Operation Manual

Professional Power Amplifier

V2-1000/2000/3000/4000



inter M

Welcome

A personal welcome to you from the management and employees of Inter-M

All of the co-workers here at Inter-M are dedicated to providing excellent products with inherently good value, and we are delighted you have purchased one of our products.

We sincerely trust this product will provide years of satisfactory service, but if anything is not to your complete satisfaction, we will endeavor to make things right.

Welcome to Inter-M, and thank you for becoming part of our worldwide extended family!





This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attentions: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant on une autre sortie de courant, sauf si les lames peuvent étre insérées à fond sans en laisser aucune partie à découvert.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

*WARNING FOR YOUR PROTECTION PLEASE READ THE FOLLOWING-WATER AND MOISTURE: Unit should not be used near water(e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so than objects do not fall and liquids are not spilled into the enclosure through openings.
*CLASS 2 WIRING (Adjacent to speaker terminal): The speaker output of this apparatus can exceed 10 Watts and could be a shock injury. Connection to speakers should be performed by a skilled person.
*Do not install this equipment in a confined space such as a book case or similar unit.
*This apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such vases, shall be placed on the apparatus.
*This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
*It has heed to be easy to disconnect the device. To disconnect the device from power, separate AC input cable from inlet or unplug the AC Cord.

CAUTION

*These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

NOTE

*This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Unpacking

Please take a few minutes to read this manual to familiarize yourself with important information regarding installation, product features, and operation.

As with most electronic devices, original packaging (or equal) is required in the unlikely event that the product needs to be returned for servicing.

Short Form Instructions

1. Do not connect the AC power until step 6. The ac mains power switch should be in the off position.

2. Adjust both of the level controls to the fully attenuated position(turn fully counter-clockwise).

3. Connect an appropriate line level input signal to the balanced XLR connector marked inputs.

4. Move the mode selector to the desired position. The Stereo position is the most common.

5. Connect the outputs to the speaker load according to the mode of operation determined in the previous step.

6. With the ac mains power switch in the off position, connect to an appropriate AC source.

7. Depress the ac mains power switch to the on position. The indicator 'POWER' will illuminate dimly and then fully after a few seconds.

8. The product is ready for operation. Slowly increase the level control to the desired operating level. Avoid illuminating the clip indicator and do not apply too much power to the speakers.

9. Operate the product and the system in a manner which does not illuminate the clip warning indicator.

Installation

Environment

Never place this product in an environment which could alter its performance or reduce its service life. Such environments usually include high levels of heat, dust, moisture, and vibration.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. 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 the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing 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.



Description

- V2-1000
  A 2U rack space, 2 channel amplifier capable of 1150W into 4Ω load(bridged mono).

- V2-2000
  A 2U rack space, 2 channel amplifier capable of 1850W into 4Ω load(bridged mono).

- V2-3000
  A 2U rack space, 2 channel amplifier capable of 3300W into 4Ω load(bridged mono).

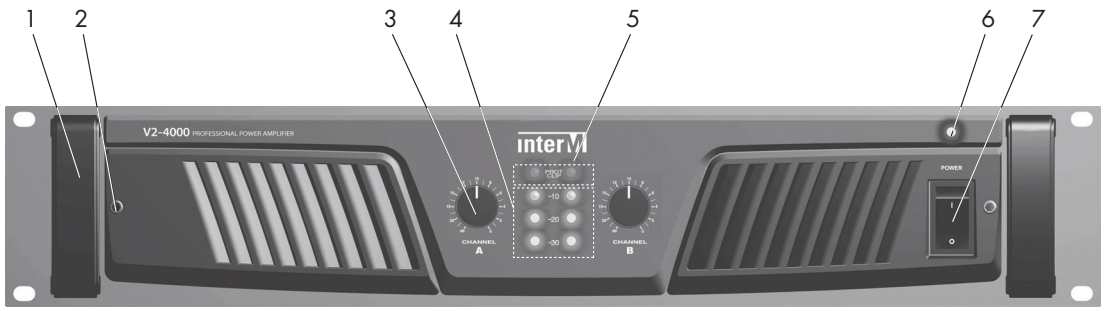
- V2-4000
  A 2U rack space, 2 channel amplifier capable of 4200W into 4Ω load(bridged mono).

※ The output power can be changed in relation to the AC supply voltage.

Features

- 2Ω-load stable per channel, 4Ω-load stable in bridged mono
- 2U rack space
- Switch mode power supply available for high efficiency and low weight
- Forced air cooled(front panel intake, rear panel exhaust)
- Front panel indicators for output signal, clip, protect and power
- Rack ears for permanent installation in a standard 19"(rack mount width) enclosure
- Selectable high pass filter on each channel-clip limiter circuitry
- Gain selectable switch for both channel
- Front removable dust filters

Front Panel



1. HANDLES

These are provided for easy transporting and installing into equipment enclosures or racks.

2. SCREW FOR DUST FILTER REMOVAL

To avoid unnecessary dust particles being drawn into amplifier, a removable dust filter has been fitted to the front panel.

3. LEVEL CONTROL

This control adjusts the level(amplitude) of the input signal for each channel. In stereo or parallel mode the knobs will determine the signal level independently for each channel. In the bridged mono mode only channel A knob will be determine the signal level, while channel B disabled.

4. LEVEL INDICATOR

These indicators should illuminate during normal operation when there is an output signal.

5. PROTECTION/CLIP INDICATOR

This warns of a problem when illuminated. Reduce the level of the device which supplies signal to the amplifier or reduce the level control(s) on the amplifier. This should not be continuously illuminated during normal operation, but may flash occasionally. Also this indicates protection occurred like the amplifier over heated, output shorted, over loaded and unexpected DC voltage output, which result the amplifier shutdown. When protection released, the amplifier should be recovered.

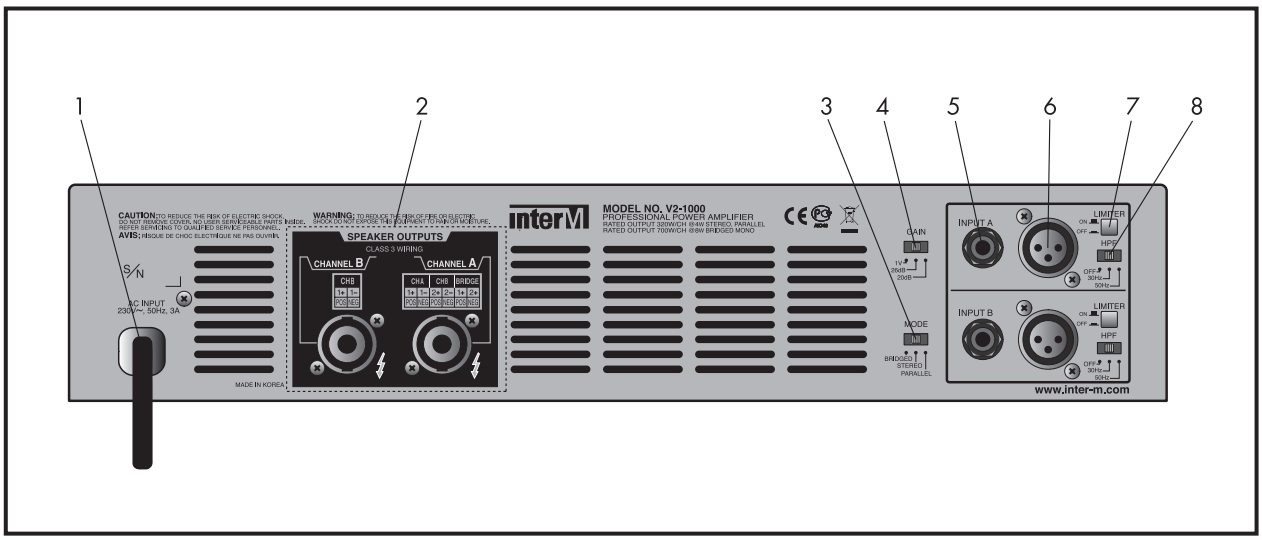
6. POWER INDICATOR

This confirms the amplifier is switched on and receiving AC mains power when illuminated. When switched on, the indicator is illuminated dimly for stand-by and then fully illuminated with prot/clip indicator for mute status, after that, only this illuminated fully activating the amplifier.

7. POWER SWITCH

V2-Series have a combination AC switch/circuit breaker. The position of this switch determines whether the AC mains power is on or off. The power-on status is confirmed by the illuminated power indicator. Also this is used for a circuit breaker to protect AC mains power and the amplifier from abnormal operations due to overload or malfunction. If the current flows over the circuit breaker's rating, the circuit breaker is tripped. You can switch on after abnormal situation released and then the amplifier will be recovered. Amplifiers are always the last item in a system to be turned on. It is generally a good idea to reduce the level controls before applying AC mains power.

Rear Panel



1. **AC CORD**
   Connect this product to an appropriate AC main power source.

2. **OUTPUT CONNECTORS**
   4 Pole speaker sockets are provided. Bridged mono operation requires a different method of connecting the speaker cables than stereo operation. Be sure that the amplifier is in the correct mode before connecting the speaker load. Please refer to the output connection drawings.

3. **MODE SELECTOR SWITCH**
   Move this switch to select the stereo, parallel or bridged mono position as needed for the application. The stereo mode is most common. Channel A input provides signal through the amplifier to the channel A output. The channel B input provides signal through the amplifier the channel B output. The parallel mode uses the channel A input provides signal through the amplifier to both the channel A and channel B outputs. No input will be supplied to channel B in the Parallel mode. The bridge mono mode combines both channels to create one larger mono channel. Input signal applied to channel A will provide signal through the amplifier to the positive terminals of channel A and channel B. Do not connect any signal to the channel B input or any loads to the negative outputs.

4. **VOLTAGE GAIN SELECTOR SWITCH**
   You can drive the amplifier with different gain structure, 1V, 32dB or 26dB, which is possible the amplifier to accept a various input level. (V2-1000/2000 Voltage Gain: 1V, 26dB, 20dB)

5. **BALANCED TRS INPUT CONNECTORS**
   Each input channel is equipped with a TRS connector. The signal at these connectors is parallel with the XLR input signal for linking the input signal to other amplifier.

6. BALANCED XLR INPUT CONNECTORS

Each input channel is equipped with a XLR connector. You can use either balanced or unbalanced connectors, but recommend using unbalanced only for a short distance between equipment to avoid a noise problem. Please refer to the input connection drawings.

7. CLIP LIMITER SWITCH

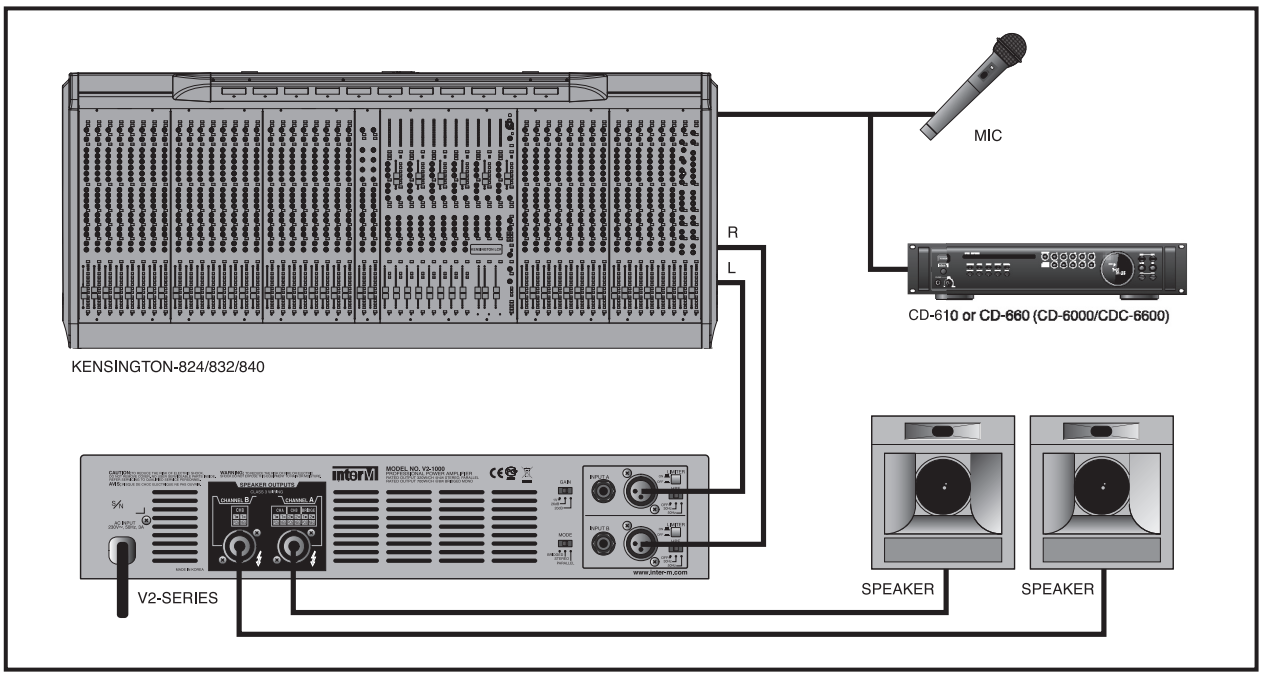
The clip limiter reduces the internal operating level of the amplifier as necessary to insure that signal peaks do not overdrive the amplifier, causing distortion or damage to the amplifier or loudspeakers. It is recommended to leave this switch to the "ON" mode to reduce distortion and help to provide protection to the loudspeakers.

8. HIGH PASS FILTER SWITCH

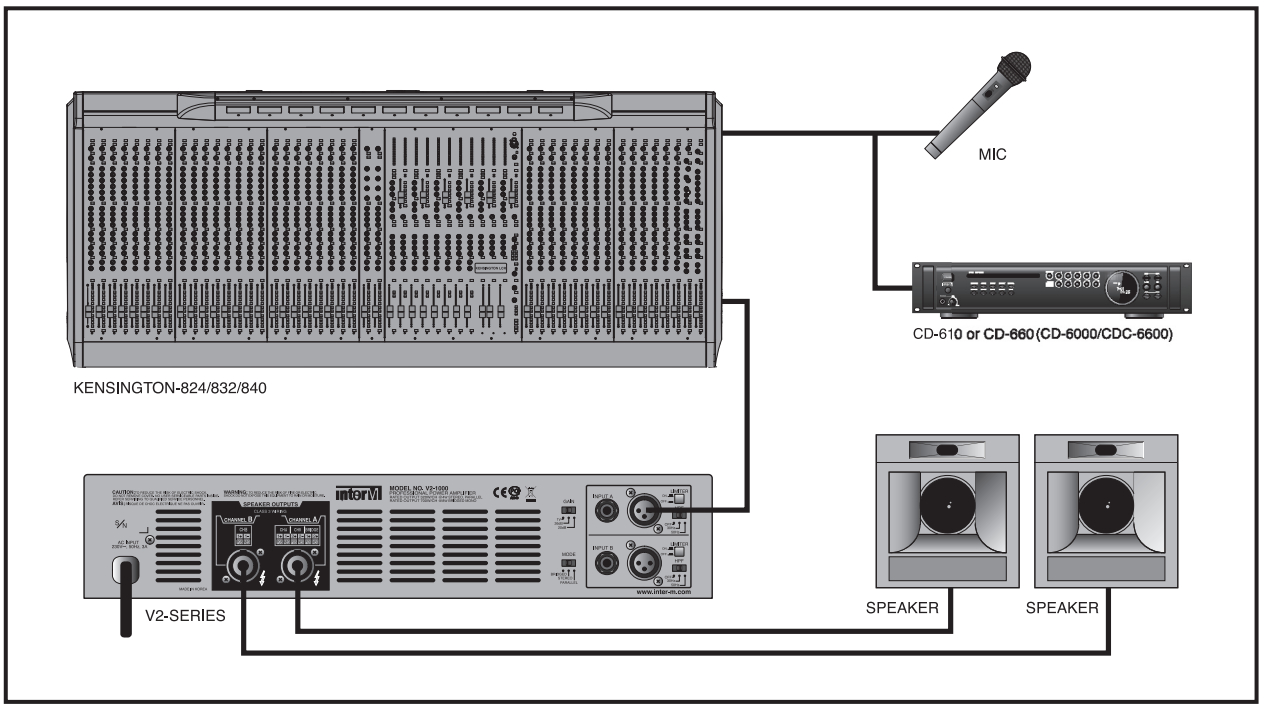
Select the switch position that is suited for your application the most. The off position allows full frequency range signals to reach the loudspeakers. The 30Hz position reduces the signal amplitude below 30Hz to conserve power and help protect the loudspeakers. The 50Hz position reduces the signal amplitude below 50Hz to conserve power and help protect the loudspeakers.

Applications

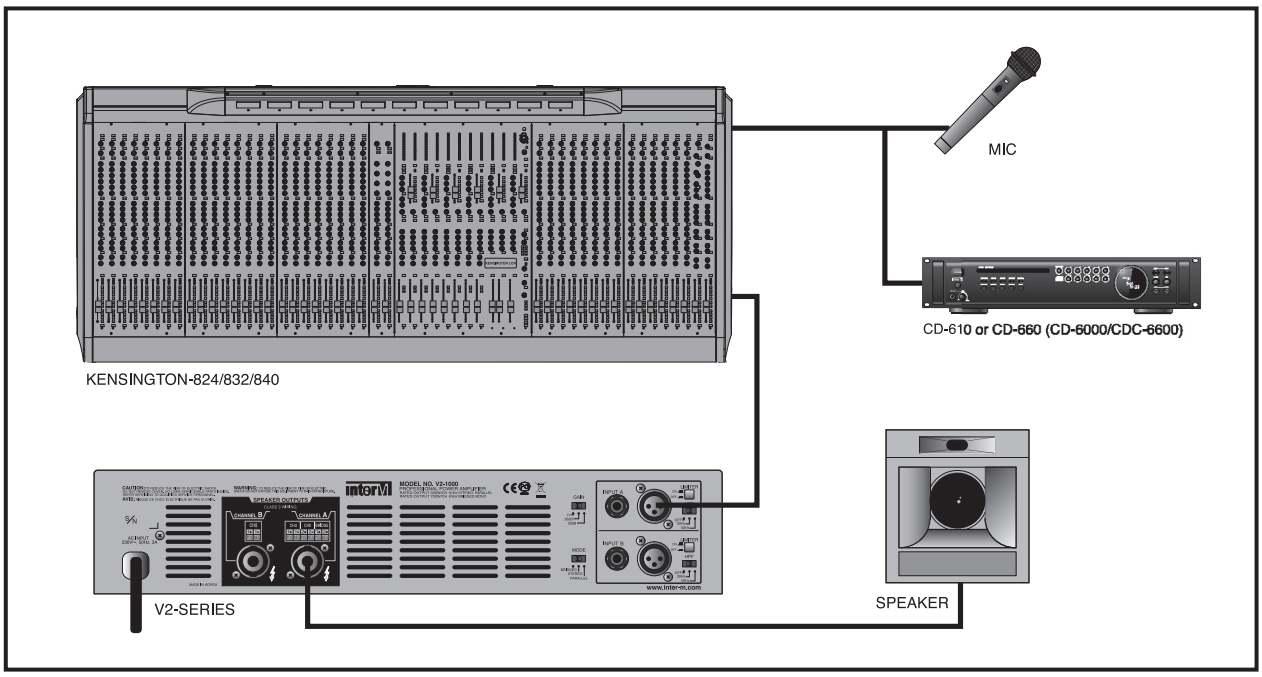
Stereo Installation



Parallel Installation

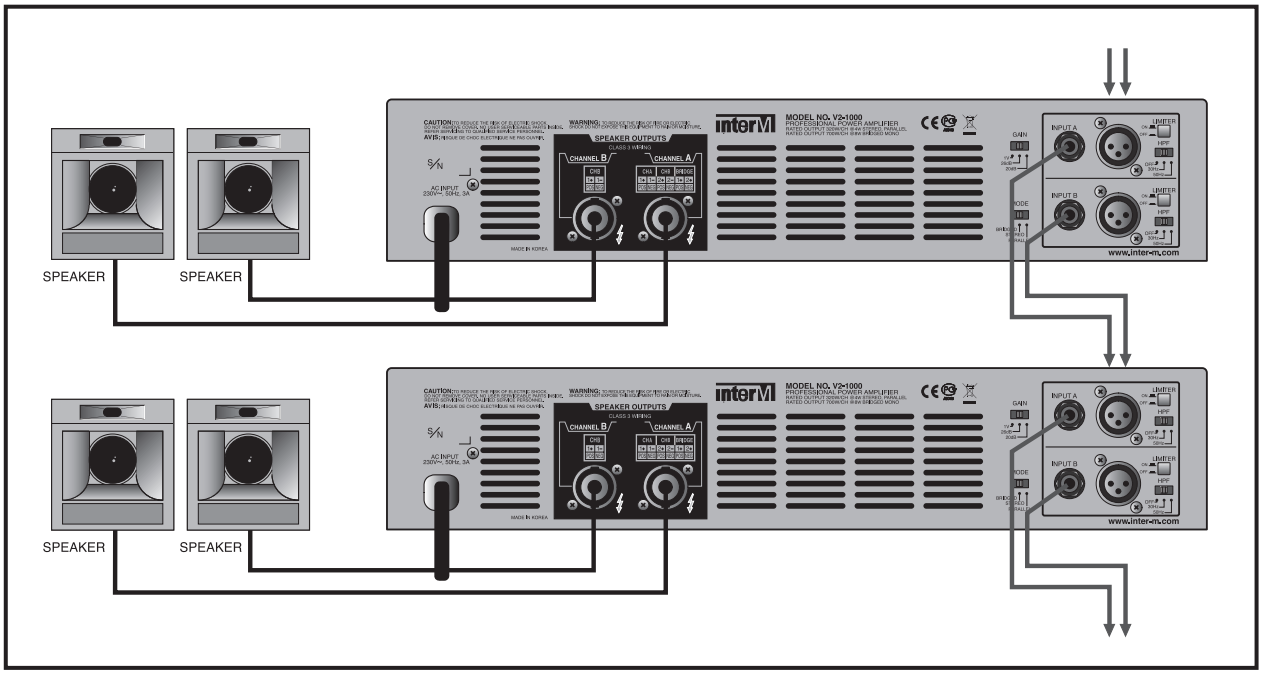


Bridged Mono Installation



Linked Installation

In V2-Series, Linking is possible when in Stereo/Parallel or Bridged Mono operation.

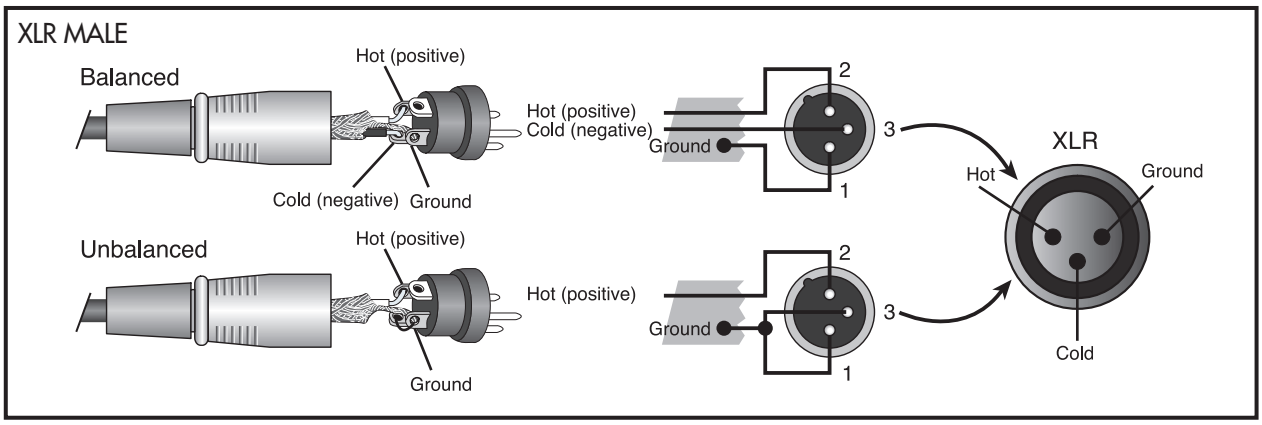


Connections

Inter-M products are wired according to professionally accepted wiring practices used throughout the world.

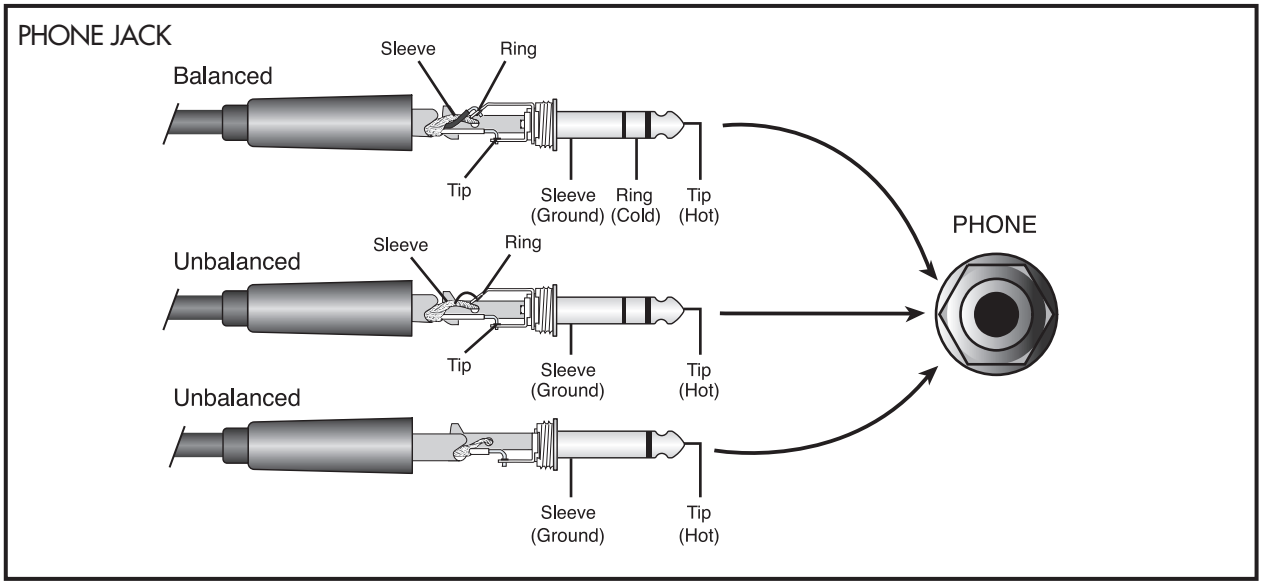
1. XLR INPUTS

Balanced XLR connectors are wired as described:
Pin #1 Shield
Pin #2 Positive
Pin #3 Negative



2. TRS INPUT

Balanced 1/4″ TRS connectors are wired as described:
Tip is Positive
Ring is Negative
Sleeve is Shield

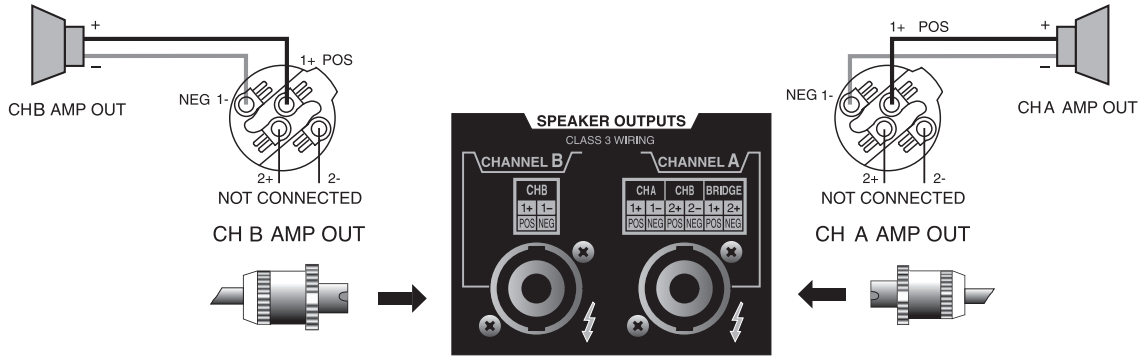


3. OUTPUTS

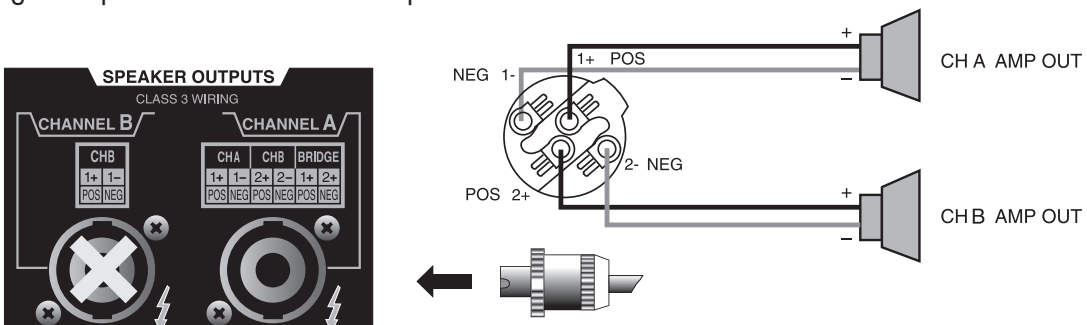
Bridged Mono operation has a minimum load impedance of 4Ω.

Stereo/Parallel Connection

Wiring Using Both Speaker Connectors

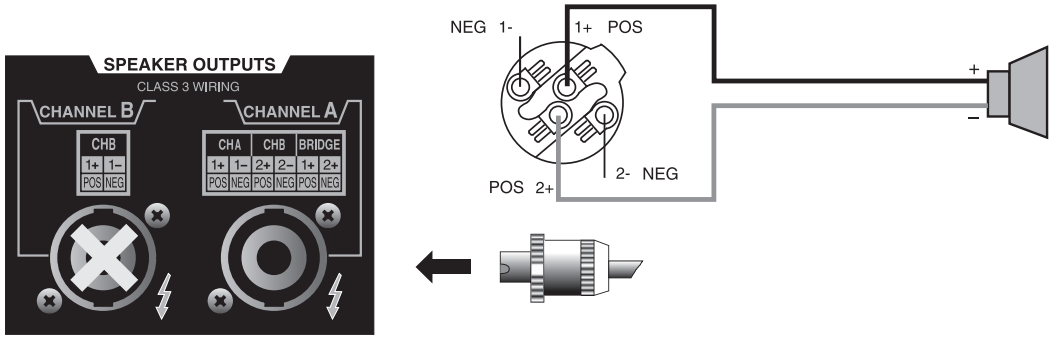


Wiring Two Speakers to the Channel A Speaker Connector



Bridge Mono Connection

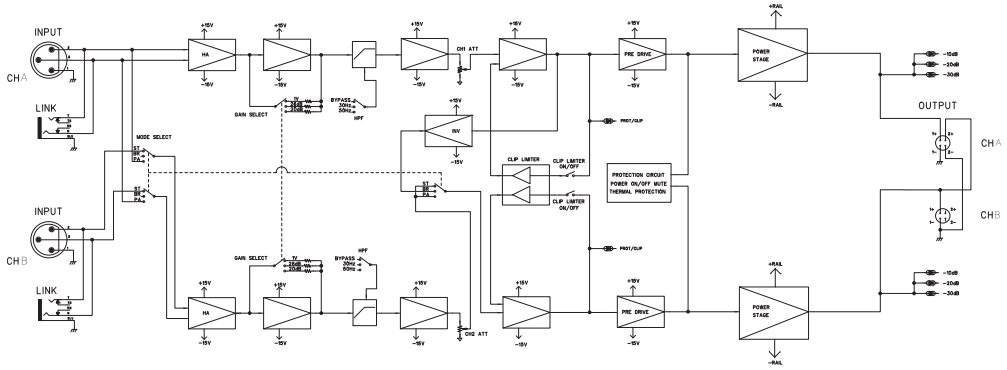
Wiring a Speaker in Bridged Mono to the Channel A Speaker Connector



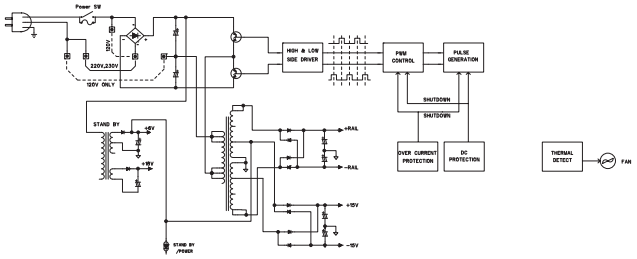
Block Diagrams

V2-1000/2000

AMPLIFIER STAGE

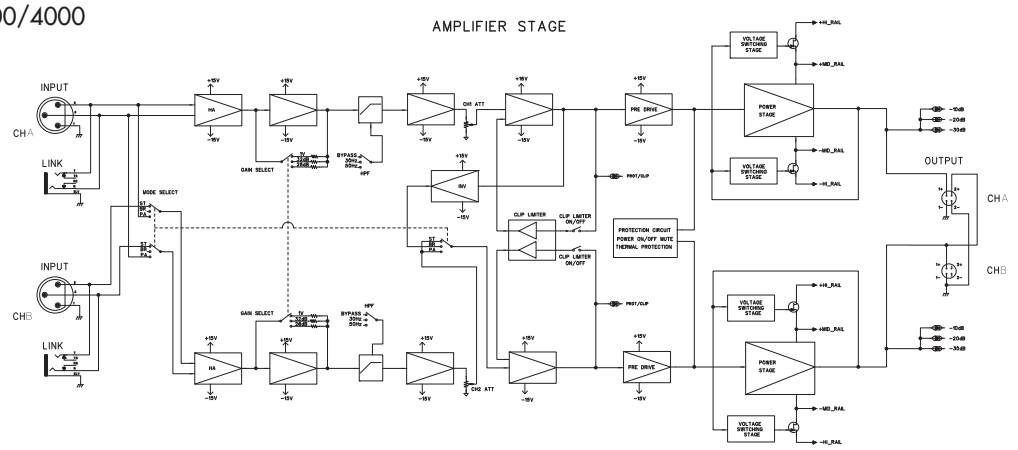


POWER STAGE

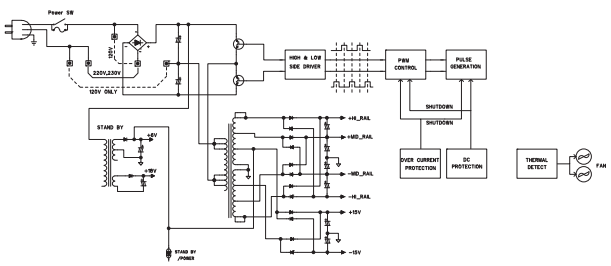


V2-3000/4000

AMPLIFIER STAGE



POWER STAGE



Specifications

0dB=1V

		V2-1000		V2-2000		V2-3000		V2-4000	
		120VAC	230VAC	120VAC	230VAC	120VAC	230VAC	120VAC	230VAC
Continuous Average Output Power Per Channel									
Stereo Mode	8Ω (T.H.D 0.1%)	190W	180W	320W	300W	550W	550W	750W	750W
(1kHz, Both Channels Driven)	4Ω (T.H.D 0.1%)	340W	320W	550W	530W	1000W	1000W	1300W	1300W
	2Ω (T.H.D 0.5%)	580W	580W	900W	900W	1600W	1650W	2000W	2100W
Bridged Mono Mode	8Ω (T.H.D 0.1%)	720W	700W	1150W	1100W	2000W	2000W	2600W	2600W
	4Ω (T.H.D 0.5%)	1200W	1150W	1900W	1850W	3200W	3300W	4000W	4200W
Input Sensitivity (Rated Output Power @4Ω)		1.1V		1V		1.1V		1V	
Voltage Gain (Rated Output Power @4Ω)		31dB		33dB		36dB		37dB	
Frequency Response	20Hz~20kHz	±0.3dB							
(1W @8Ω)	- 3dB point	5Hz~70kHz							
Damping Factor (100Hz, Rated Output Power @8Ω)		more than 380		more than 450		more than 400			
T.H.D (20Hz~20kHz, 10dB Below Rated Output Power @4Ω)		less than 0.05%							
Channel Separation (1kHz, 3dB Below Rated Output Power @8Ω)		less than 70dB							
Residual Noise		less than 75dB				less than 73dB			
Signal to Noise Ratio (Rated Output Power @8Ω, 20Hz~20kHz)		106dB							
Output Circuitry		Class AB				2 Step Class H			
Input Impedance		12 kΩ Balanced							
HPF (30Hz/50Hz)		12dB/oct							
Indicators		Prot/Clip, Signal, Power							
Protection Circuitry		Full Short Circuit, Thermal Protection Power ON/OFF Muting, DC Output Protection							
Cooling		Variable Speed Fans, Front to Rear Air Flow							
Connectors		Input : XLR(Female), 1/4″ TRS, Output : 4 Pole Speaker Socket							
Operating Temperature/Humidity		Temperature : -10°C ~ +40°C / Humidity : 0% ~ 90%							
Power Source		120VAC 60Hz	230VAC 50Hz	120VAC 60Hz	230VAC 50Hz	120VAC 60Hz	230VAC 50Hz	120VAC 60Hz	230VAC 50Hz
Power Consumption (1/8 Rated output power @4Ω)		6A	3A	8A	4A	12A	6A	14A	7A
Weight (SET)		10.7kg / 23.6lb		10.9kg / 24lb		12kg / 26.4lb		12.1kg / 26.7lb	
Dimensions (SET)		482(W) x 88(H) x 407(D)mm / 19(W) x 3.5(H) x 16(D)in							

* Specifications and design subject to change without notice.

Specifications (U.K/Australia Version)

0dB=1V

		V2-1000	V2-2000	V2-3000	V2-4000
		240VAC	240VAC	240VAC	240VAC
Continuous Average Output Power Per Channel					
Stereo Mode	8Ω (T.H.D 0.1%)	170W	280W	500W	650W
(1kHz, Both Channels Driven)	4Ω (T.H.D 0.1%)	300W	500W	900W	1150W
	2Ω (T.H.D 0.5%)	500W	850W	1400W	1800W
Bridged Mono Mode	8Ω (T.H.D 0.1%)	650W	1000W	1800W	2400W
	4Ω (T.H.D 0.5%)	1100W	1700W	3000W	3800W
Input Sensitivity (Rated Output Power @4Ω)		1V			
Voltage Gain (Rated Output Power @4Ω)		31dB	33dB	36dB	37dB
Frequency Response	20Hz~20kHz	±0.3dB			
(1W @8Ω)	- 3dB point	5Hz~70kHz			
Damping Factor (100Hz, Rated Output Power @8Ω)		more than 380	more than 450	more than 400	
T.H.D (20Hz~20kHz, 10dB Below Rated Output Power @4Ω)		less than 0.05%			
Channel Separation (1kHz, 3dB Below Rated Output Power @8Ω)		less than 70dB			
Residual Noise		less than 75dB		less than 73dB	
Signal to Noise Ratio (Rated Output Power @8Ω, 20Hz~20kHz)		106dB			
Output Circuitry		Class AB		2 Step Class H	
Input Impedance		12 kΩ Balanced			
HPF (30Hz/50Hz)		12dB/oct			
Indicators		Prot/Clip, Signal, Power			
Protection Circuitry		Full Short Circuit, Thermal Protection Power ON/OFF Muting, DC Output Protection			
Cooling		Variable Speed Fans, Front to Rear Air Flow			
Connectors		Input : XLR(Female), 1/4″ TRS, Output : 4 Pole Speaker Socket			
Operating Temperature/Humidity		Temperature : -10°C ~ +40°C / Humidity : 0% ~ 90%			
Power Source		240VAC 50Hz			
Power Consumption (1/8 Rated output power @4Ω)		4A	5A	6A	7A
Weight (SET)		10.7kg / 23.6lb	10.9kg / 24lb	12kg / 26.4lb	12.1kg / 26.7lb
Dimensions (SET)		482(W) x 88(H) x 407(D)mm / 19(W) x 3.5(H) x 16(D)in			

* Specifications and design subject to change without notice.

Service

Procedures
Ensure the problem is not related to operator error, or external system devices, Once it is certain that the problem is related to the product contact your warranty provider as described in the warranty section of this manual.

Schematic
A Schematic is available by contacting your warranty provider.

Parts List
A Parts List is available by contacting your warranty provider.

Variations and Options

Variations
Variations of this product exist to reflect the variations in AC power requirements throughout the world. Product supplied through local sources are compatible with local AC power requirements.

Options
No optional items are available for this product.

Warranty

Warranty terms and conditions vary by country and may not be the same for all products. Terms and conditions of warranty for a given product may be determined first by locating the appropriate country which the product was purchased in, then by locating the product type.

To obtain specific warranty information and available service locations contact Inter-M directly or the authorized Inter-M Distributor for your specific country or region.

Inter-M, Ltd. (Korea) began operations in 1983.

Since then, Inter-M has grown to become one of the largest manufacturers
of professional audio and commercial sound electronics equipment in the world.

Inter-M has gained worldwide recognition for its own branded products,
as well as private label manufacturing of electronics sold under other names (OEM).

The company is no longer just a Korean company, but rather a global company
that is truly international in scope, with factories and offices in Korea and China,
and sales and marketing operations located in Japan, Europe, and the U.S.A.

With more than 850 employees around the globe,
Inter-M is well-poised for further growth and expansion.

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