

**DA28R**  
**Distribution Amp / Router**  
**Operation Manual**



## TABLE OF CONTENTS

Front & Rear Panel Features	pg. 2
Logic Input & Transformers	pg. 3
Applications	pgs. 4 & 5
Specifications & Block Diagram	pg. 6
Warranty	

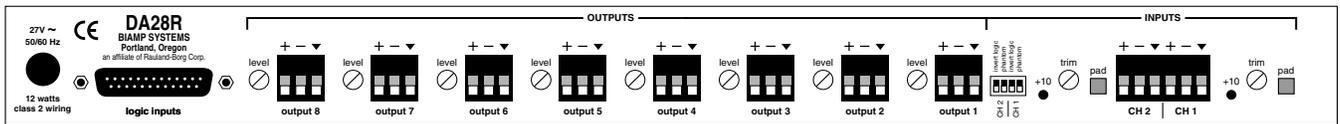
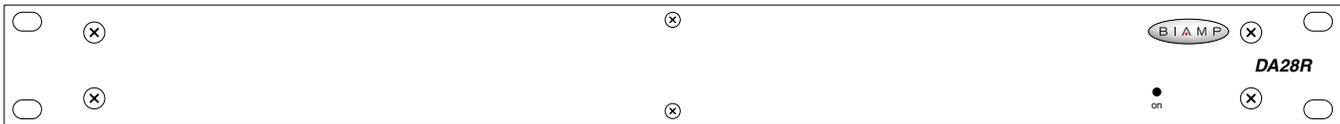
## INTRODUCTION

The **DA28R** is a 2-in by 8-out distribution amp/router. Each input channel accepts mic or line-level signals, and includes phantom power for condenser microphones. All outputs are electronically balanced & floating line-level, with 600 ohm drive capability. Logic inputs allow routing of each input to specific outputs via external contact-closures. The DA28R can operate as a flexible 2x8 distribution amp, or as a complete 8-zone page-over-music routing system. The DA28R carries a five-year warranty.

**DA28R** features include:

- ◆ two electronically balanced, differential mic/line inputs
- ◆ pad switch, trim control, & peak indicator on each input
- ◆ 24 volt phantom power switch on each input channel
- ◆ eight electronically balanced & floating line outputs (600 ohm line output drive capability)
- ◆ screwdriver adjustable level control for each output
- ◆ sixteen logic inputs with invert function switches (mute/assign inputs to outputs via external switches)
- ◆ inputs & outputs on plug-in barrier strip connectors
- ◆ optional input and output isolation transformers
- ◆ covered by Biamp Systems' five-year warranty
- ◆ **CE** marked and **UL / C-UL** listed power source

## FRONT & REAR PANEL FEATURES



**Input Connectors** (Channels 1 & 2): These plug-in barrier strips provide the balanced mic/line inputs for Channel 1 & Channel 2. Input isolation transformers (model IT-A) are available as a user installed option (see Transformers on pg. 3). For balanced input, wire high (+), low (-), and ground (▼). For unbalanced input, wire high (+), and ground to both (▼) & (-). Phantom power (+24VDC) is available for condenser microphones (see DIP Switches below).

**Trim** (Channels 1 & 2): These screw-driver adjustable controls set the channel gain (+24dB ~ +60dB) to compensate for different input signal levels. For best performance, adjust these controls so the channel +10 indicators flash only on occasional peaks. If input signal level exceeds the normal operating range of the Trim control, assign the corresponding channel Pad switch (see below). When both inputs are assigned to common outputs, it may then be necessary to reduce the Trim setting on one input, to establish a proper level relationship (mix) between the two input signals.

**Pad** (Channels 1 & 2): When depressed, these switches reduce the signal level at the respective input channels by 40dB. Use the Pad switches whenever signal level at the associated input channel exceeds the normal operating range of the Trim control. Typically, a line-level input signal will require use of the Pad.

**+10 Indicator** (Channels 1 & 2): These red LEDs will light whenever channel signal levels reach +10dB (8dB below clipping). Use this feature to aid in adjusting the Trim controls (see above).

**DIP Switches** (Channels 1 & 2): These switches assign functions to the input channels (when pushed up). Phantom turns on +24VDC phantom power at the respective input, for use with condenser microphones. **CAUTION:** *Make sure phantom power is turned off (switch down) when connecting line-level input signal.* Invert Logic reverses the operation of the respective Logic Inputs, from 'muting' the associated channel at Outputs 1~8, to 'unmuting' the associated channel at Outputs 1~8 (see Logic Inputs below).

**Output Connectors** (Outputs 1~8): These plug-in barrier strips provide the balanced line-level signals from Outputs 1~8. Output isolation transformers (model IT-B) are available as a user installed option (see Transformers on pg. 3). For balanced output, wire high (+), low (-), and ground (▼). For unbalanced output, wire high (+) and ground (▼), leaving (-) unconnected. Signal level will be reduced by 6dB when outputs are unbalanced. Output 1~8 are assigned signals from Channel 1 and/or Channel 2, by means of DIP Switches & Logic Inputs (see below). From the factory, signals from both input channels are assigned to all Outputs 1~8.

**Level** (Outputs 1~8): These screw-driver adjustable controls provide level adjustment for the respective outputs. Use the Level controls individually to set the desired signal level for each sound system or device being fed. The range of the Level controls is from 'OFF' (fully counter-clockwise) to a maximum of +16dB of gain (fully clockwise). From the factory, all Output 1~8 Level controls are set fully counter-clockwise, to 'OFF'.

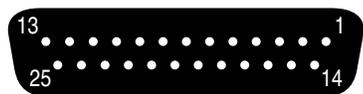
**Logic Inputs** (Channels 1 & 2): This 25-pin Sub-D (female) connector provides Logic Inputs 1~16 (on pins 1~16 respectively) and a common ground (on pins 17~25). Logic Inputs allow signal from Channel 1 & Channel 2 to be routed to the various outputs, via external contact-closures. Logic Inputs 1~8 route Channel 1 to Outputs 1~8 respectively. Logic Inputs 9~16 route Channel 2 to Outputs 1~8 respectively. Logic Inputs perform either 'muting' or 'unmuting' functions, depending upon the position of the 'Invert Logic' DIP Switches (see above). When 'Invert Logic' is assigned, the associated input is normally muted at all outputs, and a contact-closure will 'unmute' the input at the desired output. From the factory, 'Invert Logic' is not assigned, both inputs are normally unmuted at all outputs, and a contact-closure will 'mute' the input at the desired output. Logic Inputs allow a variety of input/output routing (see Logic Inputs on pg. 3 & Applications on pgs. 4 & 5).

**AC Power Cord:** The power transformer provides 27 Volts AC to the DA28R, and is detachable via a 5-pin DIN connector. The DA28R has two internal 'self-resetting' fuses (there are no user serviceable parts inside the unit). If the internal fuses blow, they will attempt to re-set after a short period. However, this may be an indication that the unit requires service.

**On Indicator:** When the power transformer is plugged in, and AC power is applied to the DA28R, the red On indicator remains lit.

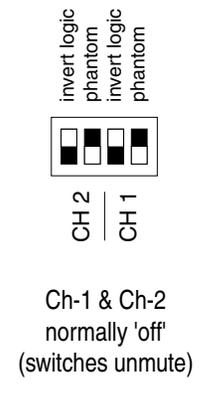
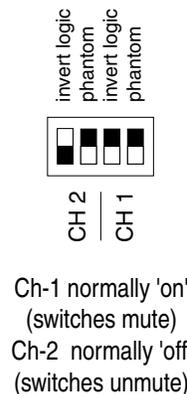
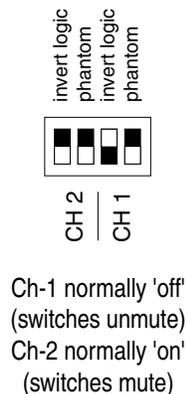
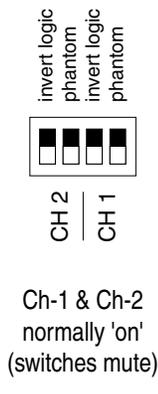
## LOGIC INPUTS & TRANSFORMERS

**Logic Inputs:** Logic Inputs 1~16 are on pins 1~16, and a common ground is on pins 17~25. Logic Inputs 1~8 affect routing of Channel 1 signal to Outputs 1~8, respectively. Logic Inputs 9~16 affect routing of Channel 2 signal to Outputs 1~8, respectively. Logic Inputs are triggered by being shorted to ground, usually by means of external switches, relays, logic outputs, or other such contact-closures. However, they may also be triggered permanently, via a 'hard-wired' short to ground (see Applications on pg. 5). Logic Inputs perform either 'muting' or 'unmuting' functions, depending upon the position of the 'Invert Logic' DIP Switches (see diagrams below). From the factory, 'Invert Logic' is not assigned on Channel 1 or Channel 2, and both inputs are normally unmuted (turned on) at all outputs. Contact-closures can then be used to 'mute' (turn off) either input at selected outputs. When 'Invert Logic' is assigned, the associated input is normally muted (turned off) at all outputs, and contact-closures can be used to 'unmute' (turn on) that input at selected outputs. A combination of 'Invert Logic' and normal (non-inverted) logic operation allows Channels 1 & 2 to provide an override function. With a single switch wired to two corresponding Logic Inputs (i.e...Logic Inputs 1 & 9), one input may be muted, while the other input is unmuted at the same output. This can be extremely effective in multi-zone, page-over-music applications (see Applications on pgs. 4).



**logic inputs**

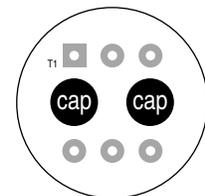
Logic Inputs	assign functions
pins 1~8	ch-1 to outputs 1~8
pins 9~16	ch-2 to outputs 1~8
pins 17~25	common ground



**NOTE:** The DA28R chassis must be dis-assembled before installing input/output transformers: **1)** remove top panel (2 screws at bottom of each side panel; 1 screw at top-center of rear panel). **2)** remove screws from front panel (2 screws at each end). **3)** remove hex-nuts from rear panel (1 hex-nut each side of Logic Inputs connector). **4)** remove mounting screws from circuit board (9 screws in front of rear panel connectors; 2 screws behind each side of front panel). **6)** gently pull circuit board forward (front panel comes forward; connectors exit rear panel). **7)** rotate front panel/circuit board upward, away from chassis (leave rear portion of circuit board in chassis, being careful not to strain power cord connections).

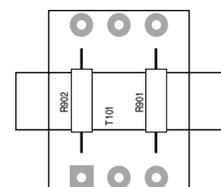
**Input Transformers:** To install input transformers (see diagram at right): **1)** locate transformer positions T1 & T2 on the circuit board (circle areas located in front of input connectors). T1 is for Channel 1 & T2 is for Channel 2. **2)** un-solder & remove the 2 capacitors located within each of the appropriate circle areas. **3)** install & solder an input transformer at each of the appropriate circle areas (transformer pin 1, designated by a red dot, must be inserted into the proper hole, designated by a square). Input isolation transformers are model IT-A (P/N# 909-0010-01).

### INPUT TRANSFORMERS



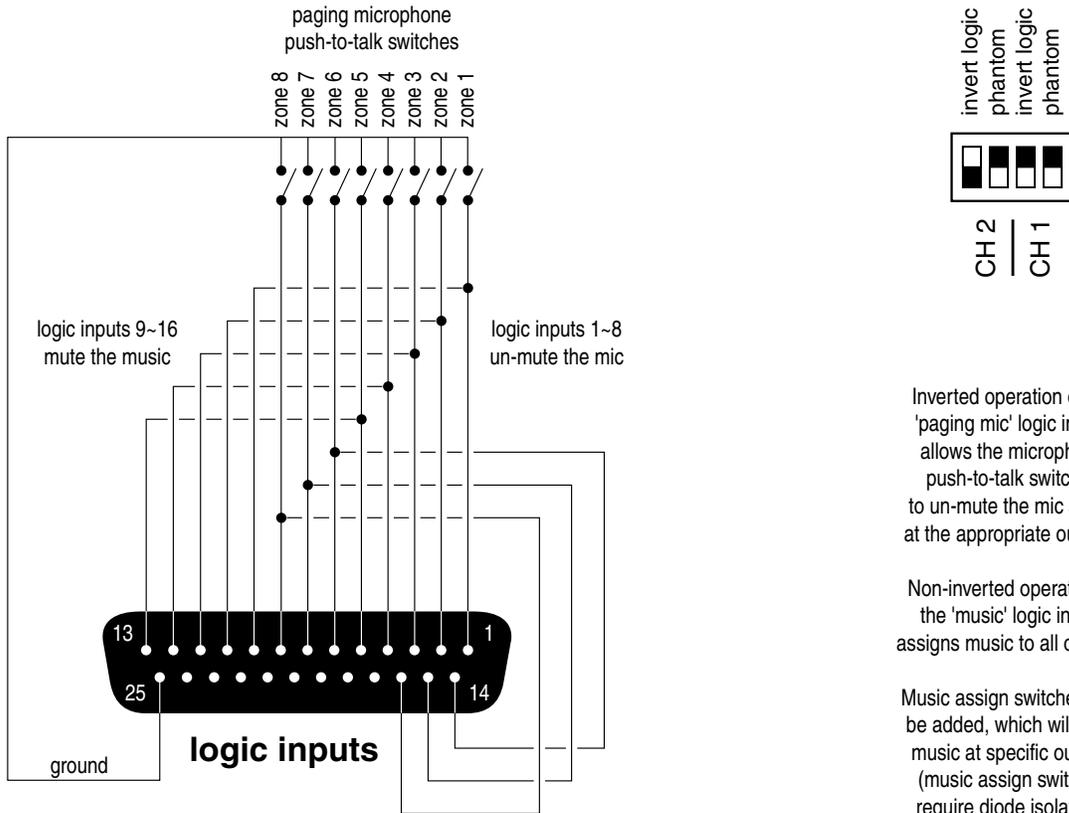
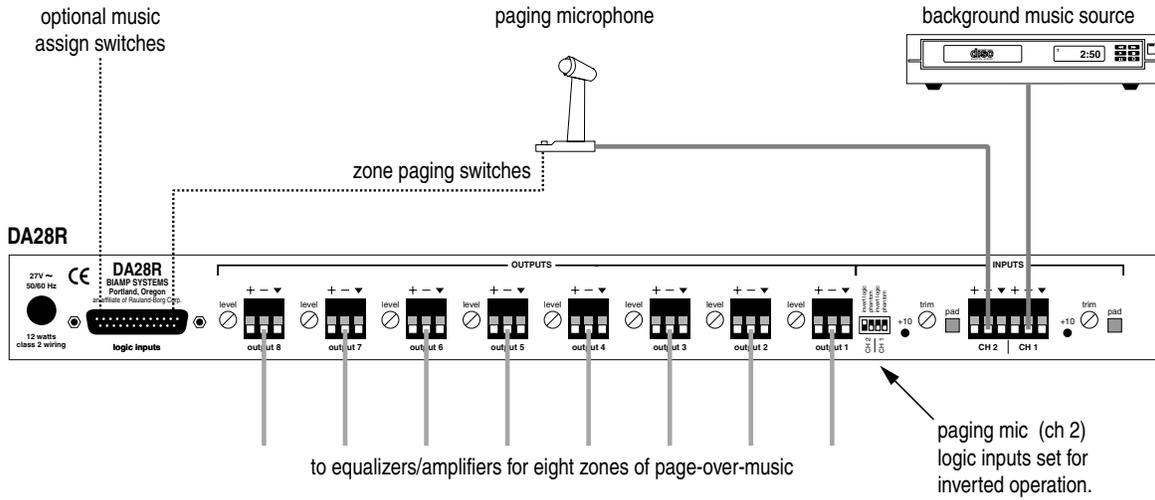
**Output Transformers:** To install output transformers (see diagram at right): **1)** locate transformer positions T101~T801 on the circuit board (rectangle areas located in front of output connectors). T101 is for Output 1, T201 is for Output 2, etc. **2)** un-solder & remove the 2 jumpers located within each of the appropriate rectangle areas. **3)** install & solder an output transformer at each of the appropriate rectangle areas (transformer pin 1, designated by a red dot, must be inserted into the proper hole, designated by a square). Output isolation transformers are model IT-B (P/N# 909-0019-00).

### OUTPUT TRANSFORMERS



# APPLICATIONS

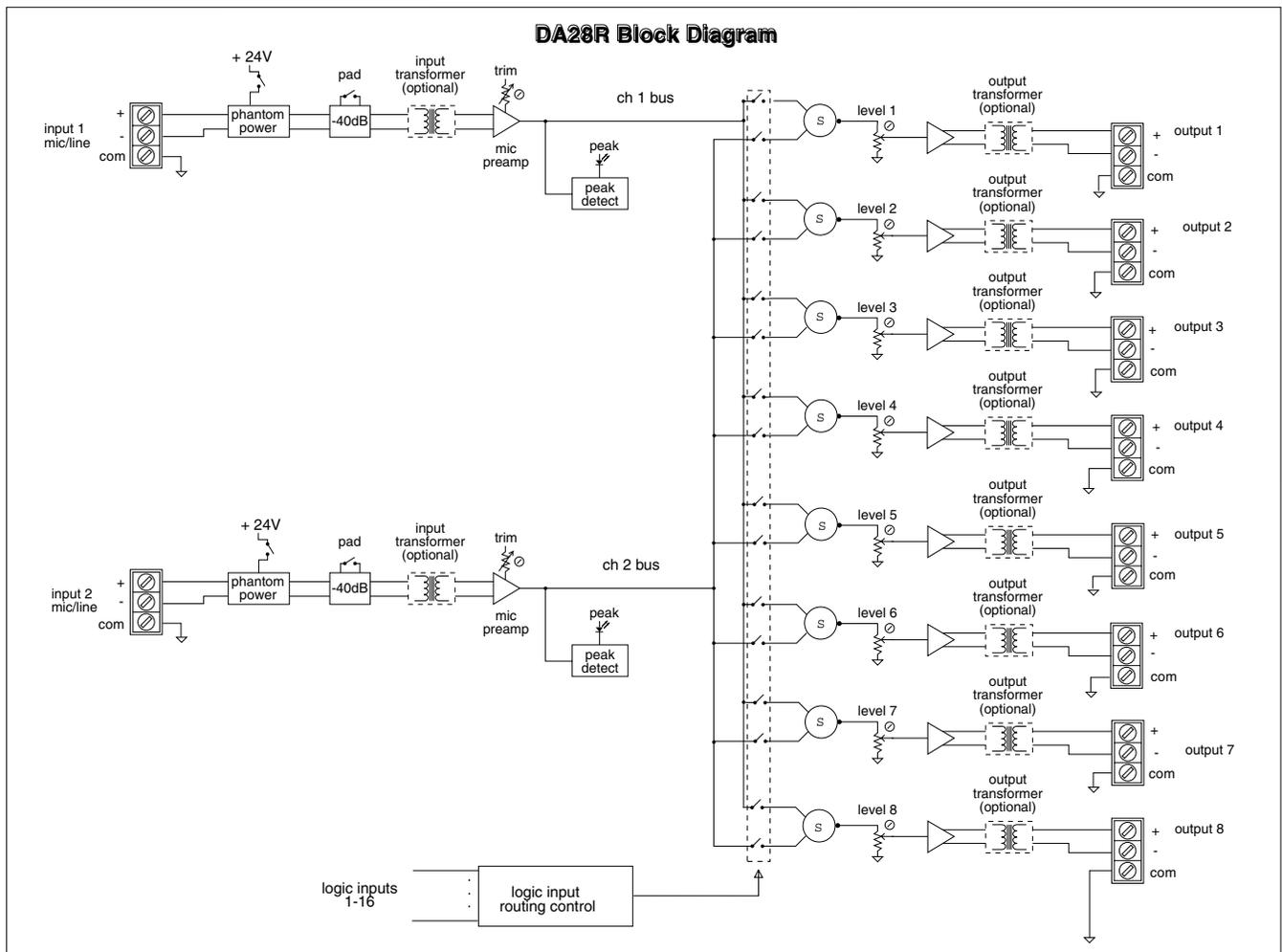
## EIGHT ZONES OF PAGE-OVER-MUSIC ROUTING





## SPECIFICATIONS & BLOCK DIAGRAM

<b>Frequency Response</b> (20Hz~20kHz):	+0/-1dB	<b>Maximum Input:</b>	+24dBu
<b>THD+Noise</b> (20Hz~20kHz):	< 0.03%	<b>Maximum Output</b> (balanced):	+24dBu
<b>Noise Floor</b> (20Hz~20kHz @ unity gain):	< -75dBu	<b>Power Consumption:</b>	10 Watts max.
<b>Maximum Gain</b> (mic in to balanced out):	79dB	<b>Dimensions:</b>	
<b>Input Impedance</b> (balanced):		height	1.75 inches (44mm)
mic input	4.3k ohms	width	19 inches (483mm)
line input	5.6k ohms	depth	7.5 inches (190mm)
<b>Output Impedance</b> (balanced):	200 ohms	<b>Weight:</b>	4.75 lbs. (2.16kg)



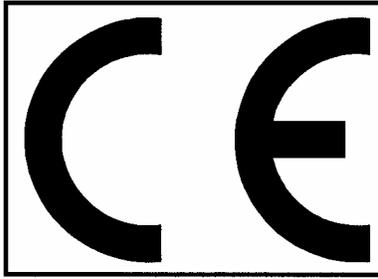
## WARRANTY

---

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

1. BIAMP Systems warrants to the original purchaser of new products that the product will be free from defects in material and workmanship for a period of 5 YEARS from the date of purchase from an authorized BIAMP Systems dealer, subject to the terms and conditions set forth below.
2. If you notify BIAMP during the warranty period that a BIAMP Systems product fails to comply with the warranty, BIAMP Systems will repair or replace, at BIAMP Systems' option, the nonconforming product. As a condition to receiving the benefits of this warranty, you must provide BIAMP Systems with documentation that establishes that you were the original purchaser of the products. Such evidence may consist of your sales receipt from an authorized BIAMP Systems dealer. Transportation and insurance charges to and from the BIAMP Systems factory for warranty service shall be your responsibility.
3. This warranty will be VOID if the serial number has been removed or defaced; or if the product has been altered, subjected to damage, abuse or rental usage, repaired by any person not authorized by BIAMP Systems to make repairs; or installed in any manner that does not comply with BIAMP Systems' recommendations.
4. Electro-mechanical fans, electrolytic capacitors, and normal wear and tear of items such as paint, knobs, handles, and covers are not covered under this warranty.
5. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. BIAMP SYSTEMS DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
6. The remedies set forth herein shall be the purchaser's sole and exclusive remedies with respect to any defective product.
7. No agent, employee, distributor or dealer of Biamp Systems is authorized to modify this warranty or to make additional warranties on behalf of Biamp Systems. statements, representations or warranties made by any dealer do not constitute warranties by Biamp Systems. Biamp Systems shall not be responsible or liable for any statement, representation or warranty made by any dealer or other person.
8. No action for breach of this warranty may be commenced more than one year after the expiration of this warranty.
9. BIAMP SYSTEMS SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS OR LOSS OF USE ARISING OUT OF THE PURCHASE, SALE, OR USE OF THE PRODUCTS, EVEN IF BIAMP SYSTEMS WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Biamp Systems  
10074 S.W. Arctic Drive  
Beaverton, Oregon 97005  
(503) 641-7287



## Declaration of Conformity

BIAMP SYSTEMS  
10074 SW Arctic Drive  
Beaverton, OR USA 97005

as the manufacturer, hereby declares that the following described product, in our delivered version, complies with the provisions of the DIRECTIVES as noted herein. In case of alteration of the product, not agreed upon or directed by us, this declaration is no longer valid.

Product: Model: ADVANTAGE® DA28R  
Description: Distribution Amp/Router

Applicable EC Directives: EMC Directive (89/336/EEC) LVD Directive (73/23/EEC)

Applicable Harmonized Standards: EN55103-1 emissions EN55103-2 immunity  
EN60065 safety

### Special Considerations for Product Environment or Compliance:

Shielded cabling must be used for system connections. The apparatus is deemed incapable of producing harmonic emissions or flicker levels sufficient enough to interfere with other apparatus as noted in EN61000-3-2 and EN61000-3-3.

This apparatus operates from a removeable external power source at voltages below the levels encompassed by the LVD. The external power source complies with the applicable requirements of EN60065. The apparatus itself is outside of the scope of the LVD and presents no hazardous voltages, as defined in the LVD. For compliance, the apparatus shall be powered only from the separate CE marked BIAMP SYSTEMS power source.

RF interference conducted through interconnect cabling may cause varying degrees of random signal degradation. The effect of increased noise or distortion due to this interference is typically masked by the desired signal. In no instance is operation inhibited.

The Technical Report/File is maintained at:

Biamp Systems  
10074 S.W. Arctic Drive  
Beaverton, OR USA 97005  
phone: (503) 641-7287 fax: (503) 626-0281  
e-mail: [biamp@biamp.com](mailto:biamp@biamp.com)

Authorized Representative: Ralph Lockhart, President

Authorized Representative Signature:  
Issued: 1999

## 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 calificada 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 del 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.



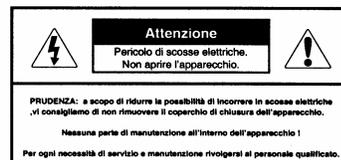
La simbologia con il punto esclamativo all'interno di un triangolo, intende avvisare l'utente di una serie di istruzioni contenute nel manuale d'uso riguardanti: operato, manutenzione e assistenza. Il suddetto manuale sarà a corredo dell'apparecchio.

**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, (WARNING) 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 Rufzeichen 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 svæbet ikke fjernes.		
Indeholder ingen komponenter relevante for brugeren.		
Anvend autoriseret servicepersonale ved alle servicetilfælde.		

## 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 internationaal 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 ELECTRISCHE SCHOK TE VERMIDEN 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 tärkeästä turvallisuusinformaatiosta. 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 turvallisuusinformaatioon.



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 ammattilaisien 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 brukersikkerhet 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.

Produktmerkingen og bruksanvisningen bruker internasjonale symboler for å merke punkter som er viktige for brukersikkerhet.



Lynet i en triangel advarer brukeren om uisolert "farlig spenning" inne i apparatet, eller tilkoblingsterminaler 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 tilleggsinformasjon som følger er kun for kvalifiserte installatører eller servicepersonell.

	<b>VIKTIG</b> FARE FOR STØT, MÅ IKKE DEMONTERES.	
<b>VIKTIG:</b> 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 säkerhetsinformation. 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 undviks.

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



En blixn med pil, innesluten i en triangel, menad att uppmärksamma användare på närvaron av isolerade "farliga spänningar" i apparaten eller på anslutningskontakter 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 modifieringsinstruktioner och annan information av teknisk art i denna manual är endast avsedd att användas av kvalificerad installations och servicepersonal.

	<b>OBSERVERA</b> RISK FÖR ELEKTRISK STÖT FÄR EJ ÖPPNAS	
<b>OBSERVERA:</b> FÖR ATT MINSKA RISKEN FÖR ELEKTRISK STÖT, AVLÅGNSA 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.	
<b>ΠΡΟΣΟΧΗ:</b> ΓΙΑ ΝΑ ΜΕΙΩΣΕΤΕ ΤΟΝ ΚΙΝΔΥΝΟ ΗΛΕΚΤΡΟΠΛΗΞΙΑΣ, ΜΗΝ ΜΕΤΑΚΙΝΗΣΕΤΕ ΤΟ ΚΑΛΥΜΜΑ. ΔΕΝ ΠΑΡΕΧΟΝΤΑΙ ΑΝΤΑΛΛΑΚΤΙΚΑ SERVICE ΣΤΟΝ ΧΡΗΣΤΗ ΓΙΑ SERVICE ΑΝΑΦΕΡΕΤΕ ΣΤΟ ΕΞΟΥΣΙΟΘΕΤΗΜΕΝΟ 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.



o 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.



o 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.	
<b>PRECAUÇÃO:</b> 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.		