

**VSX41**  
**Video Switcher**  
**Operation Manual**

advantage ®



# VSX41

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## INTRODUCTION

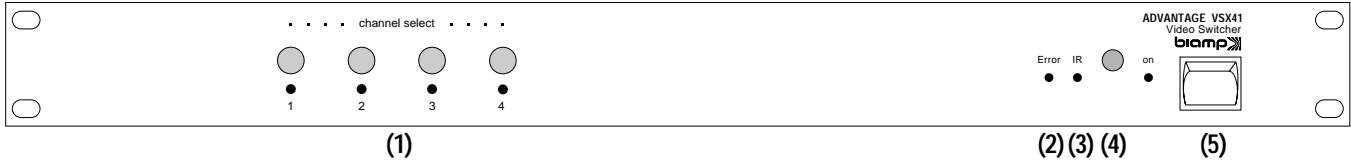
The ADVANTAGE® VSX41 Video Switcher provides four video inputs and one video output, with source selection and remote control functions. Passive switching allows the VSX41 to be used as either a switcher or router, and for either video or audio signals. The VSX41 is designed to operate independently or in conjunction with other ADVANTAGE products, such as the SPM412e Stereo Preamp/Mixer. The VSX41 Video Switcher is ideally suited for applications such as sports bars, meeting rooms, class rooms, auditoriums, multi-media presentation, and tele-conferencing. The VSX41 is versatile, cost-effective, easy to install, and carries a five-year warranty.

VSX41 features include:

- ◆ four video inputs, each with both BNC and RCA connectors
- ◆ one video output, with both BNC and RCA connectors
- ◆ front panel push-buttons select from the four input sources
- ◆ front panel infrared receiver for remote control of switching
- ◆ two rear panel ports for infrared and/or wall-mount controls
- ◆ 'remote output' for control of other ADVANTAGE products
- ◆ 'logic inputs' for control from other ADVANTAGE products
- ◆ 'remote translator' for interface to third-party controllers
- ◆ compatible with most AMX® & CRESTRON® controllers
- ◆ 'switching' function assigns 1-of-4 inputs to a single output
- ◆ 'routing' function assigns single input to 1-of-4 outputs
- ◆ selectable 'back-termination' for video or audio applications
- ◆ dry contact relay switching for complete ground isolation
- ◆ covered by Five-Year 'Gold Seal' Warranty
- ◆ UL listed power source

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CRESTRON is a registered trademark of CRESTRON Electronics, Inc.

## FRONT PANEL



**(1) Channel Select 1-4:** These momentary push-buttons select which of the four input signals is sent to the output. To select a desired input, press the corresponding push-button (see Remote Control on pages 4 & 5). The adjacent LED indicator will light, indicating the selection. *Only one input can be selected at a time. If power is lost or turned off, Channel Select reverts to Input 1 when power returns.* The VSX41 may be used as a "router", with a single input signal being switched to one of four outputs (see Applications on page 9). The VSX41 may be used with either video or audio signals. From the factory, Inputs 1-4 have 'back-termination' of 3.9k ohms, which is appropriate for most applications. However, internal jumper straps allow selection of 75 ohm 'back-termination', which is required only for specific video applications (see Options on page 6).

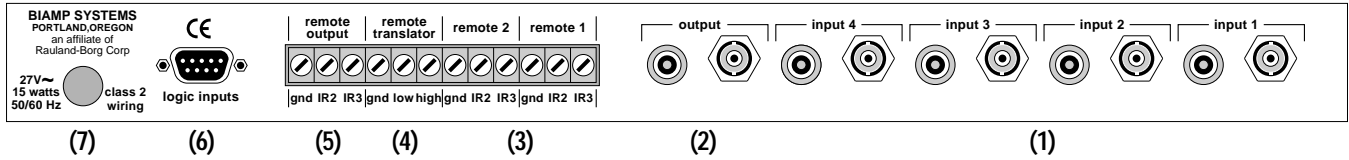
**(2) Error:** This red LED indicates when unusable information is received via remote control (see Remote Control on page 4 & 5). Errors in transmission/reception of remote control commands, or improperly connected controls, will cause the Error indicator to light.

**(3) IR:** This red LED indicates when information is received via remote control. If the IR and Error indicators light simultaneously, this may be an indication of improper installation. Check the location and wiring of all remote controls.

**(4) Internal Infrared Receiver:** This green infrared detector receives commands from optional hand-held Infrared Transmitters (see Remote Control on page 4). A transmitter will work up to 30 feet from the receiver. For best results, there should be an unobstructed line-of-sight from the transmitter to receiver. When infrared commands are received, the IR indicator will light. If the IR and Error indicators light simultaneously, this may be an indication of improper installation. The Internal Infrared Receiver should not be located in direct sunlight, or pointed directly at fluorescent lighting. An internal jumper strap is provided to allow the user to bypass the Internal Infrared Receiver (see Options on page 6).

**(5) Power:** When the Power switch is turned on, the red "On" LED will light and Channel Select will revert to Input 1.

## REAR PANEL



**(1) Inputs 1-4:** Each input is provided on both BNC and RCA type connectors, which are wired in parallel. Inputs 1-4 will accept any video signals from cameras, VCRs, laser-discs, cable, satellite, etc. The VSX41 may instead be used as an audio switcher, with Inputs 1-4 accepting any mono line level audio signals from mixers, tapes, CDs, VCRs, cable, satellite, etc. Connections for audio signals are typically unbalanced, wired with (+) to tip and (ground) to sleeve. However, if all audio signals to be connected are balanced, they may be wired with (+) to tip and (-) to sleeve (the input/output grounds are connected directly, bypassing the VSX41). The VSX41 may also be used as a 1-in/4-out video (or audio) "router", with a single input being switched to one of four outputs (see Applications on page 9). From the factory, Inputs 1-4 have 'back-termination' of 3.9k ohms, which is appropriate for most applications. However, internal jumpers allow selection of 75 ohm 'back-termination', which is required only for specific video applications (see Options on page 6).

**(2) Output:** The Output is provided on both BNC and RCA type connectors, which are wired in parallel. The VSX41 is a passive switching device (using dry contact relays), and will provide an output signal identical to the selected input signal. The VSX41 does not provide any processing, synchronization, or amplification of signals. The VSX41 may instead be used as an audio switcher, with Inputs 1-4 accepting (and the Output providing) mono line level audio signals. Connections for audio signals are typically unbalanced, wired with (+) to tip and (ground) to sleeve. However, if all audio signals to be connected are balanced, they may be wired with (+) to tip and (-) to sleeve (the input/output grounds are connected directly, bypassing the VSX41). The VSX41 may also be used as a 1-in/4-out video (or audio) "router", with a single input being switched to one of four outputs. This is accomplished simply by connecting to the VSX41 Output as if it were a single input. Inputs 1-4 are then utilized as the four possible outputs (see Applications on page 9).

**(3) Remote 1 & Remote 2:** These screw terminals are for connection of optional remote controls (see Remote Control on pages 4 & 5). Including the Internal Infrared Receiver, the Remote Translator (4), and the Logic Inputs (6), these terminals allow remote control from up to five locations. Optional remote controls may be wired up to 2000 feet from the VSX41, using 2-conductor shielded cable.

**(4) Remote Translator:** These screw terminals are for connection of certain third-party controllers (such as AMX® and CRESTRON®), which generate "carrier-stripped" remote control signals. Two remote translator inputs are provided. The Low terminal being used for controllers which produce a "low" output level (-15VDC ~ +2VDC) when idle. The High terminal is for controllers which produce a "high" output level (+2VDC ~ +15VDC) when idle. The third-party controller must be programmed to output a bitstream in the Biamp format (contact the controller manufacturer to determine if their device driver library currently supports the Biamp format).

**(5) Remote Output:** These screw terminals are for connection to other ADVANTAGE® products having similar remote control capabilities (such as the SPM412e, SPM522D, DRC4+4, PMX84, and EQ282M). Remote Output combines the commands from VSX41 front panel switches, remote controls, & logic inputs, for simultaneous remote control of additional devices (see Applications on page 9).

**(6) Logic Inputs:** This 9-pin Subminiature D (female) connector provides four logic inputs and their related ground. Logic Inputs allow remote control of the VSX41 Channel Select switching function via external logic output circuits, contact closures, or active driver circuits (see Remote Control on page 5). Remote control via logic output circuits is possible from other ADVANTAGE products, such as the AGII, DRC4+4, and PMX84 (see Applications on page 8). Remote control via contact closures is possible using switches, relays, or certain third-party controllers (see Applications on page 9). The Logic Inputs may also be remotely controlled via active driver circuits (such as a TTL or RS-232 output). Logic Inputs also include a "priority switching" scheme and internal jumpers for input pin assignment.

**(7) AC Power Cord:** The external power transformer provides 27 Volts AC to the VSX41, and is detachable via a 5-pin DIN connector. The VSX41 has two internal 1 Amp Normal-Blow (1A NB) fuses. If fuses should require replacement, use same fuse value and type only.

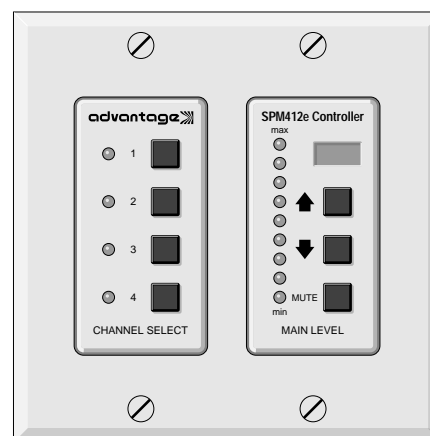
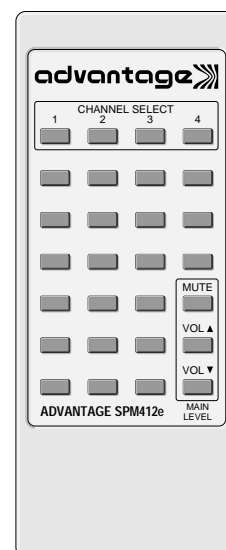
## REMOTE CONTROL

An infrared receiver is provided on the VSX41 front panel, however, infrared and wall-mount remote control is optional. This allows the user to select only the type and quantity of controls necessary for a particular application. Remote controls affect VSX41 Channel Select switching, as well as functions on other ADVANTAGE® products that might be connected to the VSX41. Remote controls may be added at any time, and do not require the VSX41 to be modified, opened, or removed from a rack. There are four remote control devices: a hand-held Infrared Transmitter, an Infrared Receiver unit, a wall-mount push-button Controller with status indicators & infrared detector, and a Remote Interface Kit for building custom control panels. Remote control of the VSX41 is also possible via third-party controllers and Logic Inputs.

**Infrared Transmitter** (Biamp #909-0060-00): The transmitter is a hand-held remote control, which transmits infrared codes unique to Biamp. Therefore, the Transmitter should not affect any other infrared controlled equipment (such as TVs or VCRs). Likewise, other infrared controllers will not provide proper control of Biamp equipment. The transmitter requires two AAA batteries, which are included with the unit (user installed). The transmitter has twenty-eight buttons, only four of which control functions on the VSX41. Channel Select 1-4 buttons provide the same function as Channel Select 1-4 buttons on the VSX41 front panel. The remaining buttons on the transmitter may be used to control other ADVANTAGE products, which are connected to the VSX41 Remote Output. When used in this way, VSX41 Channel Select functions may be assigned to the next row of buttons, to avoid conflict with the other products (see Options on page 6). For best results, there should be an unobstructed line-of-sight from transmitter to receiver. The transmitter will operate up to 30 feet from a receiver. When infrared information is transmitted to a receiver, the IR LED indicator on the VSX41 front panel will light. The transmitter is labelled for use with the VSX41 and SPM412e.

**External Infrared Receiver** (Biamp #909-0030-00): The receiver consists of a black plastic box, which contains an infrared photo detector, an LED indicator, and three screw terminals. To install the receiver, first take off the front cover by removing the four screws. Mount the receiver to wall or other surface, using the two screw holes on the back cover (screws not included). The receiver should not be mounted in direct sunlight, or pointed directly at fluorescent lighting. For best results, there should be an unobstructed line-of-sight from transmitter to receiver. The receiver may be wired up to 2000 feet from the VSX41, using 2-conductor shielded cable (not included). Route the cable through the access hole on the bottom of the receiver. The three screw terminals inside the receiver ("GND", "IR2", & "IR3") directly correspond to the Remote 1 and Remote 2 terminals on rear panel of the VSX41. Connect the cable shield to the "GND" terminal at each end. Use the two conductors to connect "IR2" to "IR2" and "IR3" to "IR3". Replace the receiver front cover. When the VSX41 is turned on, power is delivered to the receiver. The LED indicator inside the receiver (and the IR LED indicator on the VSX41 front panel) will light whenever infrared information is detected. **NOTE:** The Infrared Receiver includes a "Remote Translator", which allows remote control via third-party controllers (instructions included with receiver).

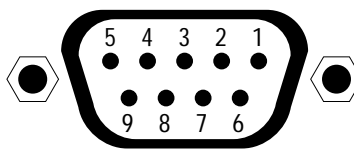
**Controller** (Biamp #909-0128-00): The Controller is a 'hard-wired' control, which is powered by the VSX41. There are no batteries to wear out, and it is not easily lost or stolen. The Controller may be wired up to 2000 feet from the VSX41, using 2-conductor shielded cable (not included). The Controller overrides commands to the VSX41 from any other source (front panel controls, Logic, Translator, & Remote). To install Controller, first remove mounting box from circuit board & front panel. Route cable through 'knock-out' hole on rear of mounting box. Install mounting box in wall or panel. Three screw terminals on circuit board ('GND', 'IR2', & 'IR3') correspond to 'Remote 1' or 'Remote 2' terminals on rear panel of VSX41. Connect cable shield to 'GND' terminals at each end. Use conductors to connect 'IR2' to 'IR2' & 'IR3' to 'IR3'. Install circuit board & front panel on mounting box. Only four of the Controller buttons control functions on the VSX41. The Channel Select buttons & indicators provide the same functions as Channel Select on the VSX41 front panel. The Main Level buttons & display do not affect the VSX41 (the Controller is used with a VSX41 primarily when controlling an ADVANTAGE® SPM412e as well). The Controller also includes an infrared detector, which allows it to operate as an Infrared Receiver as well. **NOTE:** Two additional screw terminals ('GND' & 'KEY SWI') allow an external key-switch (or contact-closure) to 'lock-out' control of Channel Select (and/or Main Level) functions. A 4-gang DIP switch on the Controller circuit board allows custom functions to be assigned, such as Channel Select 'lock-out', Main Level 'lock-out', key-lock normally-open/closed, and infrared detector defeat (instructions included with Controller).



## REMOTE CONTROL

**Remote Interface Kit (Biamp #909-0041-00):** The Remote Interface Kit allows the user to create a customized control panel, using his own switches, enclosure, and panel. It can provide up to 40 buttons (12 more than standard remote controls), which are supported by some other ADVANTAGE® products. The VSX41 itself only supports 4 buttons (Channel Select), but it will also pass commands on to other Advantage products which have been connected to the Remote Output (see Applications on page 7). The Remote Interface Kit is a tested circuit board assembly, which includes two wiring harnesses. The circuit board connects to the VSX41 in exactly the same way the External Infrared Receiver does, using 2-conductor shielded cable (not included), and may be wired up to 2000 feet from the VSX41. The three screw terminals on the circuit board ("GND", "IR2", & "IR3") directly correspond to the Remote 1 & Remote 2 terminals on the rear panel of the VSX41. Connect the cable shield to the "GND" terminal at each end. Use the two conductors to connect "IR2" to "IR2" and "IR3" to "IR3". When the VSX41 is turned on, power is delivered to the circuit board. The circuit board is 2.27"W by 2.65"H, with four mounting holes (2" centers) and #6 mounting hardware provided. Complete instructions are included with the Remote Interface Kit.

**Logic Inputs:** The 9-pin Subminiature D (female) connector on the rear panel of the VSX41 provides four logic inputs and their related ground. Logic Inputs allow remote control of the VSX41 Channel Select switching function via external logic output circuits, contact closures, or active driver circuits. When nothing is connected to a Logic Input, an internal pull-up resistor keeps it at a "high" idle state. The Logic Input is activated when its input goes "low" (less than +2VDC). A Logic Input is controlled in one of three ways: **1)** Use an NPN style "open collector" logic output from an external device (such as an ADVANTAGE AGII or DRC4+4) to short the Logic Input to ground. **2)** Use a switch, relay, or other contact closure (such as from a third-party controller) to short the Logic Input to ground. **3)** Use an active TTL or RS-232 output driver circuit (such as from a third-party controller) to actively drive the Logic Input to a "high" or "low" state. Multiple logic outputs or contact closures may be wired in parallel to a single Logic Input. Logic outputs and contact closures should be rated for at least 5 Volt / 1 mA operation. Low-current / dry-contact closures are recommended for reliability. Active output driver circuits should not exceed a signal range of -15VDC to +15VDC, and should have a minimum pulse width of 50 milli-seconds. Logic Input impedances are approximately 1k ohms for negative voltages, and approximately 10k ohms for positive voltages. Maximum recommended cable length for Logic Inputs is 10 feet. The VSX41 Logic Inputs include a "priority switching" scheme (Logic Input 1 overrides Logic Inputs 2-4, Logic Input 2 overrides Logic Inputs 3 & 4, and Logic Input 3 overrides Logic Input 4). For example, if Logic Input 2 is turned on (Channel 2 selected) and then Logic Input 1 is also turned on, the VSX41 will switch to Channel 1. However, if Logic Input 2 is turned on (Channel 2 selected) and then Logic Input 3 is also turned on, the VSX41 will not switch channels. This "priority switching" also helps limit the amount of unnecessary switching in video-follow-audio applications. Logic Input #4 may be hard-wired to ground, designating Input 4 as the default when no other input is selected (see Applications on page 8). The Logic Input "priority switching" scheme will be overridden by commands received from other remote controls. When controlling the VSX41 via logic outputs from an AGII or DRC4+4, internal jumper straps are provided which assign the VSX41 Logic Inputs to the corresponding pins for those products (see Options on page 6). From the factory, Logic Inputs 1-4 are assigned to pins 1-4, with pin 5 being ground.



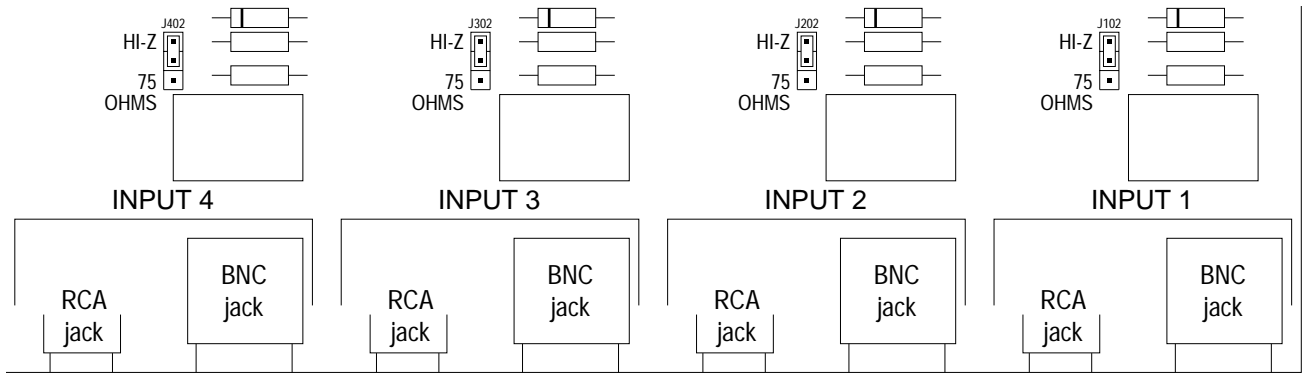
logic inputs

**Third-Party Controllers:** The VSX41 may be remotely controlled by third-party controllers in three ways: **1)** Connect "carrier stripped" remote control signals to the VSX41 Remote Translator (see Rear Panel on page 3). **2)** Connect contact closures, logic output circuits, or active TTL / RS-232 driver circuits to the VSX41 Logic Inputs (see Logic Inputs above). **3)** Apply "infrared transmitter" signals to the VSX41 Internal or External Infrared Receivers. The third-party controller must be programmed to output a bitstream in the Biamp format (contact the controller manufacturer to determine if their device driver library currently supports the Biamp format).

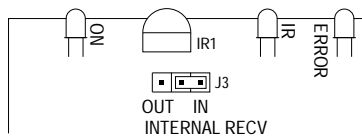
## OPTIONS

**NOTE:** To access internal jumper options: **1)** disconnect the unit from AC power **2)** remove the top panel **3)** lay the unit with the front panel facing away **4)** using needle-nose pliers, move the desired jumper straps as described below **5)** replace the top panel.

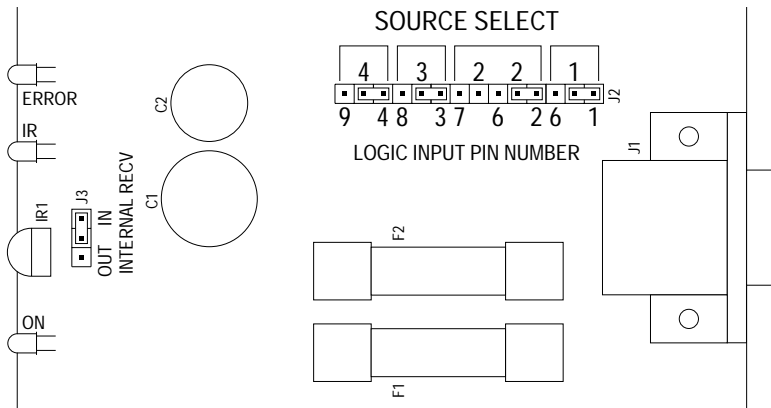
**75 Ohm Back-Termination:** From the factory, Inputs 1~4 have 3.9k ohm 'back-termination', which is appropriate for most applications. However, internal jumpers allow selection of 75 ohm 'back-termination', which is required only for specific video applications. To select 75 ohm 'back-termination', move the Input 1~4 jumper straps (J102~J402) down one pin, to the "75 OHMS" position (see diagram below).



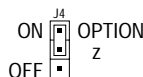
**Internal Infrared Receiver Bypass:** An internal jumper allows the Internal Infrared Receiver to be bypassed. To bypass the Internal Infrared Receiver, move the "INTERNAL RECV" jumper strap (J3) left one pin, to the "OUT" position (see diagram below).



**Logic Inputs Pin Assignments:** When controlling the VSX41 via logic outputs from an ADVANTAGE® AGII or DRC4+4, internal jumpers allow VSX41 Logic Inputs to be assigned to corresponding pins for those products (refer to AGII & DRC4+4 manuals). To assign Logic Input pins, move the "SOURCE SELECT" jumper straps (J2) to the desired Logic Input Pin Number positions (see diagram below).



**Remote Control Button Assignment:** When using Remote Output to control additional ADVANTAGE products, VSX41 Channel Select functions may be assigned to the next row of buttons, to avoid conflict with the other products. To assign Channel Select to the second row of remote control buttons, move the "OPTION Z" jumper strap (J4) down one pin, to the "OFF" position (see diagram below).

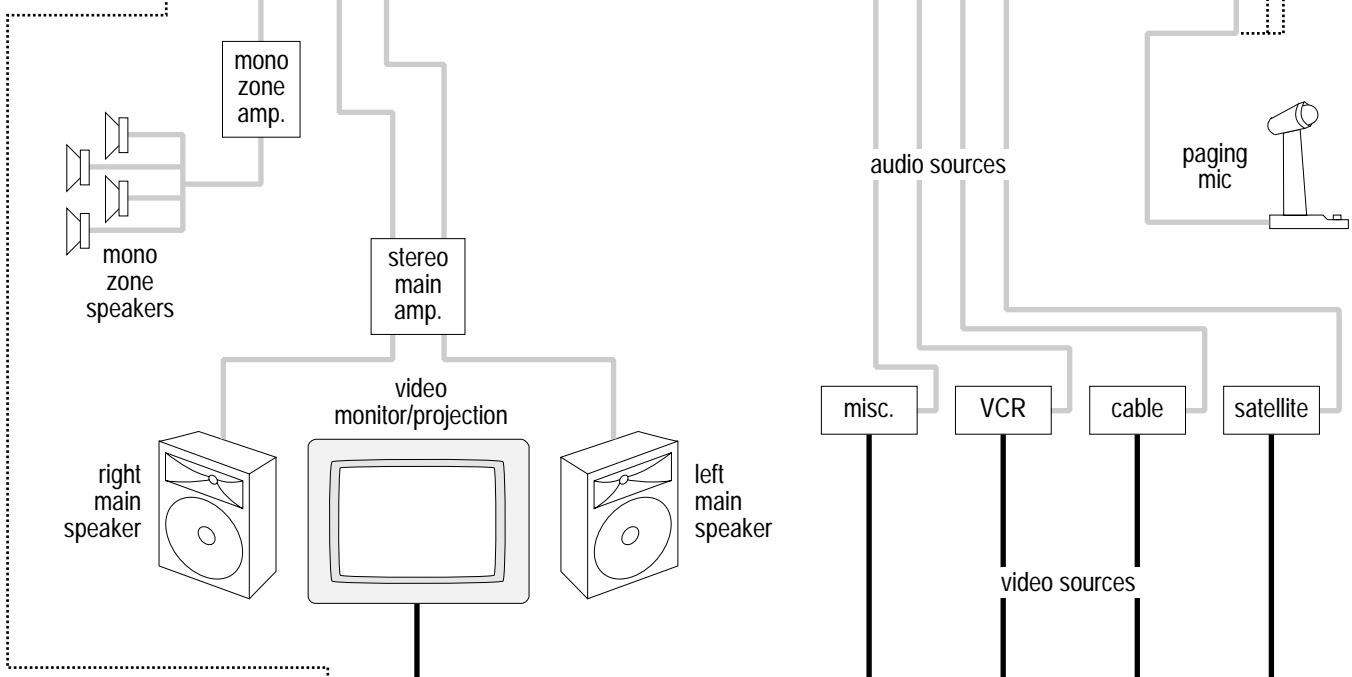
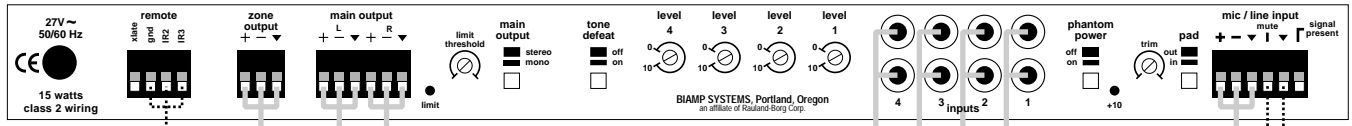




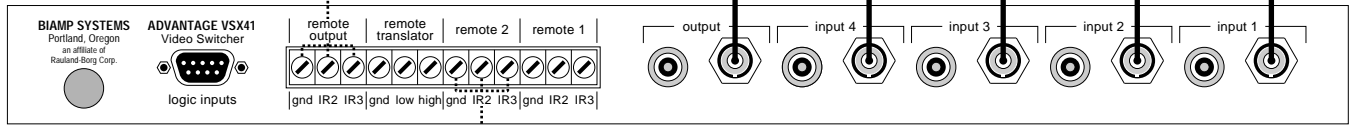
# APPLICATIONS

## Audio/Video Source Selection

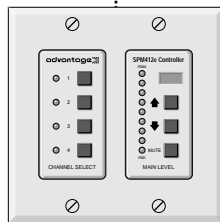
### SPM412e



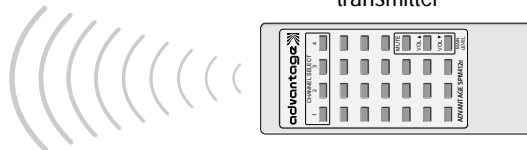
### VSX41



wall-mount controller



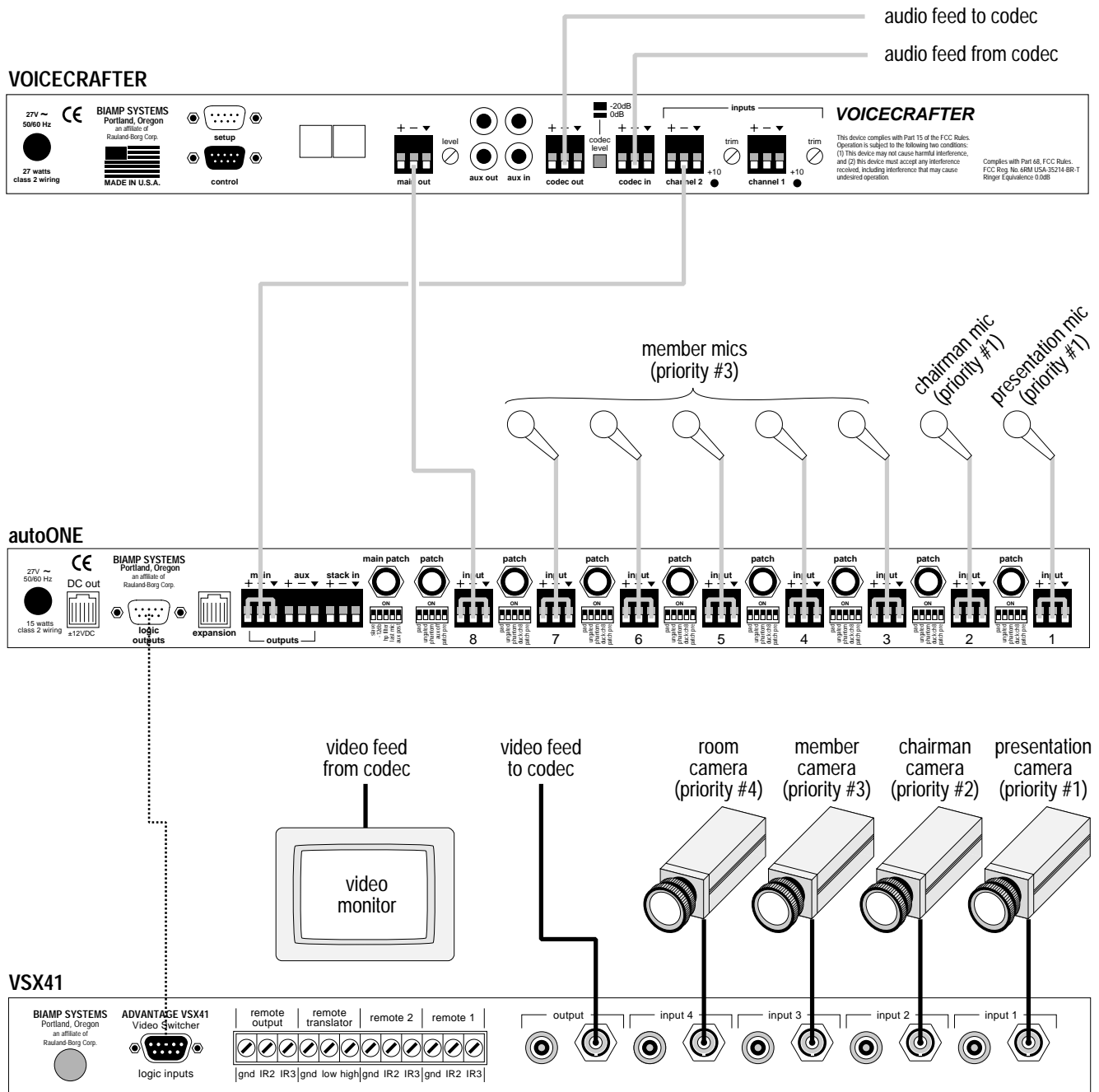
hand-held infrared transmitter



This diagram shows a VSX41 used for video source selection in a "sports bar" application. A similar system could be used for classroom applications. The VSX41 Remote Output is connected to an ADVANTAGE® SPM412e Remote input, allowing combined control of the two units. Wall-mount and/or infrared remote controls provide simultaneous "audio-follow-video" switching of sources, as well as a master volume control. The VSX41 receives video input signals from satellite, cable, VCR, etc., and sends a single output to a large-screen video monitor or projector. The SPM412e receives stereo audio input signals from the same sources, and sends a stereo output (with remote volume control) to the main sound system, as well as providing a mono output for a zone sound system. In addition, the SPM412e provides an input for a paging microphone, which includes automatic "page-over" muting of the audio signals.

# APPLICATIONS

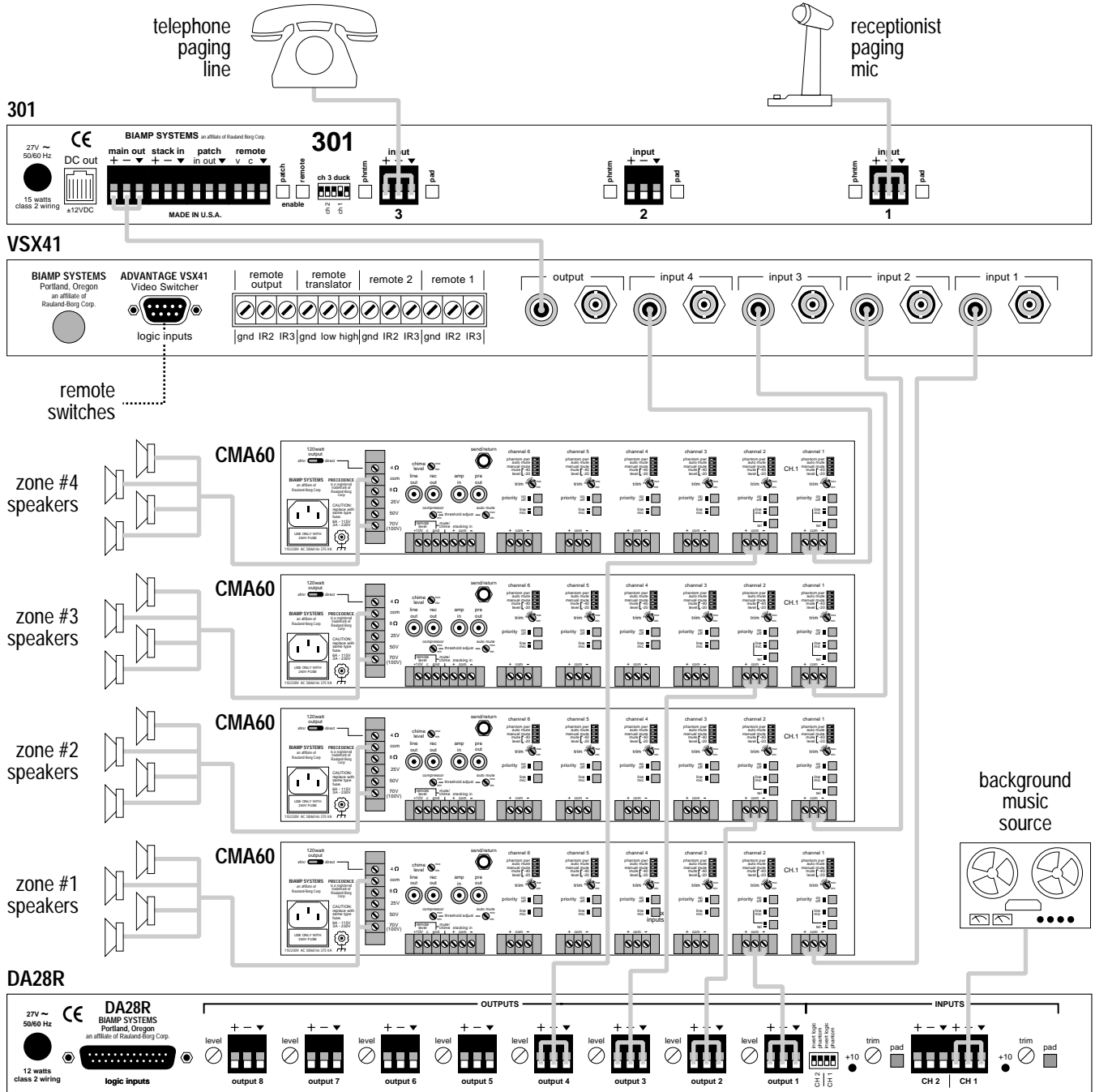
## Corporate Video Conferencing



This diagram shows a VSX41 used for video source selection in a "corporate video conferencing" application. A similar system could be used for "distance learning" applications. An ADVANTAGE® autoONE automatic (voice-activated) mixer accepts the microphone signals. When a microphone becomes active, a corresponding Logic Output goes on. The Logic Outputs of the autoONE are connected (individually or in specific groups) to the Logic Inputs of the VSX41, for "video-follow-audio" switching. Therefore, the VSX41 will automatically select the appropriate camera when some one speaks. When the "presentation" mic becomes active, the VSX41 switches to the "presentation" camera. The "presentation" camera has priority over all other cameras. (The audio & video "presentation" signals could instead be from a VCR or multi-media device.) The "chairman" camera has priority over the "member" & "room" cameras, and the "member" camera has priority over the "room" camera. The "room" camera can be made to come on whenever no one is speaking, by wiring the VSX41 Logic Input 4 directly to ground. Manual or automatic audio override can also be assigned to channel 1 of the autoONE mixer. A VOICECRAFTER provides echo canceling and proper interface of audio signals to the video-conferencing codec.

# APPLICATIONS

## Audio Paging Router



This diagram shows a VSX41 used as an audio router in a "office paging" application. A similar system could be used for factory or school applications. An ADVANTAGE® 301 receives input signals from the paging sources, and sends a single output to the VSX41. The 301 may be assigned so signal present in Channels 1 & 2 causes 15dB ducking of Channel 3 (example: mic priority over telephone). (When using the VSX41 as a "router", the Output connector is used as a single input.) PRECEDENCE® CMA60s provide power for the four paging zones. An ADVANTAGE® DA28R receives input signal from a background music source, and distributes that signal to the Channel 2 input on the four CMA60s. The VSX41 provides four outputs, which are sent to the Channel 1 input on the four CMA60s. (When using the VSX41 as a "router", the Input connectors are used as the four outputs.) Paging signal is routed to a specific zone via the VSX41 front panel Channel Select switches or by remote switches connected to the VSX41 Logic Inputs. The CMA60s allow signal present at the Channel 1 input to cause "page-over" muting of the Channel 2 input signal. This allows paging (and muting of background music) to be routed to a specific zone. In addition, CMA60 muting (and announcement chimes) may be triggered by remote switches.

## SPECIFICATIONS

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**Maximum Input/Output Voltage:** 20Vrms

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**Maximum Input/Output Current:** 100mA rms

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**Remote Translator:**

maximum input voltage +15VDC

minimum input voltage -15VDC

switching threshold +2VDC

input voltage when idle (high input) high (> +2VDC)

input voltage when idle (low input) low (< +2VDC)

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**Crosstalk (20Hz - 20kHz):** -70dB

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**Power Requirements:** 120/240VAC 50/60Hz

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**Power Consumption:** 8 watts max.

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**Dimensions:**

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height (1 rack space) 1.75 inches (44mm)

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width 19 inches (483mm)

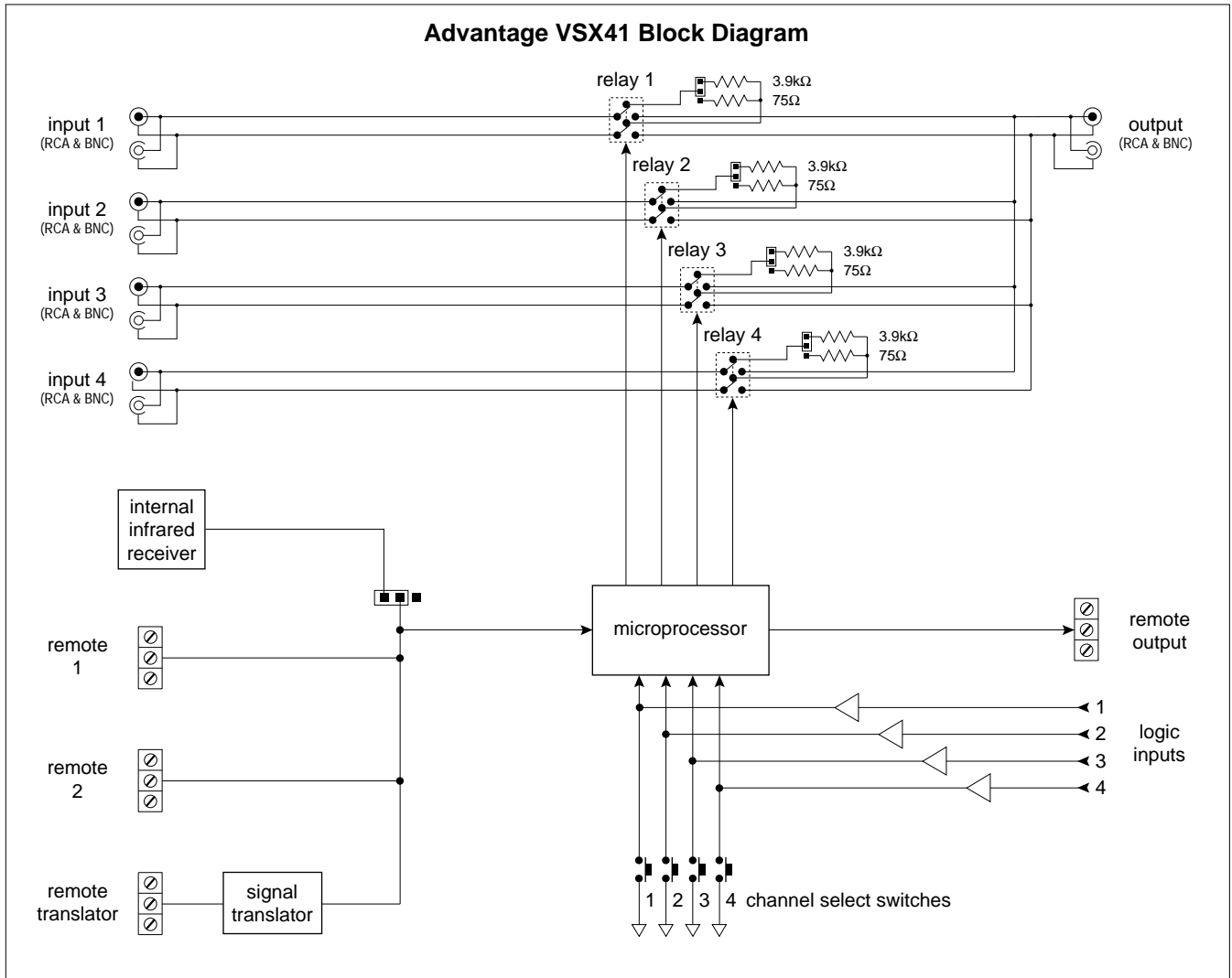
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depth 4 inches (102mm)

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**Weight:** 4.5 lbs. (2.04kg)

# BLOCK DIAGRAM



## WARRANTY

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### BIAMP SYSTEMS IS PLEASED TO EXTEND THE FOLLOWING 5-YEAR LIMITED WARRANTY TO THE ORIGINAL PURCHASER OF THE PROFESSIONAL SOUND EQUIPMENT DESCRIBED IN THIS MANUAL.

BIAMP Systems expressly warrants this product to be free from defects in material and workmanship for a period of 5 YEARS from the date of purchase as a new product from an authorized BIAMP Systems dealer under the following conditions.

1. In the event the warranted BIAMP Systems product requires service during the warranty period, BIAMP Systems will repair or replace, at its option, defective materials, provided you have identified yourself as the original purchaser of the product to any authorized BIAMP Systems Service Center. Transportation and insurance charges to and from an authorized Service Center or the BIAMP Systems factory for warranted products or components thereof to obtain repairs shall be the responsibility of the purchaser.
2. This warranty will be VOIDED if the serial number has been removed or defaced; or if the product has been subjected to accidental damage, abuse, rental usage, alterations, or attempted repair by any person not authorized by BIAMP Systems to make repairs; or if the product has been installed contrary to BIAMP Systems's recommendations.
3. Electro-mechanical fans, electrolytic capacitors, and the normal wear and tear of appearance items such as paint, knobs, handles, and covers are not covered under this warranty.
4. BIAMP SYSTEMS SHALL NOT IN ANY EVENT BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, LOSS OF USE, PROPERTY DAMAGE, INJURY TO GOODWILL, OR OTHER ECONOMIC LOSS OF ANY SORT. EXCEPT AS EXPRESSLY PROVIDED HEREIN, BIAMP SYSTEMS DISCLAIMS ALL OTHER LIABILITY TO PURCHASER OR ANY OTHER PERSONS ARISING OUT OF USE OR PERFORMANCE OF THE PRODUCT, INCLUDING LIABILITY FOR NEGLIGENCE OR STRICT LIABILITY IN TORT.
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6. No action for breach of this warranty may be commenced more than one year after the expiration of this warranty.

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(503) 641-7287  
<http://www.biamp.com>

## SAFETY INFORMATION

The words **WARNING** and **CAUTION** throughout the manual, and on the device, call attention to important safety information. These words have the following meanings.

**WARNING:** The related information alerts you to conditions that could result in serious injury or damage to property if the instructions are not followed properly.

**CAUTION:** The related information instructs you on how to prevent damage to the equipment or how to avoid conditions that could result in minor injury if proper steps are not followed.

Product labelling and the operation manual may use the internationally recognized symbols defined below to note safety messages.



The lightning flash with arrowhead symbol, enclosed within a triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the apparatus's enclosure or at connection terminals that may be of sufficient magnitude to constitute a risk of electrical shock.



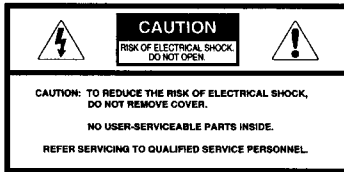
The exclamation point, enclosed within a triangle, is intended to alert the user to important installation, operation, and maintenance (servicing) instructions in the literature accompanying the apparatus.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

**CAUTION:** Installation of this apparatus should be made by a qualified installation person and should conform to all applicable local codes.



Modification and optional equipment information referenced in this manual is for use by qualified installation and service personnel only.



## "INFORMACIÓN DE SEGURIDAD"

Las palabras **PELIGRO** (**WARNING**) y **PRECAUCIÓN** (**CAUTION**) a lo largo del manual y en el dispositivo (sistema), llaman la atención acerca de una importante información de seguridad. Estas palabras tienen los siguientes significados:

**PELIGRO** : la información relata las condiciones en que podría ser dañada seriamente la propiedad si no se siguen adecuadamente las instrucciones.

**PRECAUCIÓN** : la información que se relata le instruye en cómo prevenir daños al equipo o como evitar condiciones que podrían resultar en perjuicio menor si los pasos adecuados no son seguidos correctamente.

El etiquetado del producto y el manual de operación pueden hacer uso de los símbolos reconocidos internacionalmente y cuyos mensajes están definidos a continuación para modificar mensajes de seguridad:



El símbolo del rayo encerrado en un triángulo pretende alertar al usuario de la presencia de un peligroso voltaje no aislado, dentro de la caja del aparato o a un terminal de conexión y que podría ser de suficiente magnitud como para constituir un grave riesgo de descarga eléctrica.



El punto de exclamación dentro de un triángulo pretende alertar al usuario de la importancia de las instrucciones de instalación, operación y mantenimiento (servicio) que acompañan al aparato.

**PELIGRO** : para reducir el riesgo de fuego o una descarga eléctrica, no exponer este aparato a la lluvia o la humedad.

**PRECAUCIÓN** : la instalación de este aparato debería hacerse por una persona cualificada en la instalación, y debería conformar todos los códigos locales aplicables.



La modificación y la información opcional del equipo referenciada en este manual es para ser utilizada únicamente por personal cualificado en instalación y servicio.



## INFORMATION CONCERNANT VOTRE SECURITE

Les mots **WARNING** et **CAUTION** dans le manuel d'utilisation et sur les appareils attirent votre attention sur les plus importantes informations concernant votre sécurité. Ces mots ont la signification suivante:

**WARNING:** Ce mot vous indique les circonstances dans lesquelles vous pourriez être blessé ou endommager votre équipement si les instructions ne sont pas suivies correctement.

**CAUTION:** Ce mot vous indique comment éviter d'endommager votre matériel et comment éviter de vous blesser si vous ne suivez pas les instructions.

Vous trouverez peut-être les symboles suivants sur votre appareil ou dans le manuel d'utilisation.



L'éclair se terminant en flèche dans un triangle permet de prévenir l'utilisateur d'un voltage dangereux non isolé dans l'appareil ou d'une connexion d'une amplitude suffisante pour constituer un risque de choc électrique.



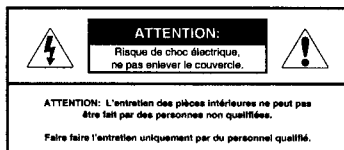
Le point d'exclamation dans un triangle permet de prévenir l'utilisateur des points importants concernant l'installation, le fonctionnement et l'entretien de l'appareil figurant dans le manuel d'utilisation.

**WARNING:** POUR REDUIRE LES RISQUES DE FEU OU DE CHOC ELECTRIQUE, NE PAS METTRE L'APPAREIL SOUS LA PLUIE OU DANS L'HUMIDITE.

**CAUTION:** L'installation de cet appareil doit être faite par un installateur qualifié et doit être en conformité avec toutes les lois locales en application.



Les informations concernant une modification ou un équipement en option dans le manuel doivent être effectués par du personnel qualifié.



## INFORMAZIONI PER LA SICUREZZA

Le parole **AVVERTENZA** (**WARNING**) e **PRUDENZA** (**CAUTION**) poste sul manuale d'uso e sul apparato richiamano la vostra attenzione su delle importanti informazioni per la vostra sicurezza. Queste parole hanno il seguente significato.

**AVVERTENZA:** La suddetta indicazione vi avvisa sul rischio di incorrere in danni a cose o a persone, se le procedure d'uso e installazione non saranno seguite propriamente.

**PRUDENZA:** La suddetta indicazione vi instruisce su come prevenire e ridurre al minimo, il rischio di danni agli apparati e alle persone se le istruzioni saranno seguite propriamente.

Le apparecchiature e i manuali di istruzioni riporteranno la simbologia standard raffigurata qui sotto, accompagnate dalle relative informazioni per la sicurezza.



La simbologia con il fulmine all'interno di un triangolo, intende avvisare l'utente della presenza di alto voltaggio all'interno dell'apparecchio in questione, e che il suddetto apparecchio si alimenta attraverso una tensione di rete ad alto voltaggio e che dunque si potrebbe incorrere sul rischio di una possibile scossa elettrica.



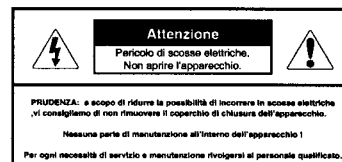
La simbologia con il punto esclamativo all'interno di un triangolo, intende avvisare l'utente di una serie di istruzioni contenute nel manuale d'uso riguardanti: operato, manutenzione e assistenza. Il suddetto manuale sarà a corredo dell'apparecchio.

**AVVERTENZA:** PER RIDURRE IL RISCHIO DI POSSIBILI INCENDI O SCOSSE ELETTRICHE, SCONSIGLIAMO DI ESPORRE L'APPARECCHIO ALLA PIOGGIA O ALL'UMIDITA'.

**PRUDENZA:** L'installazione di questo apparato dovrà essere effettuata solo da personale qualificato e il tipo di installazione dovrà essere in regola con le norme vigenti locali.



Modifiche e ulteriori informazioni specificate in questo manuale sono solamente riservate al personale qualificato all'installazione.



## Sicherheitshinweise

Die Begriffe **WARNUNG** (engl. WARNING) und **ACHTUNG** (engl. CAUTION) in der Bedienungsanleitung und auf den Geräten machen auf wichtige Sicherheitsinformationen aufmerksam. Diese Begriffe haben die folgende Bedeutung:

**WARNUNG:** Der folgende Text warnt Sie vor ernsthaften Verletzungen oder Beschädigungen, die aus einer fehlerhaften Bedienung bzw. Handhabung des Gerätes resultieren können.

**ACHTUNG:** Der folgende Text informiert Sie über Bedienungshinweise zum Schutz Ihres Gerätes oder weist auf mögliche Schäden hin, wenn die Bedienungshinweise nicht beachtet werden.

Die Beschriftung der Geräte und die Bedienungsanleitungen weisen unter Umständen international bekannte Symbole auf, die die folgende Bedeutung haben:



Das Blitzsymbol im Dreieck warnt vor anliegender, nicht isolierter „gefährlicher Spannung“ im Inneren oder an den Anschlüssen des Gerätes. Die Berührung der unter Spannung stehenden Teile kann zu einem elektrischen Schock führen.



Das Fußzeichen im Dreieck macht auf wichtige Installations-, Bedienungs- und Servicehinweise in der zugehörigen Bedienungsanleitung aufmerksam.

**WARNUNG:** Zur Minderung des Risikos von Feuer und elektrischem Schock schützen Sie das Gerät vor Regen und Feuchtigkeit.

**ACHTUNG:** Die Installation des Gerätes sollte nur durch qualifiziertes Personal durchgeführt werden und muß den jeweiligen Bestimmungen entsprechen.



Die Modifikationen und die Informationen zu den optionalen Erweiterungen in der Bedienungsanleitung sind nur für qualifiziertes Personal bestimmt.

	<b>ACHTUNG</b> Risiko von elektrischem Schock Gerät nicht öffnen	
Achtung: Zur Minderung des Risikos von elektrischem Schock das Gerät nicht öffnen		
Keine Bedienungselemente im Inneren des Gerätes		
Service nur durch qualifiziertes Personal durchführen lassen		

## Sikkerhedsinformation

Ordene **ADVARSEL** (WARNING) og **FORSIGTIG** (CAUTION), brugt i henholdsvis brugervejledning og på selve produktet, indikerer, at vigtig information omkring sikkerhed følger. Ordene betyder følgende:

**ADVARSEL:** Den efterfølgende information advarer Dem om forhold, der kan føre til alvorlige ulykker og ejendomsskader, hvis ikke vejledningen følges.

**FORSIGTIG:** Den efterfølgende information vejleder Dem i, hvordan De undgår skade på produktet, samt undgår forhold der kan føre til mindre ulykker og ejendomsskader, hvis ikke vejledningen følges.

Produktetiketter og brugervejledning kan indeholde de internationalt anerkendte symboler der er vist nedenfor:



Trekanten med et lyn i midten har til hensigt at advare brugeren om, at produktet indeholder "farlig spænding", og at det derfor er forbundet med fare for elektrisk stød at åbne produktet.



Trekanten med udråbstegn har til hensigt at advare brugeren om, at vigtig information omkring installation, brug, service og vedligeholdelse af produktet er indeholdt i den medfølgende brugervejledning.

**ADVARSEL:** Med henblik på at reducere risikoen for brand eller elektrisk stød, må produktet ikke udsættes for regn eller fugt.

**FORSIGTIG:** Installation af dette produkt skal foretages af en autoriseret installatør og skal være i overensstemmelse med alle anvendelige lokale retningslinier.



Modifikationer samt alternativt udstyr beskrevet i denne brugervejledning er kun henvendt til kvalificerede installatører og servicepersonale.

	<b>FORSIGTIG</b> Fare for elektrisk stød - må ikke åbnes.	
<b>FORSIGTIG:</b> Med henblik på at reducere risikoen for elektrisk stød, må svaret ikke fjernes.		
Indeholder ingen komponenter relevante for brugeren.		
Anvend autoriseret servicepersonale ved alle serviceeftersøgninger.		

## VEILIGHEIDSINFORMATIE

De woorden **WAARSCHUWING** (WARNING) en **VOORZICHTIG** (CAUTION) welke in de handleiding en op het apparaat voorkomen, waarschuwen U voor belangrijke veiligheidsinformatie. Zij hebben de volgende betekenis:

**WAARSCHUWING:** De betreffende informatie waarschuwt U voor omstandigheden die kunnen leiden tot defecten of beschadigingen aan apparaten als de instructies niet volledig worden opgevolgd.

**VOORZICHTIG:** De betreffende informatie instrueert U hoe U defecten aan apparatuur kunt voorkomen of hoe U omstandigheden kunt vermijden die kunnen resulteren in schade als de juiste stappen niet worden opgevolgd.

Produkt informatie en handleiding hanteren onderstaande internationale erkende symbolen om veiligheidsinstructies aan te geven.



De bliksemschicht in een driehoek wordt gebruikt om de gebruiker te attenderen op ongeïsoleerde "gevaarlijke spanning" in het apparaat of bij de aansluitklemmen, die het risico van een elektrische schok kunnen geven.



Het uitroepteken in een driehoek wordt gebruikt om de gebruiker te attenderen op belangrijke installatie, gebruiks- en onderhoudsinstructies in de beschrijving die bij het apparaat hoort.

**WAARSCHUWING:** OM HET RISICO VAN BRAND OF EEN ELECTRICISCHE SCHOK TE VERMIDDEN DIENT U HET APPARAAT NIET AAN VOCHT BLOOT TE STELLEN.

**VOORZICHTIG:** Installatie van dit apparaat dient te geschieden door gekwalificeerd personeel en dient te geschieden conform de plaatselijke voorschriften.



Modificaties en aanvullende informatie waar in de handleiding naar wordt verwezen, dient alleen voor gebruik door gekwalificeerd personeel.

	<b>VOORZICHTIG.</b> Risiko van elektrische schok. Niet openen.	
Waarschuwing: Om het risico van een elektrische schok te verminderen het apparaat niet openen.		
Er zijn geen, door gebruiker, vervangbare onderdelen in dit apparaat.		
Service overlaten aan gekwalificeerd service personeel.		

## TURVALLISUUSTIEDOTE

Sanat **VAROITUS** (WARNING) ja **HUOMIO** (CAUTION), jotka esiintyvät manuaalissa ja itse laitteessa, ilmoittavat tärkeistä turvallisuusinformatiosta. Näillä sanoilla on seuraava merkitys:

**VAROITUS:** Yhteydessä oleva informaatio varoittaa olosuhteista, jotka saattavat johtaa vakaviin vammoihin tai laitteen vaurioitumiseen, mikäli ohjeita ei täysin noudateta.

**HUOMIO:** Yhteydessä oleva informaatio neuvoo, miten laitteen vaurioituminen voidaan ehkäistä tai miten voidaan välttää olosuhteet, jotka voivat johtaa lieviin vammoihin, mikäli ohjeita ei noudateta.

Tuotteessa tai käyttöohjeessa voidaan käyttää seuraavia alla määriteltyjä kansainvälisiä symboleja, jotka viittaavat turvallisuusinformatioon.



Kolmion sisällä olevan nuolipäinen salama varoittaa käyttäjää laitteen sisällä tai liitännöissä olevasta eristämättömästä vaarallisesta jännitteestä, joka saattaa olla tarpeeksi suuri aiheuttaakseen sähköiskun vaaran.



Kolmion sisällä oleva huutomerkki tarkoituksena on ilmoittaa käyttäjälle tärkeistä asennusta, käyttöä tai huoltoa koskevista ohjeista laitteen mukana seuraavassa kirjallisuudessa.

**VAROITUS:** ÄLÄ ALTISTA LAITETTA SATEELLE TAI KOSTEUELLE TULIPALON JA SÄHKÖISKUN VAARAN VUOKSI.

**HUOMIO:** Laitteen asentaminen tulisi jättää ammattitaitoisen henkilön suoritettavaksi ja asennuksessa tulee noudattaa kaikkia paikallisia säännöksiä.



Tässä manuaalissa oleva informaatio, joka koskee muutostöitä ja lisälaitteita, on tarkoitettu vain ammattitaitoisten asennus- ja huoltohenkilöiden käyttöön.

	<b>HUOMIO</b> Sähköiskun vaara, älä avaa.	
<b>HUOMIO:</b> ÄLÄ AVAA KANTTA SÄHKÖISKUN VAARAN VUOKSI		
EI SISÄLLÄ KÄYTTÄJÄN HUOLLETTAVIA OSIA		
JÄTÄ HUOLTO AMMATTITAITOISELLE HENKILÖKUNNALLE		



# SIKKERHETS INFORMASJON

Når ordene **ADVARSEL** (WARNING) og **VIKTIG** (CAUTION) blir brukt i manualen og på produktet, gjelder det informasjon som har med brukernes sikkerhet å gjøre. Ordene har følgende mening:

**ADVARSEL:** Tilhørende informasjon viser til forhold som kan resultere i alvorlige skader eller ødeleggelser hvis anvisningene ikke følges nøye.

**VIKTIG:** Tilhørende informasjon forteller deg hvordan du skal unngå feil på utstyret, eller unngå situasjoner som kan resultere i mindre skader.

Produkt merkingen og bruksanvisningen bruker internasjonale symboler for å merke punkter som er viktige for brukernes sikkerhet.



Lynet i en triangel advarer brukeren om uisolert "farlig spenning" inne i apparatet, eller tilkoblings terminaler som kan gi støt.



Etter utropsteget i en triangel følger informasjon som er viktig når det gjelder installasjon, bruk og vedlikehold (service) av apparatet.

**ADVARSEL:** FOR Å REDUSERE FAREN FOR BRANN ELLER STØT MÅ APPARATET IKKE UTSETTES FOR VANN ELLER FUKTIGHET.

**VIKTIG:** Installasjon av apparatet skal foretas av autorisert installatør etter gjeldende forskrifter.



Modifikasjoner og tilleggs informasjon som følger er kun for kvalifiserte installatører eller service personell.

	<b>VIKTIG</b> FARE FOR STØT, MÅ IKKE DEMONTERES.	
VIKTIG: For å unngå faren for støt, må ingen deksler fjernes. Ingen interne deler skal justeres eller repareres av bruker. Overlat service til autorisert personell.		

# SÄKERHETS INFORMATION

Orden **VARNING** (WARNING) och **OBSERVERA** (CAUTION) vilka används i denna manual och på apparaten, är menade att uppmärksamma viktig säkerhets information. Dessa ord har följande betydelse.

**VARNING:** Information som uppmärksammar på omständigheter som kan resultera i allvarig personskada eller skada på egendom om instruktionerna ej följs.

**OBSERVERA:** Information som uppmärksammar på instruktioner om hur skada på utrustning eller hur situationer där lättare personskador kan uppstå undvikas.

Följande internationellt använda ord och symboler används i handboken och på märkningar på produkten för att uppmärksamma användare på viktiga säkerhets instruktioner.



En blixn med pil, innesluten i en triangel, menad att uppmärksamma användare på närvaron av isolerade "farliga spänningar" i apparaten eller på anslutnings kontakter vilka har tillräcklig styrka för att medföra risk för elektrisk stöt.



Ett utropstecken, innesluten i en triangel, menad att uppmärksamma användare på viktiga installations, handhavande eller underhålls-instruktioner i medföljande dokumentation.

**VARNING:** FÖR ATT MINSKA RISKEN FÖR BRAND ELLER ELEKTRISK STÖT, UTSÄTT EJ APPARATEN FÖR FUKT ELLER VÄTSKA.

**OBSERVERA:** Installation av denna apparat skall utföras av kvalificerad installatör samt enligt alla gällande lokala bestämmelser.



Eventuella modifierings instruktioner och annan information av teknisk art i denna manual är endast avsedd att användas av kvalificerad installations och service personal.

	<b>OBSERVERA</b> RISK FÖR ELEKTRISK STÖT FÄR EJ ÖPPNAS	
OBSERVERA: FÖR ATT MINSKA RISKEN FÖR ELEKTRISK STÖT, AVLÅSNÄ EJ LOCKET. INGA AV ANVÄNDARE UTBYTBARA ELLER REPARERBARA KOMPONENTER INUTI DENNA APPARAT. ALL SERVICE PÅ DENNA APPARAT SKALL UTFÖRAS AV KVALIFICERAD PERSONAL		

# ΠΛΗΡΟΦΟΡΙΕΣ ΑΣΦΑΛΕΙΑΣ

Οι λέξεις **ΚΙΝΔΥΝΟΣ** (WARNING) και **ΠΡΟΣΟΧΗ** (CAUTION) που αναφέρονται μέσα στο εγχειρίδιο και στη συσκευή, επικεντρώνουν την προσοχή σε σημαντικές πληροφορίες ασφαλείας. Οι λέξεις αυτές έχουν την παρακάτω σημασία.

**ΚΙΝΔΥΝΟΣ:** Η αναγραφόμενη πληροφορία επιστά την προσοχή σας σε καταστάσεις που θα μπορούσαν να έχουν σαν αποτέλεσμα σοβαρό τραυματισμό ή καταστροφή της ιδιοκτησίας αν οι οδηγίες δεν ακολουθηθούν κατάλληλα.

**ΠΡΟΣΟΧΗ:** Η αναγραφόμενη πληροφορία σας καθοδηγεί πώς να προλάβετε καταστροφή του εξοπλισμού ή πώς να αποφύγετε καταστάσεις που θα μπορούσαν να έχουν ως αποτέλεσμα μικροτραυματισμούς αν δεν ακολουθηθούν τα σωστά βήματα.

Στις επιγραφές των προϊόντων και στο εγχειρίδιο λειτουργίας, χρησιμοποιούνται τα συμβολικά αναγνωρισμένα σύμβολα, των οποίων ο ορισμός δίνεται παρακάτω έτσι ώστε να υπογραμμιστούν τα μηνύματα ασφαλείας.



Η φωτεινή αναλαμπή με σύμβολο το βέλος, μέσα στο τρίγωνο, έχει σκοπό να επιστήσει την προσοχή του χρήστη, στην ύπαρξη μη-μονομέρους « επικίνδυνος ισχύος ρεύματος » στο εσωτερικό της συσκευής ή στις άκρες σύνδεσης οι οποίες μπορεί να έχουν αρκετό μέγεθος ώστε να περιέχουν κίνδυνο ηλεκτροπληξίας.



Το επεξηγηματικό σημείο, μέσα στο τρίγωνο, έχει σκοπό να επιστήσει την προσοχή του χρήστη στις σημαντικές οδηγίες εγκατάστασης, λειτουργίας και συντήρησης (service) που περιέχονται στα φυλλάδια που συνοδεύουν την συσκευή.

**ΚΙΝΔΥΝΟΣ:** Για να αποφύγετε τον κίνδυνο φωτιάς ή ηλεκτροπληξίας, μην εκθέτετε αυτή τη συσκευή σε βροχή ή σε υγρασία.

**ΠΡΟΣΟΧΗ:** Η εγκατάσταση αυτής της συσκευής θα πρέπει να γίνει από εξειδικευμένο άτομο και θα πρέπει να προσαρμόζεται σε όλους τους εφαρμοσμένους τοπικούς κώδικες.



Οι τροποποιήσεις και οι προληπτικές πληροφορίες για τον εξοπλισμό, που αναφέρονται σε αυτό το εγχειρίδιο, προορίζονται για χρήση μόνο από εξειδικευμένα στην εγκατάσταση και στο service, άτομα.

	<b>ΠΡΟΣΟΧΗ</b> ΚΙΝΔΥΝΟΣ ΗΛΕΚΤΡΟΠΛΗΞΙΑΣ. ΜΗΝ ΑΝΟΙΓΕΤΕ.	
ΠΡΟΣΟΧΗ: ΓΙΑ ΝΑ ΜΕΙΩΣΕΤΕ ΤΟΝ ΚΙΝΔΥΝΟ ΗΛΕΚΤΡΟΠΛΗΞΙΑΣ, ΜΗΝ ΜΕΤΑΚΙΝΗΣΕΤΕ ΤΟ ΚΑΛΥΜΜΑ. ΔΕΝ ΠΑΡΕΧΟΝΤΑΙ ΑΝΤΑΛΛΑΚΤΙΚΑ SERVICE ΣΤΟΝ ΧΡΗΣΤΗ ΓΙΑ SERVICE ΑΝΑΦΕΡΕΙΤΕ ΣΤΟ ΕΞΕΙΔΙΚΕΥΜΕΝΟ ΠΡΟΣΩΠΙΚΟ SERVICE.		

# INFORMAÇÃO SOBRE SEGURANÇA

As palavras **ADVERTÊNCIA** (WARNING) e **PRECAUÇÃO** (CAUTION) neste manual, e no dispositivo, alertam para importantes informações sobre segurança. Estas palavras significam o seguinte:

**ADVERTÊNCIA:** Informação relacionada que alerta sobre condições que poderão resultar em lesões sérias ou prejuízo, se as instruções não forem seguidas adequadamente.

**PRECAUÇÃO:** Informação relacionada que instrui como prevenir danos no equipamento ou como evitar condições que poderão resultar em lesões leves, se os passos não forem seguidos adequadamente.

As etiquetas do produto e do manual de operações podem usar os símbolos internacionalmente reconhecidos definidos abaixo para advertir mensagens de segurança.



símbolo do relâmpago com uma seta, dentro de um triângulo, tem o fim de alertar o usuário a presença de "voltagem perigosa" sem isolamento dentro da caixa isolamento do aparelho ou nos terminais de ligação que podem ter a magnitude suficiente que constitui um risco de choque elétrico.



ponto de exclamação, dentro de um triângulo, tem o fim de alertar o usuário sobre instruções importantes de instalação, operação e manutenção (serviços) na literatura que acompanha o aparelho.

**ADVERTÊNCIA:** PARA REDUZIR O RISCO DE INCÊNDIO OU CHOQUE ELÉCTRICO, NÃO EXPONHA ESTE APARELHO A CHUVA OU HUMIDADE.

**PRECAUÇÃO:** A instalação deste aparelho deve ser feita por um profissional qualificado e deve obedecer a todos os códigos locais aplicáveis.



Modificação e informação sobre equipamento adicional citados neste manual são para o uso exclusivo do pessoal qualificado de instalação e manutenção.

	<b>PRECAUÇÃO</b> RISCO DE CHOQUE ELÉCTRICO NÃO ABRA.	
PRECAUÇÃO: PARA REDUZIR O RISCO DE CHOQUE ELÉCTRICO, NÃO REMOVA A TAMPA. PARTES INTERNAS NÃO MANTIDAS PELO USUÁRIO. ENCAMINHE A MANUTENÇÃO PARA PESSOAL DE SERVIÇOS QUALIFICADO.		