

Audio Zone Amplifier 100W Operation Manual 500217



SAFETY PRECAUTIONS

To insure the best use from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or may burn.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water. Keep the product away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage.
 If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Using supplies or parts not meeting the product's specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- Install the device in a place with good ventilation to avoid damage due to overheating.
- Unplug the power cord when left unused for a long period of time.
- Do not put any heavy items on the unit or on extension cable.
- Do not remove the housing of the device as you may be exposed to dangerous voltage or other hazards.
- Information on disposal of devices: do not burn or mix with general household waste, please treat this device as normal electrical wastes.
- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Please read this user manual carefully before using this product.

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1. Introduction

1.1. Introduction to the 500217

The Audio Zone Amplifier 100W is a compact-size 2x50 Watts digital amplifier (Class-D) with 3 inputs (1x 2CH analog RCA audio, 1x 2CH analog 3.5mm audio, 1x PCM digital/optical TosLink audio). It features a switchable stereo (2CH) or mono (bridged) output, and boasts a complete EQ adjustment and intuitive display.

This device is well suited for applications such as classrooms, small meeting rooms, lecture halls, bars/pubs, etc.

1.2. Features

- 3 audio inputs: 1x 2CH analog (RCA), 1x 2CH analog (3.5mm), 1x PCM digital/optical (TosLink).
- Audio inputs switchable by pushbutton, IR remote, RS232 or Web.
- Supports 2x50 Watts for 2CH audio @ 8Ω.
- Supports 1x100 Watts for mono bridge mode function @ 4Ω. This is also appropriate to support 70V speaker systems when connected to a MuxLab 70V transformer such as the 500755-70V.
- Device controllable via RS232, IR, TCP/IP.
- Supports a web-based GUI via the Ethernet port.
- Volume/Bass/Treble are controllable by pushbuttons, IR remote, RS232 or Web.
- Easy adjustments via a volume (level) rotary knob.
- Audio Cascade output support.
- Intuitive LED indicators for input source, control and volume setting.
- Power off memory.
- Convection cooling, no fan needed.
- Antistatic case design: providing good protection for long-term and stable performance.

1.3. Package Content

- One (1) Audio Zone Amplifier 100W
- One (1) Pluggable 4 Position Terminal Blocks
- One (1) RS232 Cable
- One (1) 33VDC, 4A Power Adapter
- One (1) Remote control
- One (1) IR Sensor
- One (1) Power Cord
- Two (2) Detachable Mounting Ears
- Four (4) Screws
- Four (4) Plastic Feet
- One (1) User Manual

Please verify that the product and the accessories are all included; if not, please contact your dealer.

2. Specification

Devices Audio System, Line Output, Microphone, Speaker Compatibility Compatible with MuxLab Analog Audio products Transmission Transparent to the user Frequency Response 20Hz to 20KHz CMMR >75dB @ 20Hz-20KHz SNR 80dB at maximum output Input Impedance >100 Stereo Channel >75dB @ 20HZ to 20KHz Separation 1% @ 1KHz, 50W Voltage Gain 32dB Power Output 1x100 Watts (@ 4Ω) or 2x50 Watts (@ 8Ω) Connectors Two (2) RCA Input Jacks for L+R audio input. Two (2) 3.5mm Jacks; one input & one cascade output. One (1) 4-pin terminal block (5.08mm) for the speakers. One (1) Optical TosLink for the Digital Audio. One (1) RS sensor 3.5mm stereo Jack. One (1) RS sheided for the Ethernet LAN connection. One (1) 3-pin terminal block (3.81 mm) for RS232. One (1) 4-pin DIN Jack for Power. Power Supply One (1) 110-240VAC to 33VDC power supply Temperature Operating: 0° to 50°C Storage: -20° to 85°C Humidity: Up to 95% non-condensing Enclosure Metal Dimensions 5.83" x 1.73" x 6.50" (148 x 44 x 165 mm) Weight 1.59 lbs (0.72 kg) Compliance Regulatory: FCC, CE, RoHS Warranty	Environment	Analog Audio	
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Compliance Regulatory: FCC, CE, RoHS Warranty 2 years	Dimensions	5.83" x 1.73" x 6.50" (148 x 44 x 165 mm)	
Warranty 2 years	Weight	1.59 lbs (0.72 kg)	
	Compliance	Regulatory: FCC, CE, RoHS	
Order Information 500217 Audio Zone Amplifier 100W	Warranty	2 years	
	Order Information	500217 Audio Zone Amplifier 100W	

3. Panel Description

3.1. Front Panel



Figure 2-1 Front Panel of Zone Audio Amplifier

No.	Name	Description	
1	Power LED	LED illuminates red when powered on	
2	Input Selection	Press to select any one of 3 inputs. Indicators will light accordingly. Inputs 1 to 3 correspond to audio sources connected to the 3 audio input ports, namely; > 1: 2CH analog (RCA) audio > 2: 2CH analog (3.5mm) audio > 3: PCM Digital/Optical (TosLink) audio	
3	Control	Press to select the audio parameter to be controlled, including LINE (Volume), BASS (Level), TREBLE (Level)	
4	Volume (Level) Knob	 Press to mute/unmute the audio Note: after pressed the button to mute the audio, you can press it again to restore the audio at the same volume, or rotate the knob to set the audio output level to the respective volume required. Rotate the knob to adjust volume. The volume bars will change accordingly. Rotate clockwise in increase volume (level) Rotate counter-clockwise to decrease volume (level) 	
5	Volume (Level) Bars	Indicates real-time volume setting, 10 bars for max volume. No volume bars will be illuminated if audio is muted.	

Operation Format: "INPUT SEL" + "CONTROL" + "Volume Knob"

Example: To adjust bass audio of input 3, select input 3 -> choose bass -> adjust the volume (level) knob.

3.2. Rear Panel



Figure 2- 2 Rear Panel of Zone Audio Amplifier

No.	No Name Description			
NO.	Name	Description		
		Ethernet: Connect to an Ethernet LAN to enable IP control via		
		a web-based GUI & TCP/IP communication software;		
	CONTROL	Indicators will blink when connected to a network and		
		communicating normally.		
1		RS232: Connect to an RS232 controlling device to enable		
		serial control.		
		IR Sensor: Connect to an IR Sensor to receive infrared signals.		
		Channel Switcher: Select STEREO or MONO to enable		
		2x50W or 1x100W (bridged) operation.		
		There are 3 audio inputs, including 1x 2CH analog (RCA)		
2	INPUTS	audio, 1x 2CH analog (3.5mm) audio and 1x PCM		
		digital/optical (TosLink) audio		
	OUTPUTS	Cascade: analog audio cascade output port, available only		
3		when input signal selected is 2CH analog audio		
3		Audio Output: includes stereo audio (2x50W@8Ω), or mono		
		output (1x100W@4Ω)		
4	DC 33V	33VDC, 4A power adapter Input Jack		
5	GND	Connect for grounding purposes		

Note: When connecting or disconnecting speakers, make sure to disconnect the power from the Audio Zone Amplifier 100W first to avoid electric shock or damage.

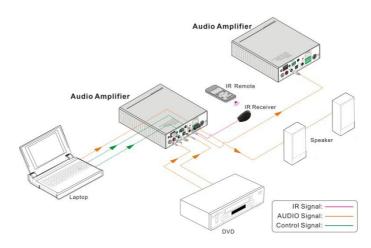
4. System Connection

4.1. Safety Precautions

The system should be installed in a clean environment with typical room temperature and humidity levels, within the specified operating range (see specifications).

All devices should be connected before turning on the power.

4.2. System Diagram



4.3. Connection Procedure

- **Step 1** Connect audio sources (such as CD, Blue-ray, DVD, media player, etc.) to **INPUT** ports of the device with audio cables;
- **Step 2** Set the Input Select to the correct source, and connect the audio output device(s) (such as passive speakers) to the audio output port accordingly. Ensure that the unit is not powered while connecting or disconnecting speakers.
- Step 3 (Optional) Insert an IR receiver (5V, without carrier) to IR Sensor to enable IR control.
- Step 4 (Optional) Connect a control device (e.g. a PC) to RS232 port to enable serial control.
- **Step 5** (Optional) Connect a control device (e.g. a PC) to an Ethernet LAN and the amplifier **TCP/IP** port to the same LAN to enable IP control.
- **Step 6** Plug 33VDC power adaptor to the power port of the amplifier.

4.4 Audio Output Connection

4.4.1 Stereo output (default): 2x50 Watts @ 8Ω

Set the switch to STEREO to enable 2x50 Watts @ 8Ω for stereo output mode. Connect the amplifier and speaker normally as shown in the figure below:

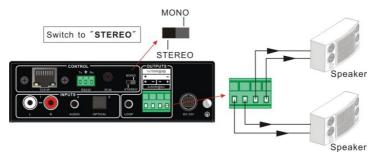


Figure 4-1 Stereo Output Connection

4.4.2 Mono output: 1x100 Watts @ 4Ω

Set the switch to MONO to enable to enable 1x100 Watts @ 4Ω for mono output mode. Connect the amplifier and speaker(s) as shown in the figure below:

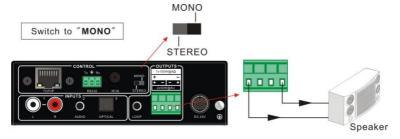


Figure 4- 2 Mono Output Connection

Note: In mono mode the user can also connect a MuxLab 70V transformer such as the 500755-70V to support 70V daisy-chained speaker systems. This is useful for longer speaker runs in a distributed speaker environment.

4.5 Loop (Cascade) Connection

The Audio Zone Amplifier 100W boasts a Cascade port for audio signal cascade output. A maximum of 255 units can be cascaded. To support cascading, connect the Audio Zone Amplifier 100W as shown in the figure below:

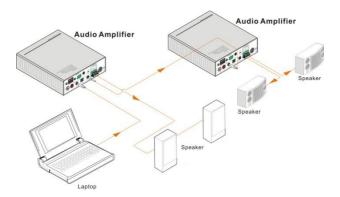


Figure 4-3 Cascade Connection

In this arrangement, audio signals sent to the first Audio Zone Amplifier 100W is cascaded to a second Audio Zone Amplifier 100W. Continuing this form of cascaded connectivity, enables multiple Audio Zone Amplifiers to share the same audio source, while being spread apart in different zones.

- 1. Audio loop (cascade) output is available only when the 1st Audio Zone Amplifier 100W has inputs 1 or 2 (the analog inputs) selected as source. Cascading with not work with input 3 (the digital input) selected.
- 2. Audio control operations are not available to the cascaded audio signal.

4.6 Application

The Audio Zone Amplifier 100W is well suited for applications such as classrooms, small meeting rooms, lecture halls, bars/pubs, etc. Also in MONO (bridged) mode with an attached MuxLab 70V transformer, 70V speaker systems may be utilized supporting longer distances and speaker daisy chaining for larger distributed applications.

5. System Control

5.1 Front Panel Button Control

Front panel buttons provide direct audio control, including input source selection and audio volume and tone adjustment.



Figure 5- 1 Front Panel Buttons

Operation Format: Input Select + Control + Volume Knob (indicators and volume bar will display real-time operation)

Input selection (area ①):

Press button **INPUT SELECT** to switch among the 3 inputs in a circular loop, the relative LED will light to indicate real-time selection. There are 3 selectable audio sources, corresponding to the 3 audio input ports on the rear panel, including;

- 1: 2CH analog (RCA) audio
- 2: 2CH analog (3.5mm) audio
- 3: PCM digital/optical (TosLink) audio

Control (EQ management) (area ②):

Including LINE (volume), BASS and TREBLE, press button **Control** to switch among the 3 control options in a circular loop, the relative LED will light to indicate real-time selection.

> Volume (Level) Knob (area ③):

Rotate knob clockwise to increase volume (level)

Rotate knob counter-clockwise to decrease volume (level)

Press knob to Mute and Unmute

About the Volume Bar (area 4):

Volume (Level) bar indicates real-time volume/level setting, 10 bars in total, the higher the volume/level, the more bars will be illuminated. In different EQ control, volume bar tend to act differently:

 LINE: Line volume ranges from 0 to 60, where each additional volume bar increases the volume level by 6, while a decrease in one volume bar decreases the volume level by 6.

- BASS: bass level ranges from 0 to 10
- TREBLE: treble level ranges from 0 to 10

5.2 IR Control

Connect an IR receiver (5V, without carrier) to the IR Sensor port on the rear panel. This allows the user to control the amplifier by the included IR remote (see below):

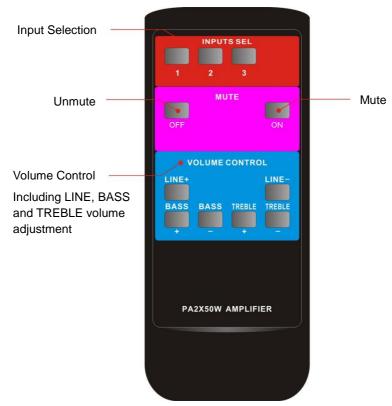
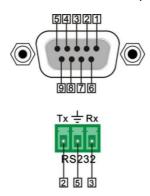


Figure 4-2 IR Remote

5.3 RS232 Control

The Audio Zone Amplifier 100W boasts a 3-pin pluggable terminal block for serial control. The definition of the connector pinout is listed in the table below.



		1
No.	Pin	Function
1	NC	Unused
2	Tx	Transmit
3	Rx	Receive
4	NC	Unused
5	Gnd	Ground
6	NC	Unused
7	NC	Unused
8	NC	Unused
9	NC	Unused

Connect the Audio Zone Amplifier 100W to the controlling device (e.g. a PC) with an RS232 cable and set the parameters such that they match with the Audio Zone Amplifier. The controlling device may use terminal emulation software to control the Audio Zone Amplifier 100W.

5.3.1 Basic RS232 Settings

You can use a terminal software to control the 500217. Please set the parameters of the COM Port (baud rate, data bit, stop bit and the parity bit) to 9600, 8, 1, none (respectively).

5.3.2 RS232 Communication Commands

\square

- 1) The RS232 commands are case-sensitive.
- **2)** "[", "]" in the commands are only to help identify parameters and not necessary used in real operations. Other symbols including "." "%" are part of the actual commands.
- **3)** Information listed in the column "Feedback" are for reference, feedback may vary depending on the operation.

Communication protocol: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none.

Command	Description	Feedback
1A1.	Switch to input 1	A: 1 -> 1
2A1.	Switch to input 2	A: 2 -> 1
3A1.	Switch to input 3	A: 3 -> 1
0A0.	Mute Audio Line out	Mute Audio
0A1.	Unmute Audio Line out	Unmute Audio
		A: 1 -> 1
600%	Inquire present working status	Volume: 30
00076	Inquire present working status	Bass: 0
		Treble: 0
601%	Turn up Line volume by 1	Volume of LINE: 51
602%	Turn down Line volume by 1	Volume of LINE: 51
603%	Turn up Bass volume by 1	Bass of LINE: 4
604%	Turn down Bass volume by 1	Bass of LINE: 4
605%	Turn up Treble volume by 1	Treble of LINE: 4
606%	Turn down Treble volume by 1	Treble of LINE: 4
607%	Restore factory default	Factory Default A: 1 -> 1 Volume: 45 Bass: 5 Treble: 5
610%	Turn up Line volume by 3	Volume of LINE: 54
620%	Turn down Line volume by 3	Volume of LINE: 51
61X%	Turn up Line volume by X	Volume of LINE: 54
62X%	Turn down Line volume by X	Volume of LINE: 54
7[x][x]%	Preset line volume, [xx] can be 00~60, 61 degrees in total.	Volume of LINE: 50
8[x][x]%	Preset the bass level, [xx] can be 00~10, 11 degrees in total.	Bass of LINE: 7

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9[x][x]%	Preset the treble level, [xx] can be 00~10, 11 degrees in total.	Treble of LINE: 7
GetIP;	Get the IP of the device	IP: 192.168.0.178

5.4 Ethernet Control

The Audio Zone Amplifier 100W supports an Ethernet port for TCP/IP control.

The default settings are: IP: 192.168.0.178; Subnet Mast: 255.255.255.0; Gateway: 192.168.0.1; Serial Port: 4001.

IP & gateway can be changed as needed, but the Serial Port cannot be changed.

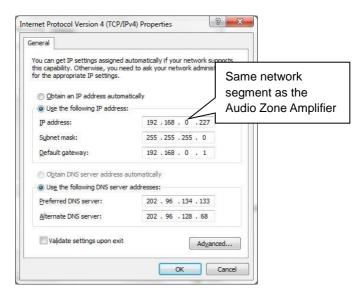
Connect the Ethernet port of the Audio Zone Amplifier 100W to the same network as the controlling device (same network segment). This allows the user to control the Audio Zone Amplifier 100W via its webserver interface.

5.4.1 Control Modes

The Audio Zone Amplifier 100W can be controlled with a PC without Ethernet access (via direct Ethernet port connection) or to any PC on the Ethernet LAN via a web browser.

Controlled by a PC without Ethernet access

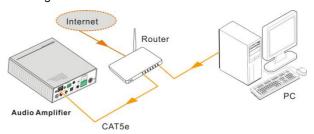
Connect a computer Ethernet port to the Audio Zone Amplifier 100W Ethernet port, and set the PC network segment to the same network segment of the Audio Zone Amplifier.



Controlled by any PC in the LAN

Before connecting the Audio Zone Amplifier to the same network as the PC to be used

for control, follow the steps below with a direct connection and use the directly connected PC to change the Audio Zone Amplifier's IP segment to that of the network it will be connected to. Then connect the Audio Zone Amplifier 100W, to the same network as the PC to be used for control via a router or Ethernet switch (as shown in the figure below). The PC will now be able to control the Audio Zone Amplifier. The steps below explain this process in greater detail.



Follow these steps to connect the devices:

- **Step1.** Connect the Ethernet port of the Audio Zone Amplifier 100W to the Ethernet port of a PC with straight-thru CAT5e/6.
- Step2. Set the PC's network segment to match that of the Audio Zone Amplifier.
- **Step3.** Set the Audio Zone Amplifier's network segment to the same as the router in the network.
- **Step4.** Set the PC's network segment back to the original setting prior to performing step 2 above.
- **Step5.** Connect the Audio Zone Amplifier and PC to the router. PC(s) within the LAN are now able to control the Audio Zone Amplifier via their web browser.

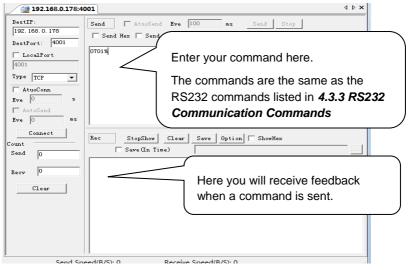
5.4.2 Control via TCP/IP communication software

(Example by TCPUDP software)

1) Connect a computer and the Audio Zone Amplifier to the same network. Open the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of the Audio Zone Amplifier (the default IP is: 192.168.0.178, port:4001):



2) Once the connection is successful, the user can then enter commands to control the Audio Zone Amplifier, as shown below:



5.4.3 Control via Webserver Interface

The Audio Zone Amplifier supports a built-in webserver GUI for convenient Ethernet control. This GUI allows users to interact with the Audio Zone Amplifier through graphical icons and visual indicators.

Type <u>192.168.0.178</u> (default IP, changeable via GUI) in your browser, which will bring up the log-in screen, as shown below:



Figure 5- 3 Log-in interface

The GUI supports the Chinese and English language, and is selectable by clicking 中文 or ENGLISH.

Enter the correct username and password to access the system:

Name: admin; **Password**: admin (these are default settings, and are changeable via the GUI). Then click **LOGIN**, which will then display the main control window, as shown below:

Audio Selection:



Figure 5- 4 Network Control Web Interface

With-in this interface, the user can:

- Select the input source
- Mute/ Unmute the output
- Control the levels for LINE/ BASS/ TREBLE by dragging the dot up or down to

set the desired level.

Switch to the network configuration window by clicking on NETWORK

Network Configuration:



Figure 5- 5 Network/Unit Settings Selection

In this window, the user can:

Configure network settings:

IP: support DHCP and Static IP, Choose the required state by clicking on the DHCP button

DHCP: IP Address, subnet mask and gateway are fixed in this mode.

Static IP: set IP Address, subnet mask and gateway manually. Make sure the IP is unique within the segment in question.

- Modify password: type in a new password in the column, with a max of 5 numbers or letters
- Inquire software version
- Switch back to the audio selection window by clicking AUDIO SEL

If there are any changes within a given window, they may be saved by pressing **Save**, or press **Cancel** to not accept the changes.

Clear the cache of the browser beforehand to ensure reliable GUI operation.

5.4.4 Port Management

Enter the Audio Zone Amplifier 100W IP Address <u>192.168.0.178:100</u> (Default, changeable via GUI) into a web browser. Enter the correct username and password to log in to the webserver interface:

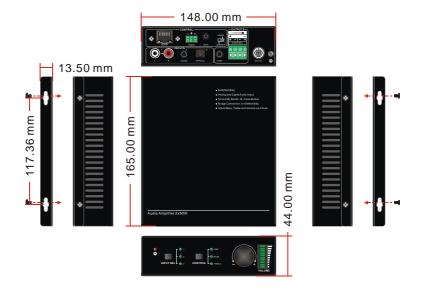
The main window of the webserver interface is displayed below.



The webserver interface allows the user to perform the following functions:

- Change webserver interface display language
- Modify network settings: Go to Internet Settings -> WAN
- Upgrade TCP/IP module: Go to Administration -> Upload Program -> Select program file -> Start upgrading
 (Reboot the device after upgrading)

6. Enclosure Dimensions



7. Troubleshooting & Maintenance

The following table describes some of the symptoms, probable causes and possible solutions in respect to the installation of the 500217 Audio Zone Amplifier 100W.

Problem	Possible Cause	Solution
	Loose or broken connection at input/ output end.	Reconnect the devices.
No output audio	No connected source at the chosen input channel.	Insert source in the proper port or change to other input channel.
No output addio	Audio has been muted.	Press the volume knob to unmute.
	Wrong output connection.	Connect output according to the transmission mode selected (stereo or mono).
Power indicator is off	Device not powered ON.	Power ON the device.
and the device does not respond to any operation	Loose or broken power connection.	Reconnect the power adapter or replace it.
Ethernet control not working	Control device (PC) and Audio Zone Amplifier are on different network segments.	Set the network segment of the control device (PC) to that of the Audio Zone Amplifier 100W.
WOIKING	Network segment of Audio Zone Amplifier is not the same as the LAN being used.	Set the network segment of the Audio Zone Amplifier to that of the LAN.
	Loose or broken RS232 connection.	Reconnect the devices or change the RS232 cable.
RS232 control not working	Wrong command or command error.	Send only supported commands, as listed in section 5.3.2.
WOIKING	Wrong RS232 communication settings.	Set RS232 parameters to: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none.
	Remote batteries are drained.	Replace remote batteries with new ones.
IR control not working	Exceed effective control distance or angle.	Move closer to the Audio Zone Amplifier 100W and adjust control angle.
Cascading Audio Zone Amplifiers is not	No connected source on input 1 or 2 of the 1 st Audio Zone	Connect audio source to input 1 or 2 of the 1 st Audio

working	Amplifier 100W.	Zone Amplifier 100W.
	Wrong input selected on the 1 st Audio Zone Amplifier 100W.	Select input 1 or 2 on the 1 st Audio Zone Amplifier 100W.

If you still cannot diagnose the problem, please call MuxLab Customer Technical Support at 877-689-5228 (toll-free in North America) or (+1) 514-905-0588 (International).

Regulatory Compliance

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CE/FCC & Recycling Information

CE Certification

This equipment complies with the requirements relating to Electromagnetic Compatibility Standards EN55022/EN55024 and the further Standards cited therein. It must be used with shielded cables only. It has been manufactured under the scope of RoHS compliance.

FCC Certification

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. You are cautioned that changes or modification not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and
- 2. This device must accept any interference received, including interference that may cause undesired operation



WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electronic Products

In 2006 the European Union introduced regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process.

Each individual EU member state has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose of any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.





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