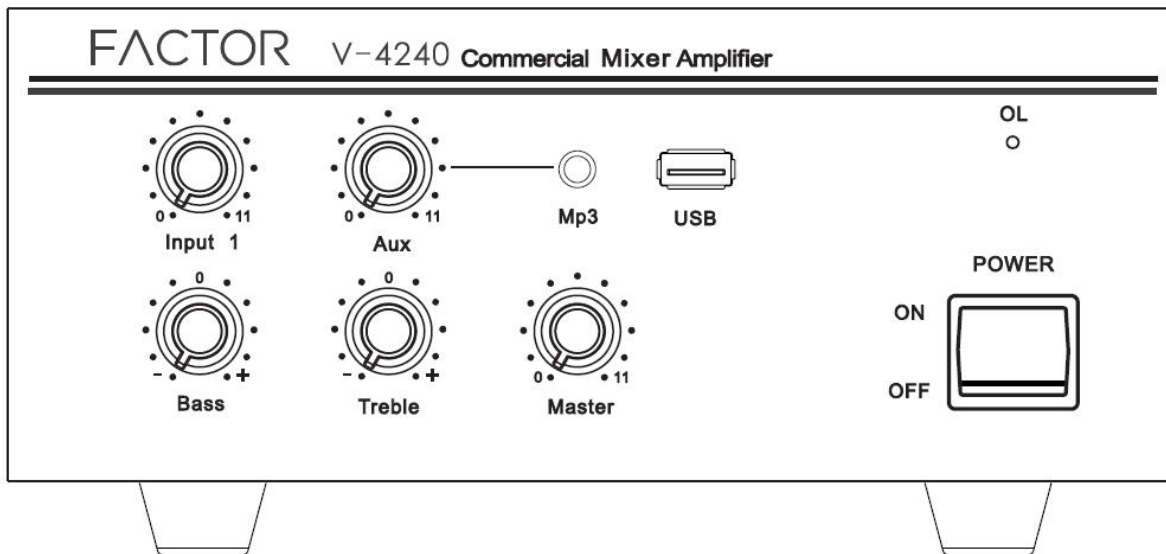


# FACTOR

ELECTRONICS

PREMIUM **AUDIO VIDEO LIGHTING AND POWER** PRODUCTS

V-430 V-460 V-4120 V-4240  
Commercial Mixer Amplifiers



Owners Manual

**IMPORTANT NOTE:** THIS OWNER'S MANUAL IS PROVIDED AS AN INSTALLATION AND OPERATING AID. FACTOR ELECTRONICS DOES NOT ASSUME ANY RESPONSIBILITY AS TO ITS ACCURACY AND SHALL NOT BE LIABLE IN TORT OR CONTRACT FOR ANY DIRECT, CONSEQUENTIAL OR INCIDENTAL LOSS OR DAMAGE ARISING FROM THE INSTALLATION, USE OR INABILITY TO USE THIS PRODUCT.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS APPLIANCE TO WATER, RAIN OR MOISTURE. THIS APPLIANCE SHOULD NOT BE DAMPENED BY WATER DROPS OR SPLASHING. CONTAINERS OF LIQUID SUCH AS VASES SHOULD NOT BE PLACED ON THIS APPLIANCE.

Immediately upon receipt, inspect the unit and shipping container for indications of improper handling or in-transit damage. This equipment was carefully inspected and tested before leaving the factory. Notify the Transportation Company, Wholesaler or Retailer immediately if any damage is found. Be sure to save the carton and packing material as evidence of damage for later inspection. DO NOT SHIP the unit back to the factory unless authorized to do so by the factory. IN TRANSIT DAMAGES ARE NOT COVERED BY THE WARRANTY. **DO NOT INSTALL OR ATTEMPT TO OPERATE THIS UNIT IF IT HAS BEEN DAMAGED.**

#### **IMPORTANT SAFETY INSTRUCTIONS**

- Read and keep these instructions.
- Heed all warnings and follow all instructions contained within this manual.
- Do not use this unit near water.
- Clean only with dry cloth.
- Do not block any 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.
- 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.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the 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.
- Operate the product only with the voltage specified on the unit. Fire and/or electric shock may result if a higher voltage is used.
- Do not modify, kink, or cut the power cord. Do not place the power cord in close proximity to heaters and do not place heavy objects on the power cord and/or the product itself, doing so may result in fire or electrical shock.
- Replace the protective cover over the speaker terminals after installation. Do not touch the 70V speaker terminals as electric shock may result.
- Ensure that the safety ground terminal is connected to a proper ground. Never connect the ground to a gas pipe, as a severe explosion and/or fire may result.
- Be sure the installation of this product is stable, avoid slanted surfaces as the product may fall and cause injury, property damage, electrocution and/or fire.
- Note when the unit is turned off it is not completely disconnected from the wall AC power outlet. Do not open the cover unless the device is unplugged from the wall AC power outlet.

## Introduction

Congratulations and thank you for purchasing Factor Electronics products. The Factor Electronics "V" series mixer amplifiers are designed and built to provide ultra reliable performance for professional background music and paging applications. All Factor Electronics amplifiers feature front panel USB charging ports, front panel AUX inputs for hand held music players, ultra low noise components, flexible expansion options with the V-RVC and X-Music accessories, color-coded inputs and outputs, and ultra low noise components. Please read this entire manual to get the most from your Factor Electronics "V" series mixer amplifier.

## Unpacking

The V-Series mixer amplifiers include the following parts:

- 1 x V- Series Mixer Amplifier
- 5 x Front panel tamper proof knob security covers
- 2 x Extra AC mains fuses
- 1 x Clear plastic output safety cover
- 1 x Product Manual

**Quick Start:** To get up and running quickly refer to DIAGRAM A on the next page.

- 1.** Connect an iPod or other hand held music player to the front panel MP3 input jack using a 3.5mm stereo cord.
- 2.** Connect a speaker with a 70V transformer to the back panel 70V output terminal. Wire the – or negative to the "C" common output terminal and the + or positive to the 70V output terminal. Never connect a 4ohm or 8ohm speaker directly to the 70V output terminal. Always insure the speaker is coupled to a 70V transformer.
- 3.** Once all your audio connections are made, plug in the AC power cord to an AC110V 60 Hz power outlet.
- 4.** Press the front panel power button to the ON position.
- 5.** Adjust the front panel AUX volume knob by turning to achieve the desired volume level.
- 6.** Adjust the front panel MASTER volume knob by turning to achieve the desired volume level.

**Refer to Diagram A on the next page:**

[info@factorelectronics.com](mailto:info@factorelectronics.com)

[www.factorelectronics.com](http://www.factorelectronics.com)

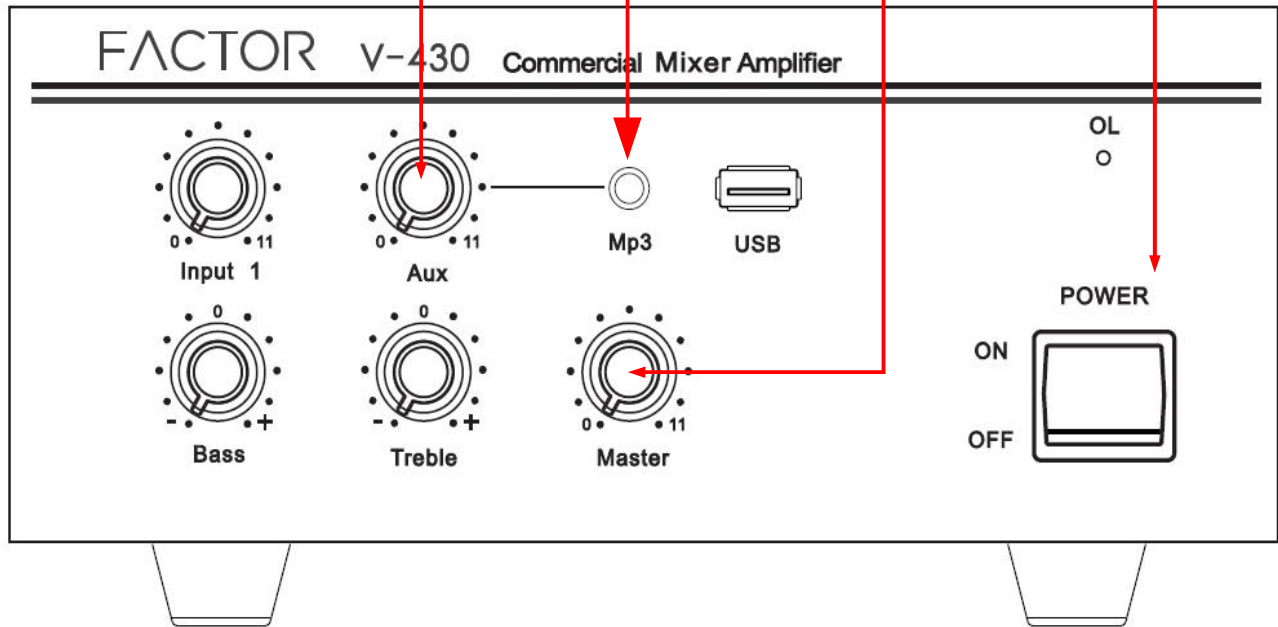
## Quick Start Guide

**Diagram A** 1 Connect a hand held music player to the MP3 jack

4 After all your connections are made press the power switch ON

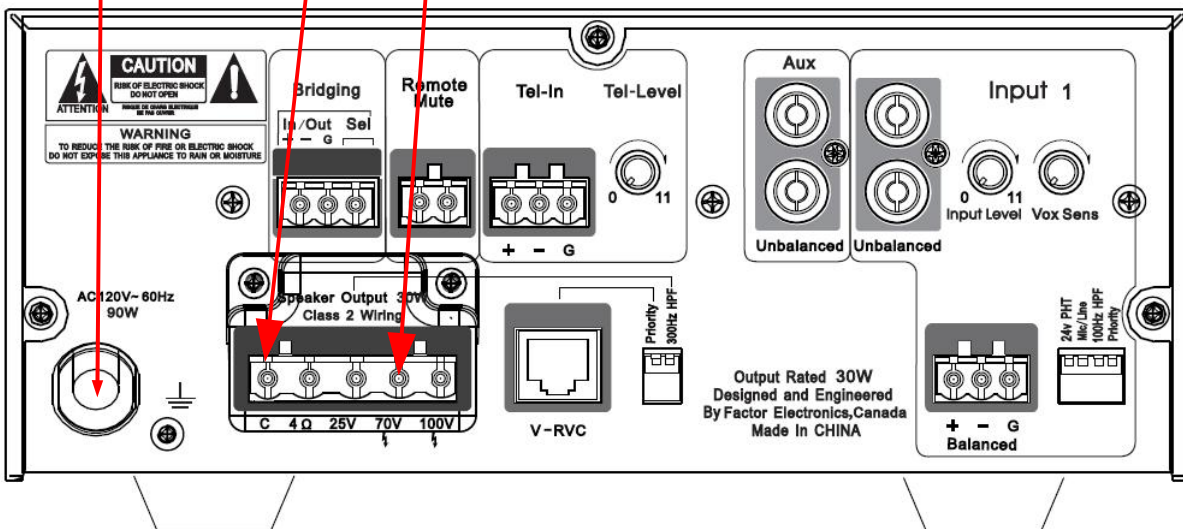
5 Adjust the AUX volume

6 Adjust the master volume



3 After all your connections are made plug the AC power cord in

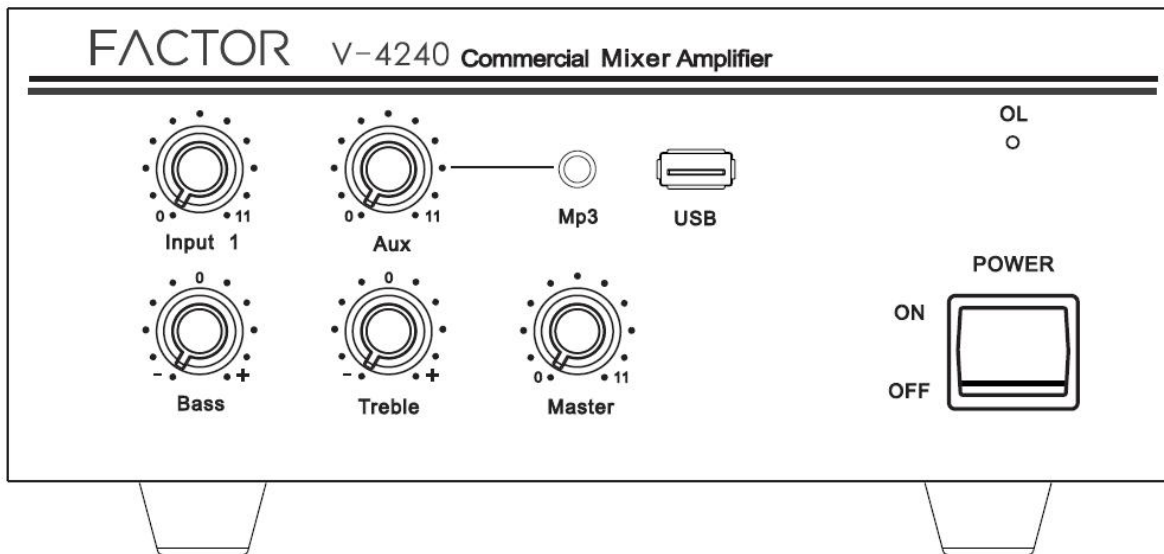
2 Connect a transformer coupled 70V speaker to the C and 70V terminals



## Front Panel Operations and Connections

**Input 1-** This controls the level of Input 1 in the overall mix. A good level to begin with is the 12:00 position. Then adjust to achieve the desired level.

**Aux –** This controls the level of the front panel MP3 input and the back panel AUX input. Note: i Pods and MP3 players have their own volume control. When using a hand held music player, start with the AUX set to the 12:00 position and use your hand held music players built in volume to adjust the level. When using the back panel AUX input use the front panel AUX to control the volume.



**Bass -** The bass control is a shelving type equalizer that boosts or cuts bass frequencies at 100Hz +/- 12 dB. The center "0" position does not affect the signal. Equalizers should be used sparingly. Too much boost can cause feedback when using microphones.

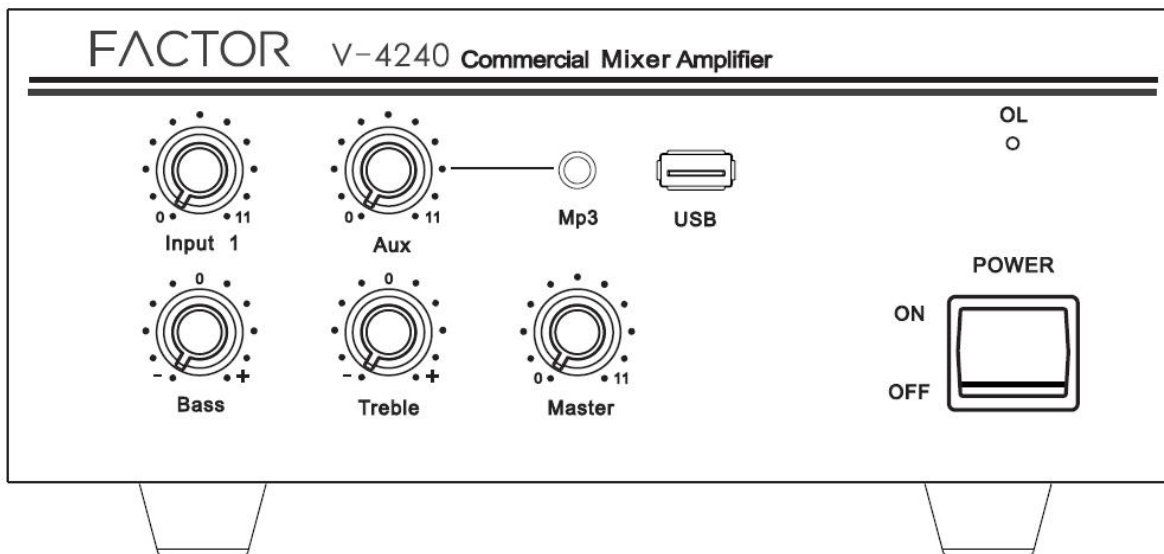
**Treble -** The Treble control is a shelving type equalizer that boosts or cuts bass frequencies at 10kHz +/- 12 dB. The center "0" position does not affect the signal. Equalizers should be used sparingly. Too much boost can cause feedback when using microphones.

**Master -** The Master gain control controls the overall output of the amplifier. Pay close attention to the output OL LED. The LED provides visual feedback to the levels in the amplifier. When the OL "RED" LED is lit or flashing the amplifier is being overloaded. Immediately turn down the Master volume control. Re-adjust the Input level controls to the desired mix and then adjust the Master level control to the desired volume where the OL LED is not solidly lit.

**NOTE:** When using the V-RVC remote control, set the amplifier master volume to 75% then control the master volume remotely from the V-RVC.

## Front Panel Operations and Connections

**Power** - The Power switch applies power to the amplifier. The Power switch is also part of the protection circuitry of the amplifier. If the amplifier is overloaded it will automatically shut down to protect the circuitry from damage. If this occurs turn the power switch off, turn the master volume down, wait 15 seconds, then turn the Power switch on. The amplifier should return to normal operation. If the amplifier continues to shut down automatically contact your nearest Factor Electronics dealer or service center.



**OL LED** - The OL LED is the overload warning light. When the OL LED flashes occasionally it is indicating occasional peaks in the output signal. If the OL LED lights solidly the amplifier is being overdriven. Immediately reduce the input levels and the Master volume control until the OL LED is not illuminated. Occasional flashing is normal.

**MP3 Input** - The Mp3 input is a stereo 3.5mm 1/8" jack that will accept signals from practically any device with a headphone output jack. Mp3 players, iPods, portable phones, computers, receivers etc. If a source is connected to the rear panel Aux Input jacks the Mp3 input will automatically override that source when a connector is inserted. The Mp3 jack is a quick way to connect to the amplifier without needing access to the back panel.

**USB** - The USB jack is a USB charging port that keeps your hand held devices batteries charged. The USB charging port is active when the main power switch is ON. The USB charging port is not active when the main power switch is OFF. The USB charging port cannot accept audio signals from hand held devices. This USB port is strictly for battery charging. Note: the USB port can be used with i Pod docks.



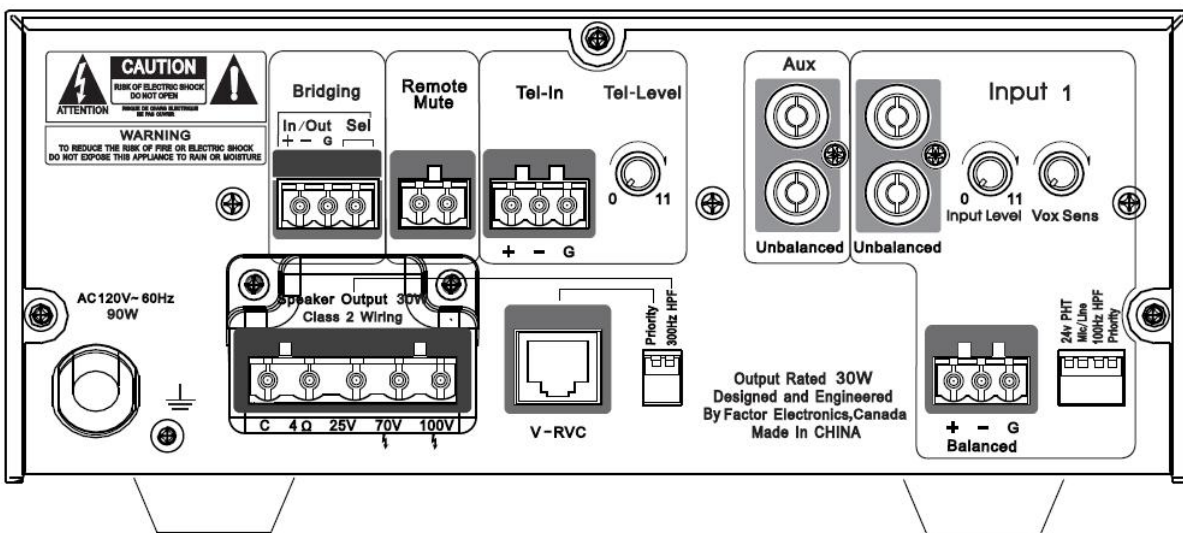
## Rear Panel Operations and Connections

### NOTE: Rear Panel color coding

GREEN = Input

RED = Output

**Input 1** Input 1 is a priority input. This input functions the same as the other input channels but offers some added features suitable for paging microphones. Priority means "override". Simply stated the microphone or line level signal will override all other inputs.



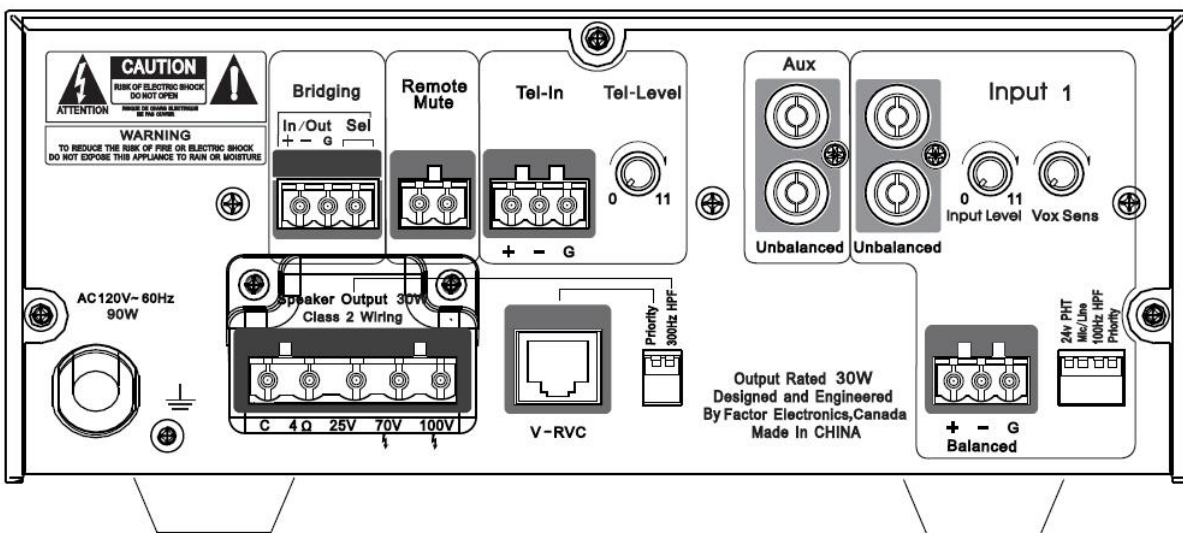
**RCA UNBALANCED**- These jacks accept line level signals from CD's, DVD's, tuners etc. This is an unbalanced input that sums the signal to mono. The INPUT LEVEL knob does not affect the RCA input level.

**BALANCED** - This is a balanced three-pin detachable terminal block connector that will accept microphone or line level sources. You can also connect an unbalanced source by connecting the HOT to + and connecting the COLD or (return) to G terminal. The INPUT LEVEL control affects the input level for the terminal block input jack.

**INPUT LEVEL** - This rotary control adjusts the input level for the terminal block connector only. Use this to match the correct input level based on the signal strength of the device connected. A good starting point is the 12:00 position. If you hear distortion turn the control counter clockwise. Turn this control clockwise to increase the input level.

## Rear Panel Operations and Connections

**VOX SENS** – This rotary control adjusts the sensitivity of the override circuit. Turning the VOX SENS control clockwise triggers the auto sensing circuit on weaker input signals. Turning the VOX SENS control counter clockwise triggers the auto sensing circuit on stronger input signals. This control will function only when the PRIORITY #4 dipswitch is ON. Start at the 12:00 position. If the override cuts in and out when there is no page signal present (called false triggering) then reduce the SENS by turning counter clockwise. If the leading edge of the page is cut off increase the sensitivity by turning the SENS control clockwise.



**DIP SWITCH 1** 24v PHT – This switch applies 24v to the + and – pins of the terminal block BALANCED jack. This feature provides phantom power for condenser microphones. NOTE: always set the 24v PHT dipswitch UP or OFF if a line level source or dynamic microphone source is connected where phantom power is not needed.

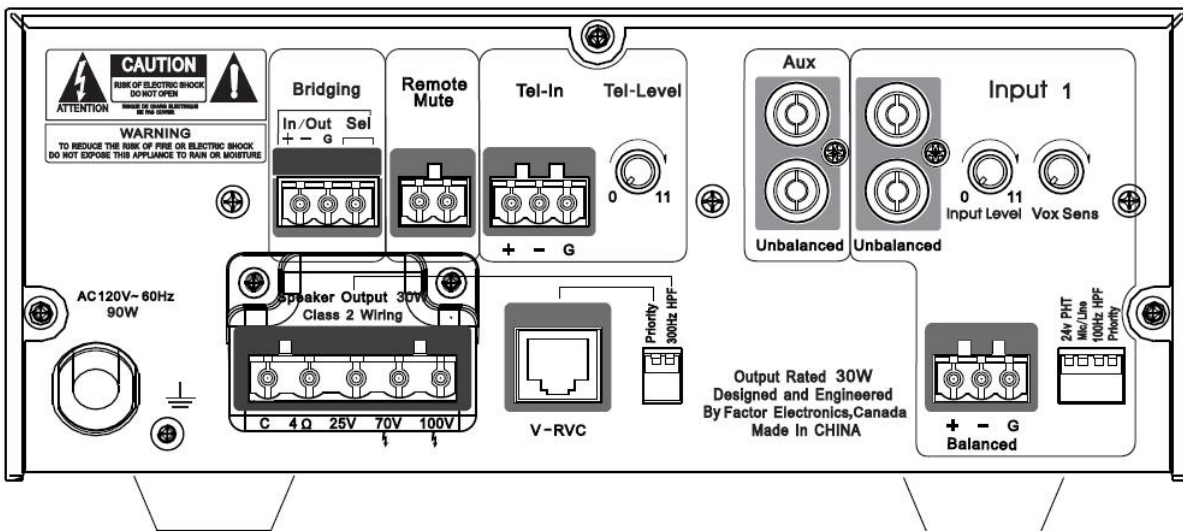
**DIP SWITCH 2** MIC/LINE – This switch adjusts the sensitivity of the terminal block BALANCED jack between microphone level signals and line level signals. Set the switch up for line level and down for microphones. Note: line level sources will overload the BALANCED input if the dipswitch is set to MIC. If the dipswitch is set to LINE and a microphone is connected the input level will be too low. Always make sure this dipswitch is set appropriately for the device that is connected.



## Rear Panel Operations and Connections

**DIP SWITCH 3** -100Hz HPF - With this switch ON all frequencies below 100Hz will be cut at 18dB per octave. Use this switch with microphones to roll off unwanted low frequency rumbles and minimizes pops from mouth noises.

**DIP SWITCH 4** PRIORITY – With this switch ON the source connected to the terminal block BALANCED connector will override all other inputs. This is commonly used for paging microphones where the background music source would be connected to the AUX input and a paging microphone would be connected to input 1. When the microphone signal is broadcast the background music source will automatically mute and then return to normal after the broadcast is complete.



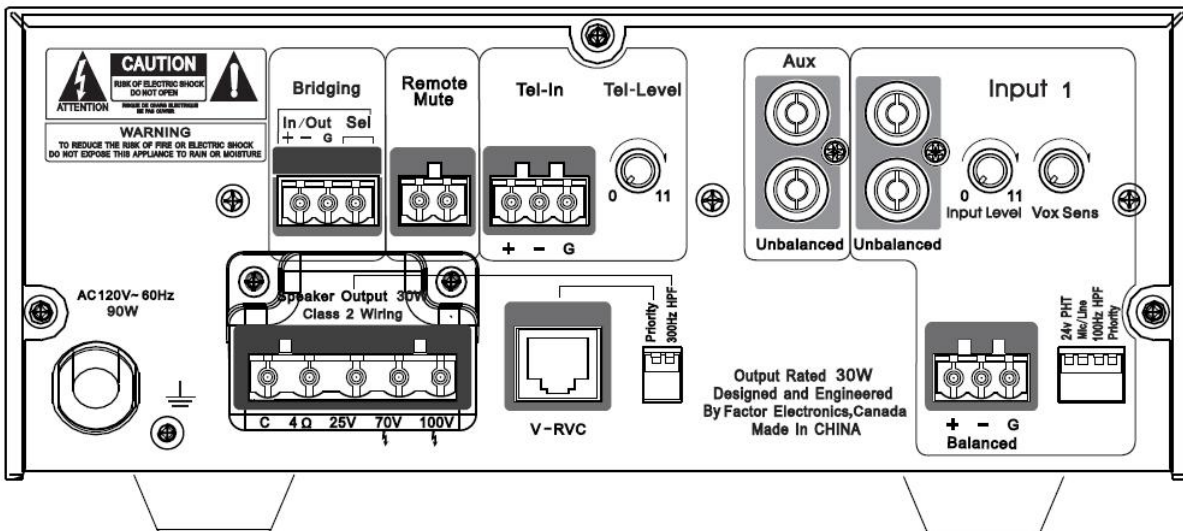
**AUX INPUT** - This is an unbalanced dual RCA input that automatically sums the stereo signal to mono. Connect your background music source such as a CD or DVD player here. Note: when a hand held device such as an i Pod is plugged into the front panel MP3 jack the MP3 jack will override the back panel AUX input.

**TEL INPUT** – This is a balanced audio input that is designed to accept signals from an analog telephone output. Due to the varied output levels from different telephone systems we have provided a level control that allows precise level adjustments.

**NOTE:** The TEL INPUT automatically overrides all signals in the pre-amplifier and broadcasts the page when an announcement is made through the telephone system.

## Rear Panel Operations and Connections

**REMOTE MUTE** – The MUTE contacts can be used to instantly mute background music sources for immediate paging or emergency situations. Simply short the MUTE contacts with a switch or external contact closure from the optional V-RMC and all inputs will mute with the exception of the PRIORITY inputs. PRIORITY inputs will function as normal provided the PRIORITY function is ON. NOTE: When using the V-RVC for a remote music input it is recommended to short the mute contacts. The V-RVC will override other music sources that may be connected to the amplifier.

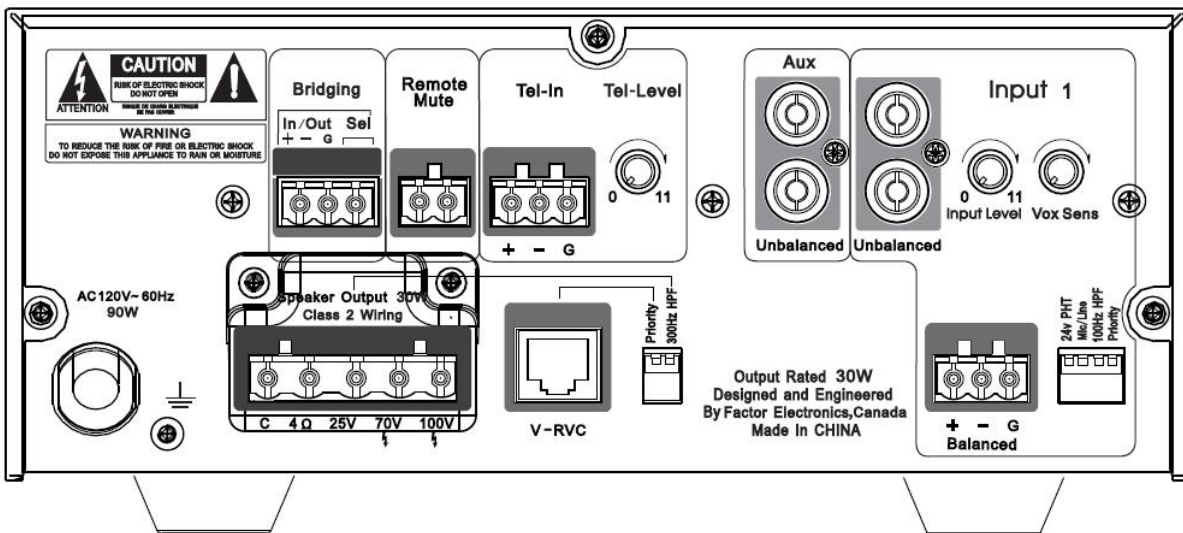


**BRIDGING INPUT/OUTPUT** – Many installations require flexibility where multiple amplifiers need to be combined for large room activities and then separated for smaller multiple room activities. This is referred to as room combining. Factor Electronics amplifiers offer this feature with simple easy to use bridging terminals. These terminals provide a way to send and receive balanced line level audio from the internal mixer of the preamplifier. The bridging terminals balanced signal can be sent long distances without introducing noise or interference using 22 AWG or 24 AWG shielded two conductor stranded copper wire.

Connect the bridging + / -- / G terminals of one Factor Electronics amplifier to the same terminals on another Factor Electronics amplifier. The amplifiers will operate independently until the SEL contacts are shorted.

## Rear Panel Operations and Connections

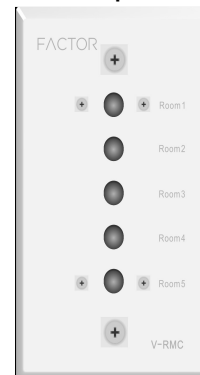
**SEL CONTACTS** - Shorting the SEL terminals using a switch or external contact closure will combine the pre-amp signals in both the amplifiers and multiple amplifiers. We recommend using the V-RMC wall plate switch, which provides room combining for up to five amplifiers. The amplifiers will operate as one larger amplifier. It is possible to connect multiple amplifiers to create a room combining system. When connecting multiple amplifiers together you may need to adjust the volume levels on the individual amplifiers to create a well-balanced mix.



**NOTE:** To combine two or more amplifiers the SEL contacts must be shorted on each amplifier you wish to combine.

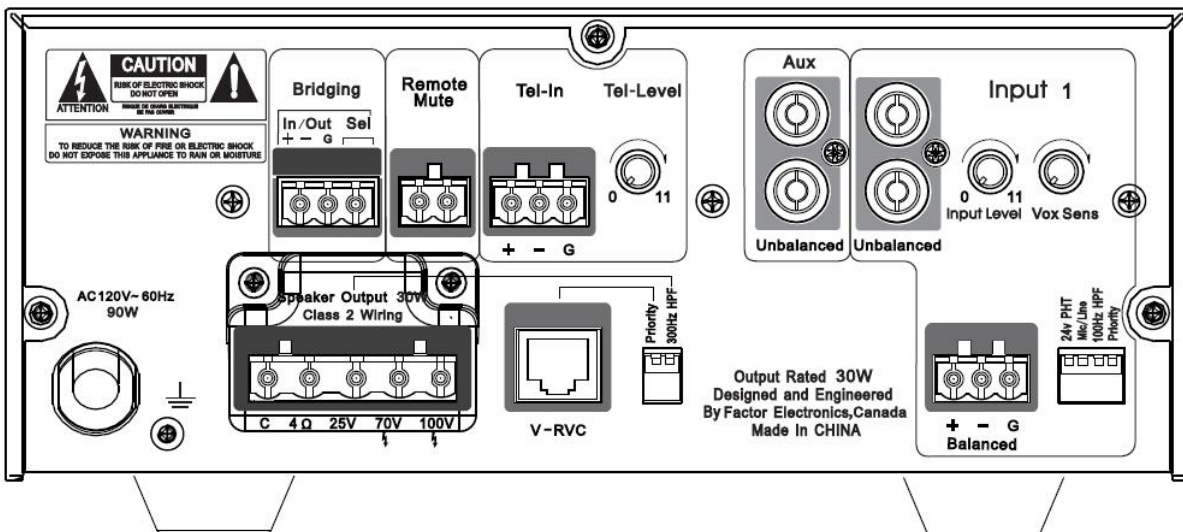
**EXAMPLE:** Connect the bridge terminals of amp 1 to amp 2. Short the SEL contacts on amp 1. The amps will not combine. Short the SEL contacts on both amps 1 & 2 and the amps will combine. Any source that is connected to either amp will broadcast on both amps.

**V-RMC** We recommend using the factor Electronics V-RMC to short the SEL contacts on Factor Electronics Amplifiers. The V-RMC provides five latching switches That can be used to short the SEL contacts or the MUTE contacts.



## Rear Panel Operations and Connections

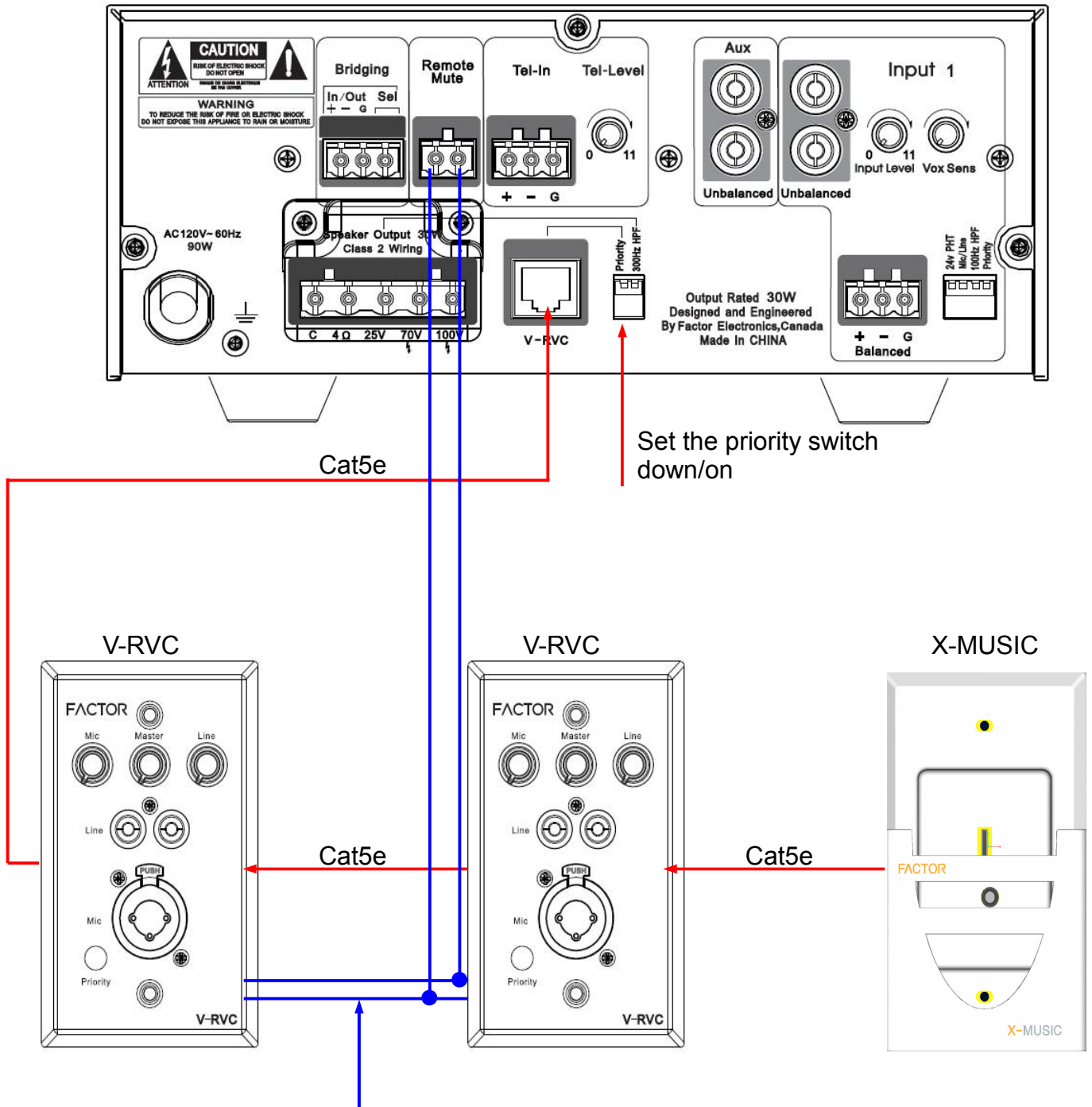
**V-RVC** - All Factor Electronics amplifiers provide the unique V-RVC input. This is an RJ45 female jack that allows the connection of up to three V-RVC remote microphone/line mixers. This feature can provide up to 6 additional inputs (3 microphone & 3 line level) with individual volume control plus remote master volume control to any Factor Electronics amplifier. The V-RVC connects with Cat5e cable providing one RJ45 input and one RJ45 output for daisy chaining up to three V-RVC's to each amplifier. The amplifier provides power for the V-RVC and additional power supplies are not necessary.



When using the V-RVC, connect the PRIORITY contacts provided on the V-RVC to the MUTE contacts on the amplifier. The V-RVC can be used as a priority input with the PRIORITY switch pushed in. Set the PRIORITY switch to the out position to blend the V-RVC signal with other signals present in the amplifier. If you wish to have the V-RVC maintain constant priority over other inputs connected to the amplifier set the PRIORITY switch on the amplifier to ON and set the PRIORITY switch on the V-RVC to the in position. Please read the V-RVC installation guide included with the V-RVC or online at [www.factorelectronics.com](http://www.factorelectronics.com)

**See Diagram B on the next page**

# Diagram B V-RVC/X-MUSIC Connections



Use 2 conductor wire to connect the V-RVC priority contacts to the amp mute contacts



## Rear Panel Operations and Connections

**300Hz HPF-** The 300 Hz High Pass Filter has no effect on the output signal in the UP / OFF position. When this switch is engaged in the DOWN / On position the speaker output frequencies below 300 Hz will be rolled off at 12 dB per octave. Use this switch when horn speakers are connected to the amplifier speaker outputs to remove unwanted bass frequencies that could damage the horn speakers. In normal operation keep the 300 Hz HPF in the UP / OFF position.

**SPEAKER OUTPUTS** – Factor Electronics V series amplifiers provide 4 speaker level outputs for the V-430 and V-460 and one speaker level output for the V-4120 and V-4240. Do not use more than one output at a time. This could overload the amplifier.

**Remove the terminal block connector and select from the following chart.**

**C** – Common or negative --

**4 ohm** – Connect to a direct-coupled loudspeaker (no transformer) min impedance 4 ohms (V-430/ V-460 only)

**25V** – Connect to 25V transformer coupled loudspeakers. (V-430/ V-460 only)

**70V** – Connect to 70V transformer coupled loudspeakers. (V-430/V-460/V-4120/V-4240)

**100V** – Connect to 100V transformer coupled loudspeakers. (V-430/ V-460 only)

### RECOMMENDED SPEAKER WIRE

Always use good quality stranded copper wire.

Speaker outputs

4 ohm 12-16 AWG stranded copper unshielded

25V 16-18 AWG stranded copper unshielded

70V 16-18 AWG stranded copper unshielded

100V 16-18 AWG stranded copper unshielded

**CAUTION:** Keep the speaker output guard on at all times. This will help prevent shock and fire hazards. Ensure the power cord is not connected to the AC outlet when making connections.

**POWER CORD** - Connect the AC power cord to 110V AC outlets only. Do not connect the power cord until all audio connections are made. Serious damage may result if the amplifier is connected to line voltages other than 110V AC.

**FUSE - TYPE T6, 3a/250V** - Always use the correct fuse for replacement. Failure to use the correct fuse or shorting the fuse could result in fire and serious damage and void your warranty.



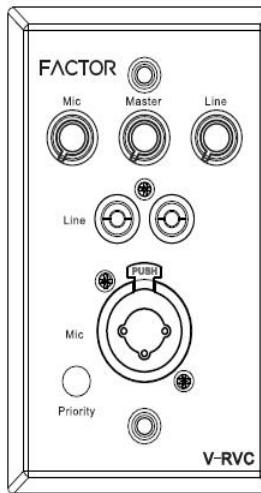
<b>Specifications</b>	<b>V-430</b>	<b>V-460</b>	<b>V-4120</b>	<b>V-4240</b>
Output Power (RMS)	30 watts	60 watts	120 watts	240 watts
Frequency Response	50Hz- 20kHz	50Hz- 20kHz	50Hz-20kHz	50Hz- 20kHz
Total Harmonic Distortion	<0.5% at rated power	<0.5% at rated power	<0.5% at rated power	<0.5% at rated power
Signal To Noise Ratio, Mic	67dB	69dB	70dB	70dB
Signal to Noise Ratio, Line	75dB	77dB	79dB	79dB
Signal to Noise Ratio, Tel	76dB	78dB	79dB	79dB
Max Residual Noise Level	5mV	3.6mV	4.2mV	4.2mV
Inputs, Microphone	1 expand to 4	1 expand to 4	1 expand to 4	1 expand to 4
Inputs, Line Level	3 expand to 6	3 expand to 6	3 expand to 6	3 expand to 6
Inputs, Telephone	1	1	1	1
Input, V-RVC	1	1	1	1
Speaker Outputs	4ohm/25/70/100V	4ohm/25/70/100V	70V	70V
Bridging In/Out	1 Balanced	1 Balanced	1 Balanced	1 Balanced
Remote Master Volume	Via V-RVC	Via V-RVC	Via V-RVC	Via V-RVC
Power Requirements, AC	AC120V/60Hz	AC120V/60Hz	AC120V/60Hz	AC120V/60Hz
Power Consumption, AC	90W	150W	150W	250W
Dimensions	8.5"W x 4"H x 11.25"D	8.5"W x 4"H x 11.25"D	8.5"W x 4"H x 11.25"D	8.5"W x 4"H x 11.25"D
Shipping Weight	10.25lb – 4.7 kg	12.2lb - 5.5 kg	7lb - 3.18kg	7.5lb – 3.4kg
Optional Accessories 1	Rack Kit V-RK2.5	Rack Kit V-RK2.5	Rack Kit V-RK2.5	Rack Kit V-RK2.5
Optional Accessories 2	V-RVC mic/line preamp	V-RVC mic/line preamp	V-RVC mic/line preamp	V-RVC mic/line preamp
Optional Accessories 3	V-RMC In-wall room combiner	V-RMC In-wall room combiner	V-RMC In-wall room combiner	V-RMC In-wall room combiner
Optional Accessories 4	X-Music In-wall iPod dock	X-Music In-wall iPod dock	X-Music In-wall iPod dock	X-Music In-wall iPod dock

All Factor Electronics V-Series amplifiers are cTUVus listed

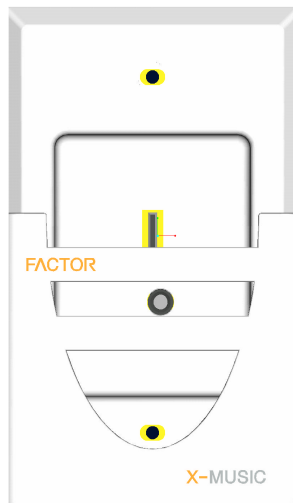


### Factor Electronics V-Series amplifier accessories

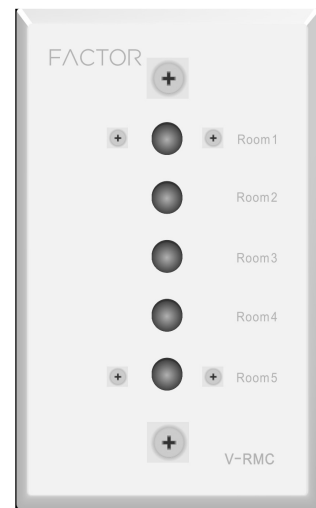
**V-RVC**  
In-wall mic/line preamp



**X-Music**  
In-wall iPod dock



**V-RMC**  
In-wall 5 room combiner



In an effort to constantly provide our valued customers with the latest advancements in technology, Factor Electronics specifications are subject to change from time to time without notice.

#### Contact Information

Factor Electronics  
#108, 19232 Enterprise Way  
Surrey BC Canada V3S 6J9  
E-mail: [info@factorelectronics.com](mailto:info@factorelectronics.com)  
Website: [www.factorelectronics.com](http://www.factorelectronics.com)

#### Warranty

Factor Electronics amplifiers are warranted to be free from defects in workmanship and materials for a period of three (3) years without charge for parts or labour. This warranty applies only to the original owner. The owner's responsibilities are to provide proof of purchase and transportation to the dealer the unit was purchased from or transportation to Factor Electronics. This warranty does not apply to units that have been subject to misuse, abuse, neglect or improper installation, and does not apply to repairs or alterations by unauthorized personnel. This warranty specifically excludes responsibility for consequential damage.

Retention of your dated ORIGINAL BILL OF SALE is required to obtain service under the terms of the warranty.

[info@factorelectronics.com](mailto:info@factorelectronics.com)

[www.factorelectronics.com](http://www.factorelectronics.com)