BIAMP®

**Tesira®
SERVER
& SERVER-IO
Server Devices**

Operation Manual

May 2012

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TESIRA SERVER

The Tesira® SERVER is a digital network server for use with the Tesira digital audio networking platform. It is factory configured with one DSP card yet capable of handling up to seven additional DSP cards. For digital audio networking it can be configured with up to two AVB or CobraNet® network cards in any combination. An integral network card provides redundant network connection for configuration and control of the Tesira network as well as General Purpose Input/Output (GPIO) connections. In cases where local I/O is advantageous, a Tesira standard I/O card may be installed. The modular DSP features two new Biamp algorithms, SpeechSense™ and AmbientSense™, which enhance speech processing by more accurately distinguishing between human speech and noise. The DSP also provides extensive audio processing, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay as well as control, monitoring and diagnostic tools; all configured through the Tesira designer software.

BENEFITS
- Highly scalable processing that can grow over time with the needs of the end customer
- Flexibility for any I/O device to harness the processing available in the server
- Enables I/O devices to be located at end points
- Offers flexibility for control network to run on separate (existing) Ethernet network

FEATURES
- Supports up to 8 DSP cards
- Up to 420 x 420 channels of digital I/O over AVB
- Supports optional 32 x 32 CobraNet audio networking
- System configuration and control via Ethernet or serial connection
- Supports network redundancy
- Local General Purpose Input/Output (GPIO) connections
- Front panel OLED display for device and system information
- New processing algorithms: SpeechSense and AmbientSense
- Signal processing via intuitive software allows configuration and control for: signal routing and mixing, equalization, filtering, dynamics, delay and much more
- Extensive input, output and logic expansion devices supported as part of the Tesira digital audio networking platform
- Rack mountable (3RU)
- **CE** marked, **UL** listed and **RoHS** compliant
- Covered by Biamp Systems' 5-year warranty

TESIRA SERVER-IO

The Tesira® SERVER-IO is a digital network server for use with the Tesira digital audio networking platform. It is factory configured with one DSP card yet capable of handling up to two additional DSP cards. The SERVER-IO can be configured with up to two AVB and CobraNet network cards in any configuration. An integral network card provides redundant network connectivity for configuration and control of the Tesira network. The SERVER-IO can support up to 12 standard Tesira I/O cards for up to 48 channels of audio I/O (e.g. mic and line level, VoIP, and telephone interface). The on-board DSP features two new Biamp algorithms, SpeechSense and AmbientSense, both of which enhance speech processing by more accurately distinguishing between human speech and noise. The DSP also provides extensive audio processing, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay as well as control, monitoring and diagnostic tools; all configured through the Tesira design software.

BENEFITS

- Offers flexibility to have scalable DSP and I/O in the same device
- Enables I/O to be distributed from a central location
- Customizable I/O configurations for easy right-sizing of system design
- Control networking can run on separate (existing) Ethernet network

FEATURES

- Up to 3 DSP cards
- Up to 12 I/O cards with maximum 48 channels of audio
- Up to 420 x 420 channels of digital I/O over AVB
- Optional 32 x 32 CobraNet audio networking
- Configuration and control networking over Ethernet
- Supports network redundancy
- Local GPIO connections
- Front panel LCD display for device and system information
- New processing algorithms: SpeechSense and AmbientSense
- Signal processing via intuitive software allows configuration and control for: signal routing and mixing, equalization, filtering, dynamics and delay and much more
- Wide selection of I/O cards available
- 4-channel Acoustic Echo Cancellation card (also includes AGC and ANC) and Ambient Noise Compensation card available
- Extensive expansion devices (Input, Output, Logic, etc.) available as part of the Tesira digital audio networking platform
- Rack mountable (3RU)
- **CE** marked, **UL** listed, **RoHS** compliant
- Covered by Biamp Systems' 5-year warranty

The SERVER-IO front panel is shown below and is identical to the SERVER panel.

1 – Ventilation filter cover
2 – Multi-color LEDs
3 – Display navigation buttons
4 – OLED Display

DISPLAY

The Servers feature an OLED display that provides information about the server device as well as the Tesira system that is connected to the server. The OLED display is read-only. Navigating the display is accomplished by touch-sensitive UP and DOWN buttons and a touch sensitive SELECT button.

Home Screen
The home screen is the default screen that shows the overview of the device. If the text is too long to fit on the entire display, it will scroll to the left. Menus at the bottom allow other selections. By default the main menu icon will be selected.

Some menu icons double as status indicators. They change depending on the status of the device. The fault status icon only appears if there is an active fault in the system.

After a period of inactivity, the Front Panel Display will transition back to this home screen.

1 – Device and Host name
2 – Main Menu
3 – Settings Menu
4 – Network Menu / Status
5 – Audio Menu / State
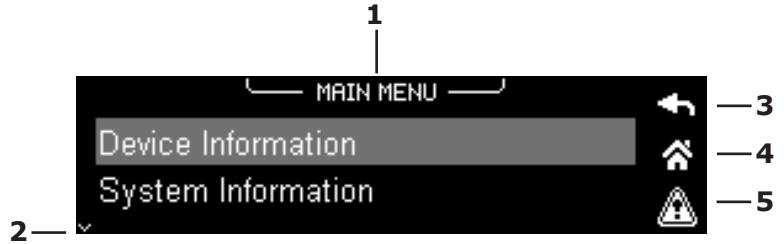**6** – Fault Menu / Status

To open any of the menus, use the UP and DOWN buttons to highlight the menu icon desired, and press the select button.

TESIRA SERVER & TESIRA SERVER-IO FRONT PANEL

Menu Screen

1 – Menu title bar
2 – Scroll indicator
3 - Previous screen
4 – Home screen
5 – Fault menu

A menu screen contains a list of items from which navigation to other menus can be selected. At the right are icons that provide quick navigation to other screens. Pressing the select button on an item in the list will transition to the screen that displays that information. A scroll indicator at the left shows there is more information to show by scrolling down. Scroll up to select from the icons at the right.

The previous screen icon goes up one menu level in the menu structure. The home screen icon transitions back to the home screen. If a fault is active in the system, the fault icon will appear and can be selected to view active faults.
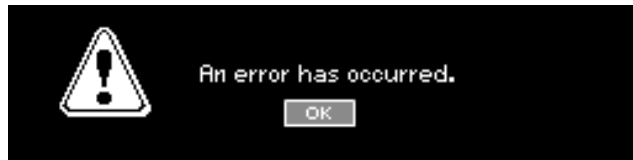
Settings Screen

1 – Display Brightness – Adjusts the brightness of the display
2 – Edit Timeouts – Edits the period of inactivity that will cause the display to turn off

Error Screen
When an error is detected when communicating with the host device, the following screen would be displayed. There will be more information than what is shown that describes the reason of the error. Press the select button to go back to the previous screen.

Dim Mode
The display is at the [Dim display brightness] and should appear the same except for the brightness level. Pressing any button will transition back to the previous mode and respond to the control movement (i.e. move the cursor, make a selection, etc.).
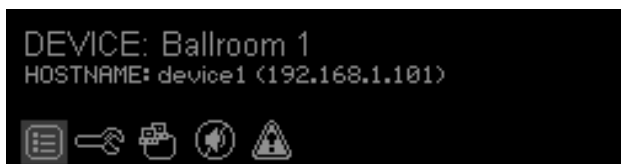
Sleep Mode
After the Display timeout is reached the display will go blank. However the Front Panel Display board and Server device still have power.

LED Display
The front panel of the servers displays five multi-color LEDs that provide information about the status of the servers.

| LED	Off	Green	Yellow	Red
Power	Unit is not powered	Unit is powered	Not applicable	Not applicable
Alarm	No fault is active in the device	Not applicable	Minor fault is active in the device	Major fault is active in the device
Activity	Not applicable	The host device is an active part of an active system	Not applicable	The host device is part of an inactive system (Audio is stopped)
Status	Not applicable	Device has received its configuration and is ready to participate in the system	Device is ready and waiting to receive a configuration	Device is not ready to receive its configuration
AIS (Alarm In System)	No fault is active in any device in the system	Not applicable	Minor fault is active in a device in the system	Major fault is active in a device in the system.

TESIRA SERVER
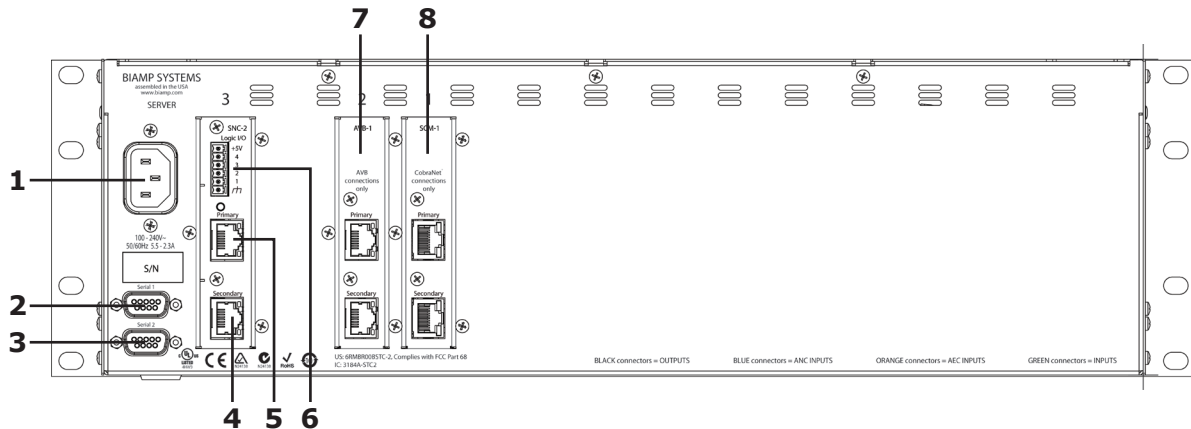
1 – AC Power inlet
2 – Serial Port 1
3 – Serial Port 2
4 – Secondary Ethernet control port (RJ-45)
5 – Primary Ethernet control port (RJ-45)
6 – GPIO connections
7 – Slot 2; always loaded with AVB-1 digital audio networking card for AVB
8 – Slot 1; optional slot that can be factory loaded or field loaded with any server card

TESIRA SERVER-IO
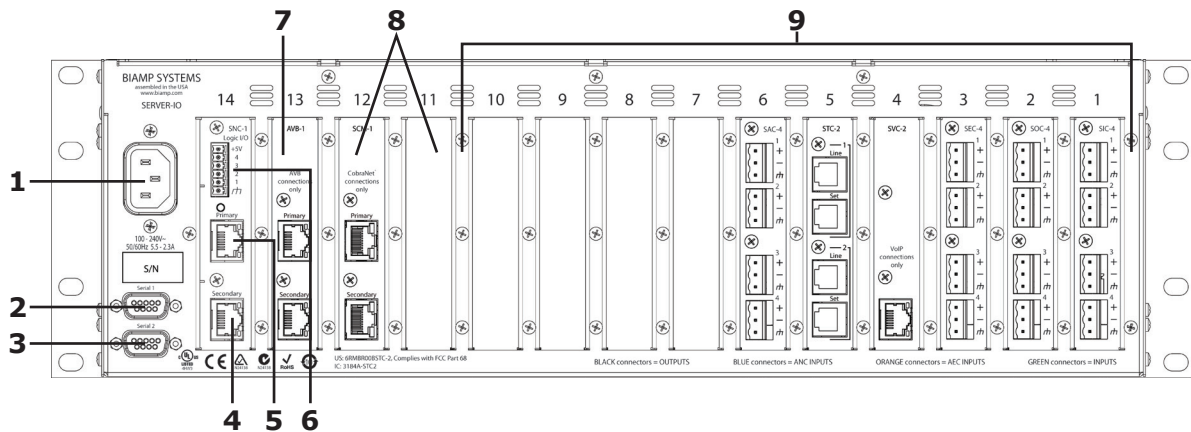
1 – AC Power inlet
2 – Serial Port 1
3 – Serial Port 2
4 – Secondary Ethernet control port (RJ-45)
5 – Primary Ethernet control port (RJ-45)
6 – GPIO connections
7 – Slot 13; optional slot that can be factory loaded or filed loaded with AVB-1 digital audio networking card for AVB or SCM-1 digital audio networking card for CobraNet
8 – Slot 12 and Slot 11; optional slot that can be factory loaded or field loaded with SCM-1 digital audio networking card for CobraNet, any telephone card or any analog audio card
9 – Slot 10 through Slot 1; optional slots that can be factory loaded or field loaded with any telephone card (STC-2, SVC-2) or any analog audio card (SIC-4, SEC-4, SAC-4 or SOC-4).

TESIRA SERVER & TESIRA SERVER-IO AUDIO CARD OPTIONS

SIC-4

The Tesira SIC-4 is a modular analog input card for use with Tesira SERVER and SERVER-IO devices. Each SIC-4 provides four channels of mic or line level audio input. The inputs are electrically balanced and provided on plug-in barrier strip connectors. Software control of each input includes gain with clip indicator, +48V phantom power, mute, level and signal invert.

SEC-4

The Tesira SEC-4 is a modular analog input card for use with Tesira SERVER or SERVER-IO devices. Each SEC-4 provides four channels of mic or line level audio input with Acoustic Echo Cancellation. The SEC-4 utilizes the next generation of the proprietary Sona™ algorithm and also features two new Biamp algorithms, SpeechSense and AmbientSense which enhance speech processing by more accurately distinguishing between human speech and other noises.

SAC-4

The Tesira SAC-4 is a modular analog input card for use with Tesira SERVER or SERVER-IO devices. Each SAC-4 provides four channels of mic or line level audio input with Ambient Noise Compensation. The SAC-4 features a new Biamp algorithm, AmbientSense, which intelligently distinguishes ambient noise from program material or announcements, thus greatly improving processing performance over traditional ambient noise compensation.

SOC-4

The Tesira SOC-4 is a modular analog output card for use with Tesira SERVER or SERVER-IO devices. Each SOC-4 provides four channels of line level audio output. The outputs are electrically balanced and provided on plug-in barrier strip connectors. Software control of each output includes mute, level, signal invert and full-scale output reference.

STC-2

The Tesira STC-2 is a modular telephone interface card for use with Tesira SERVER and SERVER-IO devices. The STC-2 allows a Tesira system to connect directly to standard analog telephone lines. Being more than just a normal "hybrid," each channel includes line-echo cancellation, noise suppression, caller ID decoding, ring detection/validation, DTMF decoding, and call progress tone decoding. When used in conjunction with Automatic Echo Cancellation processing, Tesira becomes an extraordinarily powerful, flexible and affordable conferencing platform.

SVC-2

The Tesira SVC-2 is a modular Voice over Internet Protocol (VoIP) card for use with Tesira SERVER and SERVER-IO devices. The SVC-2 allows a Tesira system to connect directly to IP-based telephone systems. When used in conjunction with Automatic Echo Cancellation processing, Tesira becomes an extraordinarily powerful, flexible and affordable conferencing platform.

TESIRA SERVER SPECIFICATIONS

Tesira SERVER Specifications (audio specifications given reflect use of SIC-4 and SOC-4)

Frequency Response (20Hz~20kHz @ +4dBu):	+0/-0.25dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (20Hz~20kHz):		**Cross Talk (channel to channel @ 1kHz):**	
@ 0dB Gain, +4dBu In	< 0.006%	@ 0dB Gain, +4dBu In	< -85dB
@ 54dB Gain, -50dBu In	< 0.040%	@ 54dB Gain, -50dBu In	< -75dB
EIN (20Hz~20kHz, 66dB Gain, 150Ω):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (20Hz~20kHz, 0dB):	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** (100~240VAC 50/60Hz):	< 150W
Output Impedance (balanced):	200Ω	**Weight:**	18 lbs (8.2 kg)
Maximum Input:	+24dBu	**Compliance:**	
Maximum Output:	+24dBu		FCC Part 68 (USA)
Input Gain Range (6dB Steps):	0 - 66dB		Industry Canada CS-03 (Canada)
Overall Dimensions:			CE marked (Europe)
Height:	5.25 inches (133 mm)		UL and C-UL listed (USA & Canada)
Width:	19.0 inches (483 mm)		A-Tick (Australia)
Depth:	17 inches (432 mm)		C-Tick (Australia)
			RoHS Directive (Europe)

TESIRA SERVER-IO SPECIFICATIONS

Tesira SERVER-IO Specifications (audio specifications given reflect use of SIC-4 and SOC-4)

Frequency Response **(20Hz~20kHz @ +4dBu):**	+0/-0.25dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (20Hz~20kHz):		**Cross Talk (channel to channel @ 1kHz):**	
@ 0dB Gain, +4dBu In	< 0.006%	**@ 0dB Gain, +4dBu In**	< -85dB
@ 54dB Gain, -50dBu In	< 0.040%	**@ 54dB Gain, -50dBu In**	< -75dB
EIN (20Hz~20kHz, 66dB Gain, 150Ω):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (20Hz~20kHz, 0dB):	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** **(100~240VAC 50/60Hz):**	< 150W
Output Impedance (balanced):	200Ω	**Weight:**	18 lbs (8.2 kg)
Maximum Input:	+24dBu	**Compliance:**	
Maximum Output:	+24dBu		FCC Part 15B (USA)
Input Gain Range (6dB Steps):	0 - 66dB		FCC Part 68 (USA)
Overall Dimensions:			Industry Canada CS-03 (Canada)
Height:	5.25 inches (133 mm)		CE marked (Europe)
Width:	19.0 inches (483 mm)		UL and C-UL listed (USA & Canada)
Depth:	17 inches (432 mm)		A-Tick (Australia)
			C-Tick (Australia)
			RoHS Directive (Europe)

FCC COMPLIANCE

FCC NOTICE - CLASS A DIGITAL DEVICE

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

TELECOM COMPLIANCE

Telephone Interface Information - This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the rear panel of this equipment are markings that contain, among other information, telecom product identifier US:6RMBR00BSTC-2. If requested, this number must be provided to the telephone company.

This equipment is designed for modular connection with Universal Service Order Codes (USOC) RJ-11C, RJ-11W, RJ-14C, RJ-14W.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

Ringer Equivalency Number (REN) - The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is 0.0 as indicated by part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 00 is a REN of 0.0).

Alarms connected to telephone line - If your facility has specially wired alarm equipment connected to the telephone line, ensure the installation of this US:6RMBR00BSTC-2 does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Automatic Dialer - WHEN PROGRAMMING EMERGENCY NUMBERS AND (OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:
1) Remain on the line and briefly explain to the dispatcher the reason for the call.
2) Perform such activities in the off-peak hours, such as early morning or late evenings.

Electrical Safety Advisory - Telephone companies report that electrical surges, typically lightning transients, are very destructive to customer terminal equipment connected to AC power sources. The use of a surge arrestor on the telephone line is recommended, particularly in areas that are prone to lightning strikes.

Service - This equipment is not user serviceable. If trouble is experienced with this equipment US:6RMBR00BSTC-2, for repair or warranty information, please contact Biamp Systems Corporation, phone number 503.641.7287. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

If this equipment US:6RMBR00BSTC-2 causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Party Lines - Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

NEW ZEALAND TELECOM NOTICE

New Zealand Telepermit - The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services

This equipment shall not be set up to make automatic calls to the Telecom '111' Emergency Service

IMPORTANT NOTICE - Under power failure conditions, this telephone may not operate. Please ensure that a separate telephone, not dependent on local power, is available for emergency use.

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 Systems 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, gooseneck microphones, cords connecting handheld microphones, hard-drives, displays, and normal wear and tear of items such as paint, knobs, handles, keypads and covers are not covered under this warranty. All server-based devices are warranted for 3 years only.

5. This warranty is in lieu of all other warranties, expressed or implied. Biamp Systems disclaims all other warranties, expressed 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.

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B I A M P®

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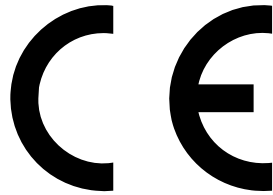
EC Declaration of Conformity

Biamp Systems Corporation, as manufacturer having sole responsibility, hereby declares that our delivered version the following described product complies with the applicable provisions of the DIRECTIVES below except as noted herein. Any alterations to the product not agreed upon and directed by Biamp Systems Corporation will invalidate this declaration.

Brand Name: Tesira®

Product Description: Networked Audio DSP Servers

Models:	Model Description:
SERVER, SERVER-IO	DSP Servers
- DSP-2	- DSP Expansion Card
- AVB-1, SCM-1, SNC-1, SNC-2, SVC-2	- IP Network Cards
- SAC-4, SEC-4, SIC-4, SOC-4	- Analog Audio I/O Cards
- STC-2	- PSTN Telephone Interface Card

Applicable EC Directives:	Applicable Harmonized Standards:		
LVD Directive (2006/95/EC)	Safety	EN 60950-1:2005, 2nd edition
EMC Directive (2004/108/EC)	Emissions	EN 55022: 2010, Class A
	Immunity	EN 55024: 2010, Class A
R&TTE Directive (1999/5/EC)	STC-2 card	LVD and EMC standards above
RoHS Directive (2011/65/EU)	RoHS Recast	

Special Considerations for Product Environment or Compliance:

- Shielded cabling must be used for system connections.

Technical Documentation File, Location and Contact:

Biamp Systems Corporation	phone:	(503) 641.7287
9300 S.W. Gemini Drive	fax:	(503) 626.0281
Beaverton, OR USA 97008	e-mail:	compliance@biamp.com

Authorized Representative: Larry Copley, Compliance Engineer

Authorized Signature: *Larry Copley*

Date and Place Issued: May 2012, Beaverton, Oregon USA

RoHS COMPLIANT

This Biamp product, including all attendant cables and accessories supplied by Biamp, meets all requirements of EU Directives 2002/95/EC of January 27, 2003, and 2005/618/EC of August 18, 2005, the EU RoHS Directives. An EU RoHS Materials Content Declaration document may be obtained at www.biamp.com

(This information is presented to comply with the requirements of Chinese law SJ/T11363-2006)
有害物质表 (Hazardous Substances Table)
Biamp Systems Corporation
数字信号处理器 (Digital Signal Processor)
型号 SERVER, SERVER-IO

部件名称 (Part Name)	有毒有害物质或元素 (Substances)					
	Pb 铅	Hg 汞	Cd 镉	Cr+6 六价铬	PBB	PBDE
设备机箱 (Equipment Chassis)	X	O	X	O	O	O
电源线 (Power Cord)	O	O	O	O	O	O
插拔式接线端子 (Plug-in Terminal Blocks)	O	O	O	O	O	O
手册和其他书面文档 (Manual and Paper Documents)	O	O	O	O	O	O
包装箱和所有包装材料 (Box and Packing Materials)	O	O	O	O	O	O

0：表示该部件所有均质材料中的这种有毒有害物质低于 SJ/T11363-2006 的限制要求.

X：表示该部件中至少有一种均质材料所含的这种有毒有害物质高于 SJ/T11363-2006 的限制要求.

在电触头和（或）镀镉所含的均质材料中，镉及其化合物的含量可以超过 0.01%，但欧盟指令 91/338/EEC（根据欧盟指令 76/769/EEC）限制销售和使用某些危险物质和制剂部分中所禁止的用途除外

在以下一种或多种物质所含的均质材料中，铅及其化合物的含量可以超过 0.1%:
1) 电子元器件中玻璃内所含的铅
2) 铅在钢材中是作为一种合金元素，含量可达 0.35%
3) 铅在铝材中是作为一种合金元素，含量可达 0.4%
4) 铅在铜材中是作为一种合金元素，含量可达 4%
5) 高熔点类焊料中的铅（即铅料合金，铅含量超过 85%）
6) 电子陶瓷部件内的铅
7) 由两种以上元素组成的焊料中所含的铅，用于连接针脚和微处理器包装，其中
铅的含量超过 80% 但低于 85%
8) 顺应针连接系统内的铅
9) 倒装芯片封装中半导体芯片及载体之间形成可靠连接所用焊料中的

在正常使用情况下，中国环保使用期限为 10 年，条件是：
• 环境温度为 (Ambient Temperature) 0-40C (32-104°F)
• 湿度为 0-95%，无凝结
• 海拔高度为 0-10,000 英尺
• 气流不受阻碍
• 没有水或其他液体进入任何部件
• 电源为 (Power Supply) 100-240 Vac, 50/60 Hz, 5.5-2.3 A
• 部件没有损坏（损坏部件应立即修理）
• 由工厂授权人员使用批准的材料进行所有维修