 kg (2.1 lbs)
Shipping Weight:	1.7 kg (3.8 lbs)

Appendix C: AC Power Draw and Thermal Dissipation

CSA-2120																			
	Load 2CH	120 VAC / 60 Hz						220 VAC / 50 Hz						240 VAC / 50 Hz					
		Line current	Watts in	Watts out	Watts dissipated	Thermal Dissipation		Line current	Watts in	Watts out	Watts dissipated	Thermal Dissipation		Line current	Watts in	Watts out	Watts dissipated	Thermal Dissipation	
Condition	Driven					BTU/hr	kcal/hr					BTU/hr	kcal/hr					BTU/hr	kcal/hr
at Idle		0.22	8.56	0.00	8.56	29.22	7.37	0.17	11.10	0.00	11.10	37.88	9.55	0.16	11.32	0.00	11.32	38.64	9.74
at Idle sleep		0.18	7.72	0.00	7.72	26.35	6.64	0.15	9.30	0.00	9.30	31.74	8.00	0.15	9.52	0.00	9.52	32.49	8.19
1/8th sinewave	8	0.93	48.99	34.21	14.78	50.44	12.72	0.60	50.36	34.02	16.34	55.77	14.06	0.57	50.80	34.26	16.54	56.45	14.23
	4	0.98	52.36	34.69	17.67	60.31	15.20	0.64	53.73	34.71	19.02	64.92	16.36	0.60	53.99	34.71	19.28	65.80	16.59
1/3rd sinewave	8	1.98	113.22	88.01	25.21	86.04	21.69	1.23	112.63	88.05	24.58	83.89	21.15	1.15	112.97	88.02	24.95	85.15	21.47
	4	2.07	118.75	86.75	32.00	109.22	27.53	1.28	117.91	86.84	31.07	106.04	26.73	1.20	117.80	86.84	30.96	105.67	26.64
1/8th Power Pink Noise	8	1.04	53.99	32.04	21.95	74.92	18.89	0.72	55.46	32.03	23.43	79.97	20.16	0.70	55.44	32.06	23.38	79.80	20.12
	4	1.17	58.34	32.79	25.55	87.20	21.98	0.70	58.12	32.78	25.34	86.49	21.80	0.73	59.87	32.79	27.08	92.42	23.30
1/3rd Power Pink Noise	8	2.33	125.30	84.57	40.73	139.01	35.04	1.49	123.80	84.46	39.34	134.27	33.85	1.45	126.35	84.49	41.86	142.87	36.02
	4	2.53	136.30	85.19	51.11	174.44	43.98	1.57	137.32	85.25	52.07	177.71	44.80	1.54	137.00	85.27	51.73	176.55	44.51

Appendix D: Contact Information

For additional information, please consult JBL Professional Customer Service, your system installer or retailer.

On The World Wide Web:
www.jblcommercialproducts.com

Professional Contacts, Outside the USA:
Contact the JBL Professional Distributor in your area. A complete list of JBL Professional international distributors is provided at our U.S.A. Website: www.jblpro.com

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